Leaf beetle biodiversity in the low Arieş river basin (Coleoptera: Chrysomelidae)

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Rezumat:

Biodiversitatea crizomelidelor (Coleoptera: Chrysomelidae) din bazinul inferior al Arieşului

Într-un studiu efectuat pe parcursul anului 2004 asupra crizomelidelor, în principalele ecosisteme naturale din 8 localităţi din zona bazinului inferior al Arieşului, s-au identificat 106 specii din 31 de genuri şi 7 subfamilii. Au dominat speciile de *Longitarsus* şi *Cryptocephalus*, au fost de asemenea bine reprezentate genurile *Phyllotreta*, *Cassida* şi *Chrysolina*, iar cele mai multe genuri au fost reprezentate prin doar 1-2 specii. Dintre subfamilii, au dominat Alticinae şi Chrysomelinae, iar Cryptocephalinae a fost de asemenea mai bine reprezentată. S-au evidenţiat de asemenea un număr de 21 de specii de crizomelide care pot fi considerate rare , cu statut de periclitate.

Keywords: leaf-beetles, biodiversity, low Arieş river basin

There are known relative few scientific data about leaf-beetle fauna in the Romanian regions (Fleck, 1905; Petri, 1912; Marcu, 1927, 1928, 1936, 1957; Panin, 1951; Konnert-Ionescu, 1963; Ieniştea, 1968, 1974, 1975; Negru, 1968; Negru & Roşca, 1967; Roşca, 1973, 1974, 1976, Ilie, 1999; Gruev et all., 1993; Maican & Serafim, 2001). For Transylvania, and mostly for "Apuseni" Mountains, leaf-beetle informations are also very rare (Seidlitz, 1891; Petri, 1912; Konnert-Ionescu, 1963; Roşca 1973, 1974; Szel et all.,1995). Starting 1992, we initiated studies on leaf-beetles in different regions of the country, and mostly in Transylvania (Crişan,1993a, 1993b, 1994, 1995a, 1995b; Crişan & Teodor, 1996a, 1996b, 1998; Crişan & Bonea, 1995; Crişan & Druguş 2001; Crişan et all., 1998, 1999a, 1999b 2000).

In 2004, as a continuation of previous studies (Crisan &Teodor, 2003; Crisan et all., 2004), we undertook studies on leaf beetle biodiversity in the low Arieş river basin, starting with Trascau Valley (the area nearby Rimetea village) to the Arieş river mouth (Gura Arieşului). The low Arieş river basin, on the whole, is situated in the "Transylvanian plain"; a geographical formation characterized by many hills and extended terraces. The greatest part of the zone is occupied by agricultural terrains, with different crops and orchards. Some forests are also present, mostly in the first part of the low Arieş river basin (Rimetea-Moldovenesti area) and also in the protected areas (Cheile Turzii, Cheile Turului), areas that were analised concerning leaf- beetle fauna in previous papers. The forests of the low Arieş river basin are characterised by different species of foliaceous trees (*Carpenus betulus,* species of *Quercus, Fagus sylvatica, Uhlmus champestris* etc.). Trees are also present along the river valley (mostly species of *Salix* and *Alnus*) and along the tributary vallies of the low Arieş river: Trascău Vally, on the right side, and Hăşdate Valley, Racilor Valley, Larga Velley, on the left side. Shrubs and bushes of *Rosa canina, Prunus spinosa, Evonymus europeus, Viburnum lantana, Corylus avellana, Lygustrum vulgare, Rubus caesius, Clematis vitalba* etc are also spread in the lawns and pastures. These areas, not or few influenced by the human activities, constituted the places in which we took samples, nearby any localities of the zone: Rimetea, Moldoveneşti, Mărtineşti, Luna, Luncani, Gligoreşti, Hădăreni, Gura Arieşului.

Material and method

We took samples and made observations in the following points and habitats:

1. Rimetea, locality situated on Trascău Valley, at about 5 km. far from the valley mouth.

- a. a mezohygrofilous lawn, situated in the Aries river meadow area, just to the Trascau valley mouth.

- b. the Trascău meadow area along the valley, with species of *Salix* and *Alnus*, and also with hygrophilous herbaceous vegetation.

- c. a mezophilous lawn, situated upstream the Rimetea village on a South-Eastern exposed slope.

- d. a mezoxerophilous lawn at high altitude, situated nearby „Colții Secuiului", a mountainous formation with a very tilted terrain.

- e. weeds and bushes, situated along the road between Remetea and Costesti localities.

2. Moldoveneşti, locality situated at the contact between Trascău Mountains and Turzii Depression with Măhăceni Plateau. We undertook researches in the forest nearby Moldoveneşti locality and in a lawn in the proximity of the forest.

- a. a Carpino-Fagetum association, forest dominated by *Carpinus betulus* and *Fagus silvatica*, having also: *Acer campestre, Corylus avellana, Betula pendula* and a herbous vegetation better represented, mostly along a small stream across the forest, with *Mentha sp., Trifolium pratense, Medicago sp., Urtica dioica, Equisetum arvense, Carduus spinosus, Carduus echinatus*, and any grass.

- b. a hay-land, differeent grass, mixed with *Trifolium pratense, Lotus corniculatus*, *Coronilla varia* şi *Rubus caesius,* etc..

3. Mărtineşti, locality situated on Racilor Valley, at aproximately 4 km down-stream of Vâlcele locality, in the valley meadow.

- a. a lown, with *Trifolium repens*, as representative, mixed with any other herbs and weeds, situated in the proximity of the pools here present;

- b. an apple orchard, with grassy vegetation dominated by different herbs mixed with *Trifolium pratense, T. repens, Coronilla varia, Medicago, Cirsium etc.*.

4. Luna, localitaty in wich we undertook researches in any ecosystems situated on tne right side of Arieş river, in the area of river meadow:

- a. an Alneto-Salicetum association, dominanted by *Salix* and *Alnus* species with a grassy rug of different herbs mixed with *Trifolium sp., Urtica dioica, Coronilla varia*, etc.

- b. a hay-land, situated nearby the up mentioned association, containing different grass and *Trifolium pratense, Medicago sp., Coronilla varia, Ononis spinosa, Plantago lanceolata,* and some bushes of *Sambucus ebulum*;

- c. weeds and bushes, with *Artemisia, Matricaria, Trifolium, Coronilla, Verbascum* and other genera .

5. Luncani, locality in which we also undertook researches in the meadow, on the right side of the Arieş river:

- a. a Salicetum association , dominanted by species of *Salix*, having a hygrophile herbous rug with: *Typha, Trifolium, Ononis, Centaurea and Urtica,* species;

- b. a pasture, with *Trifolium, Ononis, Medicago, Althea, Polygonum* species, mixed with grass.

6. Hădăreni, localitaty situated on the left side of Arieş river, having an extended pasture:

- a. a pasture, with *Trifolium pratense, Euphorbia sp, Ononis spinosa, Artemisia sp* mixed with some herbs.

- b. weeds at the road margins, with *Artemisia sp.* and *Lycopus europaeus* as representatives.

7. Gligoreşti, localitaty situated on the left side of Arieş, in the river meadow:

- a. a Salicetum association dominated by *Salix caprea*;

- b. a hay-land, hygrophilous area, with *Juncus, Typha, Trifolium* and *Ononis,* having also bushes of *Salix caprea*.

8. Gura Arieşului, localitaty situated to the Arieş river mouth, having a meadow in common with Mureş river , at aproximate 200 m. altitude:

- a. a ***Salici-Populetum association***, in which species of *Salix* and *Populus* are mixed with *Alnus glutinosa, Fraxinus excelsior, Rosa cnina, Corylus avellana, Crataegus monogyna* etc., the herbous layer being dominated mostly by species of *Trifolium, Ononis, Centaurea, Typha, Urtica, Coronilla , Plantago* and *Matricaria.*

- b. a hay-land, (*Festuceto-Agrostietum* association), on the right side of Arieş river, in the meadow area, dominated by: *Agrostis tenuis, A. stolonifera, Festuca rubra, F. pratensis* etc., and also *Caltha palustris*.

- c. weeds, dominated by species of: *Artemisia, Matricaria, Trifolium, Linaria, Verbascum, Raphanus, Echium, Coronilla, Equisetum, Urtica , Lycopus* etc.

The material was collected, in the period 2002-2004, by sampling with an insect net in a cuantum of 50 sweeps per sample. Ocazionally were made also colections directly by hand. Caught insects were kept dry and identified in the laboratory, using different literature (Mohr, 1966; Panin, 1951; Kaszab 1962-1971; Kippenberg & Doberl, 1994; Schaufuss, 1915; Reitter, 1914; Rozner,

1996; Warchalowski, 1993).

Results and discussion

We present below, Table 1, the taxonomical list of the leaf beetle species identified in the low Arieş river basin, mentioning also the number of captured individuals in each place, the relative abundance, and the places and ecosystems in which the insects were captured.

From the collected material we identified 106 leaf beetle species (Chrysomelidae, Coleoptera) classified in 31 de genera, and 7 subfamilies

We conclude therefore that the biodiversity of the group is enough great also in the low basin of the Arieş river, mentioning also that the protected areas of the zone (Cheile Turzii, Cheile Turului), were not included in the present study, leaf beetle situation in these areas being previously published. Taking into account also these researches, it result that the leaf beetle biodiversity of the low Aries river basin, on the whole, is more rich.

Table 1

Leaf beetles from the low Arieş river basin

Crt. nr.	Subfamily/ Species	Nr. ind.	Abund %	Capture place, ecosyst.
	I. Criocerinae Latreille 1807			
1.	*Oulema (Oulema) melanopus* (Linnaeus, 1758)	3 1	0.51 0.17	4.b. 5.b.
2.	*Oulema (Haspidolema) galleciana* (Heyden, 1870)	1	0.17	2.a.
	II. Clytrinae Kirby 1837			
3.	*Labidostomis lucida* (Germar, 1823)	6	1.02	1.c.
4	*Labidostomis longimana* (Linnaeus, 1761)	13 11 3 2 1	2.21 1.87 0.51 0.34 0.17	2.b. 2.a. 3.b. 4.b.. 5.a.
5	*Clytra laeviscula* Ratzenburg,1837	3 1 4	0.51 0.17 0.68	1.b. 4.b. 7.a.
6	*Clytra appendicina* Lacordaire, 1848	3	0.51	1.a.
7	*Smaragdina aurita* (Linnaeus, 1767)	1 1	0.17 0.17	1.d. 2.b.
8	*Smaragdina flavicollis* (Charpentier, 1825)	1	0.17	4.a.
9	*Smaragdina affinis* (Illiger, 1794)	1	0.17	8.a.
10	*Smaragdina xanthaspis* (Germar, 1824)	1	0.17	1.b.
11	*Smaragdina salicina* (Scopoli, 1763)	3	0.51	1.b.
12	*Coptocephala unifasciata* (Scopoli, 1763)	1	0.17	1.c.
	III. Cryptocephalinae Gyllenhal, 1813			
13	*Pachybrachys sinuatus* Mulsant et Rey, 1859	1 1	0.17 0.17	1.e. 4.c.
14	*Cryptocephalus (Cryptocephalus) violaceus* Laicharting, 1781	1 2	0.17 0.34	2.b. 1.e.
15	*Cryptocephalus (Cryptocephalus) bipunctatus* (Linnaeus, 1758)	4	0.68	2.b.
16	*Cryptocephalus (Cryptocephalus) hipochoeridis* (Linnaeus, 1758)	4 2 1	0.68 0.34 0.17	1.c.. 2.a.. 3.b.
17	*Cryptocephalus (Cryptocephalus) sericeus* (Linnaeus, 1758)	4 4 4	0.68 0.68 0.68	1.c. 1.e. 2.b.
18	*Cryptocephalus (Cryptocephalus) moraei* (Linnaeus, 1758)	1 2 4	0.17 0.34 0.68	2.b. 1.d. 1.c.
19	*Cryptocephalus (Cryptocephalus) octopunctatus* (Scopoli, 1763)	1	0.17	1.b.
20	*Cryptocephalus (Cryptocephalus) flavipes* Fabricius, 1781	1	0.17	1.d.

Crt. nr.	Subfamily/ Species	Nr. ind.	Abund %	Capture place, ecosyst.
21	*Cryptocephalus (Cryptocephalus) vittatus* Fabricius, 1775	2	0.34	1.c.
22	*Cryptocephalus (Cryptocephalus) quadriguttatus* Richter, 1820	1	0.17	5.a.
23	*Cryptocephalus (Cryptocephalus) octacosmus* Bedel, 1891	1 1	0.17 0.17	4.b. 8.b.
24	*Cryptocephalus (Burlinius) fulvus* Goeze, 1777	2	0.34	1.c.
25	*Cryptocephalus (Burlinius) vittula* Suffrian, 1848	1 3	0.17 0.51	1.d. 5.a.
26	*Cryptocephalus (Burlinius) connexus* Olivier, 1808	1 1 1 1	0.17 0.17 0.17 0.17	1.c. 3.a. 5.b. 7.b.
27	*Cryptocephalus (Burlinius) ocellatus* Drapiez, 1819	2	0.34	4.a.
	IV. Chrysomelinae Latreille, 1802			
28	*Chrysolina (Chrysolina) staphylea* Linnaeus, 1758	1	0.17	2.b.
29	*Chrysolina (Menthastriella) herbacea* (Duftschmid, 1825)	15 3 2 2	2.55 0.51 0.34 0.34	1.a. 2.a. 4.a. 5.a.
30	*Chrysolina (Fastuolina) fastuosa* (Scopoli, 1763)	5 2 5 3	0.85 0.34 0.85 0.51	1.b. 4.a. 5.a. 6.b.
31	*Chrysolina (Erythrochrysa) polita* (Linnaeus, 1758)	3	0.51	1.b.
32	*Chrysolina (Ovostoma) olivieri* (Bedel, 1892)	2	0.34	1.a..
33	*Chrysolina (Sphaeromela) varians* Schaller, 1783	1	0.17	1.a..
34	*Chrysolina (Colaphosoma) sturmi* (Westhoff, 1882)	1	0.17	1.a.
35	*Oreina (Oreina) liturata* (Scopoli, 1763)	4	0.68	5.a.
36	*Oreina (Allorina) caerulea* (Olivier, 1790)	2	0.34	1.c.
37	*Colaphus sophiae* (Schaller, 1783)	1 1 2 1	0.17 0.17 0.34 0.17	5.b. 5.a. 6.b. 8.a.
38	*Gastrophysa polygoni* (Linnaeus, 1758)	1 2 1	0.17 0.34 0.17	1.e. 4.c. 5.b.
39	*Gastrophysa viridula* (De Geer, 1775)	3	0.51	5.b.
40	*Plagiodera versicolora* (Laicharting, 1781)	1 5 6 3	0.17 0.85 1.02 0.51	1.b. 4.a. 5.a. 6.b.
41	*Linaeidea (Linaeidea) aenea* (Linnaeus, 1758)	1	0.17	1.e.
42	*Chrysomela (Chrysomela) populi* (Linnaeus, 1758)	1 2	0.17 0.34	1.b. 5.a.
43	*Chrysomela (Strikerus) vigintipunctata* (Scopoli, 1763)	2	0.34	6.b.
44	*Gonioctena (Gonioctena) linnaeana* (Schrank, 1781)	4	0.68	6.b.
45	*Phratora (Phratora) vittelinae* (Linnaeus, 1758)	10 2	1.70 0.34	1.b. 8.a.
46	*Phratora (Phratora) tibialis* (Suffrian, 1851)	1	0.17	8.a.
47	*Phratora (Chaeroceta) vulgatissima* (Linnaeus, 1758)	2 2	0.34 0.34	7.a. 8.a.
	V. Galerucinae Latreille, 1802			
48	*Galerucella (Neogalerucella) calmariensis* (Linnaeus, 1767)	27 10	4.59 1.70	4.b. 8.a.
49	*Galerucella (Neogalerucella) pusilla* (Duftschmid, 1825)	1	0.17	5.a.
50	*Galerucella (Neogalerucella) lineola* (Fabricius, 1781)	14 3	2.38 0.51	4.a. 6.b.
51	*Galeruca (Galeruca) tanaceti* (Linnaeus, 1758)	2	0.34	2.a.
52	*Galeruca (Emarhopa) rufa* (Germar, 1824)	1	0.17	5.a.

Crt. nr.	Subfamily/ Species	Nr. ind.	Abund %	Capture place, ecosyst.
	VI. Alticinae Kutschera, 1859			
53	*Phyllotreta armoraciae* (Koch, 1803)	4	0.68	1.d.
54	*Phyllotreta undulata* (Kutschera, 1860)	2 2 2 2	0.34 0.34 0.34 0.34	4.b.. 5.b. 6.a. 8.b.
55	*Phyllotreta vittula* (Redtenbacher, 1849)	1 1 1	0.17 0.17 0.17	3.a. 4.b. 5.b.
56	*Phyllotreta nemorum* Linnaeus, 1758	1 1 1 1	0.17 0.17 0.17 0.17	4.c.. 6.b. 7.b. 8.c..
57	*Phyllotreta cruciferae* Goeze, 1777	2 4 2 1	0.34 0.68 0.34 0.17	4.c. 5.b. 6.b. 8.c.
58	*Phyllotreta atra* (Fabricius, 1775)	1 2 1	0.17 0.34 0.17	4.c. 5.b.. 8.b.
59	*Phyllotreta nigripes* (Fabricius, 1775)	15 9	2.55 1.53	4.c. 5.b.
60	*Phyllotreta gengelbaueri* Heikertinger, 1909	2	0.34	4.c.
61	*Phyllotreta christinae* Heikertinger, 1941	1	0.17	8.b.
62	*Aphthona lacertosa* (Rosenhauer, 1847)	37 3 3 3 16 1	6.33 0.51 0.51 0.51 2.72 0.17	1.c.. 1.d. 1.a. 2.b. 4.b. 6.a.
63	*Aphthona violacea* (Koch, 1083)	1	0.17	2.b.
64	*Longitarsus (Longitarsus) jacobeae* (Waterhouse, 1858)	2 2	0.34 0.34	1.a. 2.a.
65	*Longitarsus (Longitarsus) lycopi* (Foudras, 1860)	2 1	0.34 0.17	1.a. 3.a.
66	*Longitarsus (Longitarsus) pratensis* (Panzer, 1794)	1	0.17	1.c.
67	*Longitarsus (Longitarsus) foudrasi* Weise, 1893	1 1 1 1	0.17 0.17 0.17 0.17	3.a.. 4.b.. 5.b.. 7.b.
68	*Longitarsus (Longitarsus) nigrofasciatus* (Goeze, 1777)	3 2	0.51 0.34	3.b. 5.b.
69	*Longitarsus (Longitarsus) brunnaeus* (Duftschmid, 1825)	3 2 4 1 4	0.51 0.34 0.68 0.17 0.68	3.b. 4.c. 5.b. 6.a. 7.b.
70	*Longitarsus (Longitarsus) pellucidus* (Foudras, 1860)	4	0.68	4.a.
71	*Longitarsus (Longitarsus) longipennis* (Kutschera, 1863)	3 2	0.51 0.34	7.b. 8.a.
72	*Longitarsus (Longitarsus) longiseta* Weise, 1888	1	0.17	4.a.

Crt. nr.	Subfamily/ Species	Nr. ind.	Abund %	Capture place, ecosyst.
73	*Longitarsus (Longitarsus) melanocephalus* (DeGeer, 1775)	1 3 1 1	0.17 0.51 0.17 0.17	3.a. 4.c. 4.b. 5.a.
74	*Longitarsus (Longitarsus) scutellaris* (Mulsant et Rey, 1874)	1	0.17	6.a.
75	*Longitarsus (Longitarsus) membranaceus* (Foudras, 1860)	3	0.51	6.a.
76	*Longitarsus (Longitarsus) atricillus* (Linnaeus, 1761)	1	0.17	2.b.
77	*Longitarsus (Longitarsus) echii* (Koch, 1803)	2	0.34	5.b.
78	*Longitarsus (Longitarsus) tabidus* (Fabricius, 1775)	1	0.17	5.b.
79	*Longitarsus (Longitarsus) nigerrimus* (Gyllenhal, 1827)	2	0.34	8.c
80	*Altica oleracea* (Linnaeus, 1758)	3 3 1 3 1	0.51 0.51 0.17 0.51 0.17	1.c. 1.d. 3.a.. 4.a. 8.a.
81	*Batophilla fallax* Weise, 1888	4	0.68	1.a.
82	*Asiorestia ferruginea* (Scopoli, 1763)	7 6 2	1.19 1.02 0.34	1.c. 5.b. 6.a.
83	*Asiorestia transsylvanica* (Fuss,1864)	1	0.17	1.a.
84	*Asiorestia transversa* (Marsham, 1802)	1 1 7 2	0.17 0.17 1.19 0.34	2.b. 4.b.. 5.a.. 7.b.
85	*Crepidodera aurata* (Marsham, 1802)	28 1 6	4.78 0.17 1.02	1.b. 6.b. 7.a.
86	*Crepidodera plutus* (Latreille, 1804)	2 2 2 1	0.34 0.34 0.34 0.17	4.a. 5.a. 6.b. 8.a.
87	*Podagrica fuscicornis* (Linnaeus, 1767)	2 1	0.34 0.17	5.a.. 7.b.
88	*Chaetocnema (Tlanoma) tibialis* (Illiger, 1807)	1 2 2	0.17 0.34 0.34	1.b. 5.a.. 8.a.
89	*Chaetocnema (Tlanoma) heikertingeri* Ljubichev, 1963	1 2 1	0.17 0.34 0.17	3.a. 7.b. 8.c.
90	*Chaetocnema (Tlanoma) semicoerulea* (Koch, 1803)	12	2.04	4.b.
91	*Chaetocnema (Chaetocnema) hortensis* (Geoffroy, 1785)	1 4	0.17 0.68	1.a. 4.b.
92	*Chaetocnema (Chaetocnema) arenacea* (Allard, 1869)	1 1 6 7 2 1	0.17 0.17 1.02 1.19 0.34 0.17	2.b. 3.a. 4.b. 5.b. 7.b. 7.b..
93	*Chaetocnema (Chaetocnema) confusa* (Boheman, 1851)	1 1	0.17 0.17	3.a.. 4.b..
94	*Dibolia (Eudibolia) schillingi* (Letzner, 1847)	3	0.51	1.e..
95	*Psylliodes (Psylliodes) calcomera* (Illiger, 1807)	2 1	0.34 0.17	5.a.. 8.a.
96	*Psylliodes (Psylliodes) picina* (Marsham, 1802)	1	0.17	3.a.
	VII. Cassidinae Gyllenhal 1813			

Crt. nr.	Subfamily/ Species	Nr. ind.	Abund %	Capture place, ecosyst.
97	*Hypocassida subferruginea* (Schrank, 1776)	1 1	0.17 0.17	3.a. 4.b..
98	*Cassida (Cassida) lineola* Creuzer, 1799	1 1	0.17 0.17	1.e. 2.a.
99	*Cassida (Cassida) denticollis* Suffrian, 1844	1	0.17	1.c.
100	*Cassida (Cassida) vibex* Linnaeus, 1767	1 1	0.17 0.17	1.a. 3.b.
101	*Cassida (Cassida) nebulosa* Linnaeus, 1758	1	0.17	5.b.
102	*Cassida (Cassida) rubiginosa* O.F. Muller, 1776	1 1	0.17 0.17	4.b. 4.c.
103	*Cassida (Cassida) pannonica* Suffrian, 1844	4 1 1	0.68 0.17 0.17	4.b. 6.a. 8.c.
104	*Cassida (Cassida) berolinensis* Suffrian, 1844	1	0.17	2.b.
105	*Cassida (Cassida) prassina* Illiger, 1798	2	0.34	5.b.
106	*Cassida (Cassida) seladonia* Gyllenhal, 1827	1	0.17	4.c.

Note: All of the indicatories in the last collumn correspond to the same indicatories, concerning the points of capture and habitats, mentioned in „material and methods".
Abbreviations: Crt.nr. = curent number, Nr.ind.= number of captured individuals., Abund.% = percentual relative abundance, ecosyst.= ecosystem,

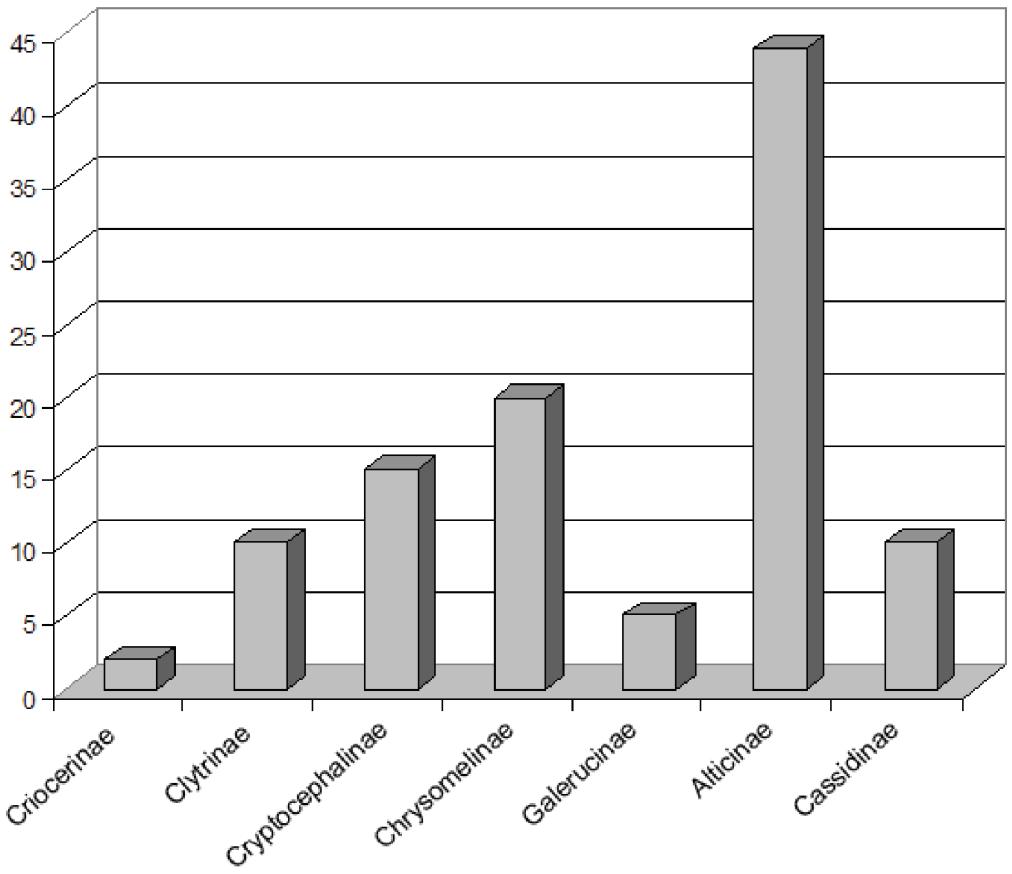

Fig. 1. Diagram of the number of leaf- beetle species in different subfamilies, in the low Arieş river basin.

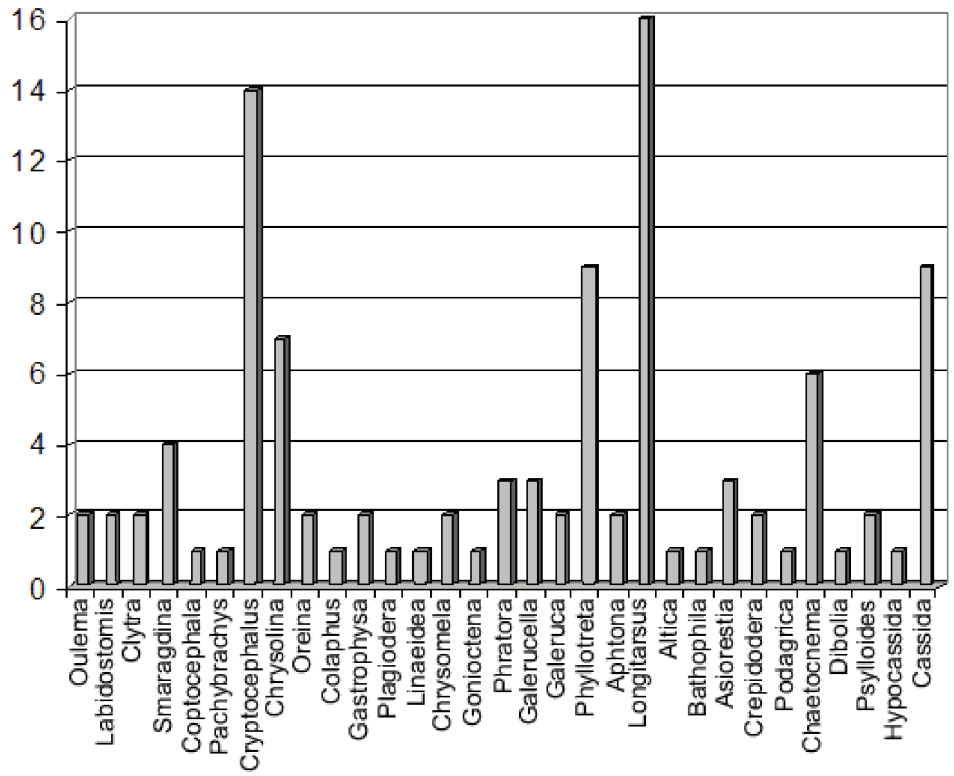

Fig. 2. Diagram of the numer of leaf-beetle species in different genera, in the low Arieş river basin.

The numerical distribution of the leaf beetles species relative to subfamilies and genera are given in Fig. 1 and Fig. 2.

It is obvious that the best represented subfamilies are Alticinae, with 44 species, Chrysomelinae, with 22 species and Cryptocephalinae, with 15 species. Intermediate positions are occupied by Clytrinae and Cassidinae, each with 10 species, and to the opposite side are situated Galerucinae and Criocerinae, with 5 and 2 species, respectively.

We explain these results by the dryness of a great part of the terrains of the hills and terraces, this favoring many of Alticinae and Cryptocephalinae species, but also by the existence of many hygrophile areas, in the meadows of the Arieş river and the tributary vallies, these areas favoring the spread of Chrysomelinae and Cassidinae species.

Concerning the genera, the majority of these were represented by 1-3 species. Genera with a greater biodiversity were: *Longitarsus* (Alticinae) with 16 species, *Cryptocephalus* (Cryptocephalinae) with 14 species, *Cassida* (Cassidinae) and *Phyllotreta* (Alticinae), each with 9 species. Intermediate positions are occupied, by the genera *Chrysolina* (Chrysomelinae) with 7 species and *Chaetocnema* (Alticinae) with 6 species.

Important mention is also the presence of some rare or very rare species for Transylvanian fauna, and even for the country`s fauna , from which we give emphasis to: *Labidostomis lucida, Clytra appendicina, Smaragdina flavicollis, Smaragdina xanthaspis, Cryptocephalus (Cryptocephalus) octopunctatus, Cryptocephalus (Cryptocephalus) quadriguttatus, Chrysolina (Chrysolina) staphylea, Chrysolina (Colaphosoma) sturmi, Gonioctena (Gonioctena) linnaeana, Phratora (Phratora) tibialis, Galeruca (Emarhopa) rufa, Phyllotreta gengelbaueri, Phyllotreta christinae, Aphthona violacea, Longitarsus (Longitatsus) longiseta, Longitarsus (Longitarsus) nigerrimus, Longitarsus (Longitarsus) atricillus, Asiorestia transsylvanica, Dibolia (Eudibolia) scillingi, Psylliodes (Psylliodes) picina, Cassida (Cassida) seladonia*, etc.. All of these considerations constitute so many arguments for an attentively monitoring of the natural environment of the zone, with the study of the opportunity to propose new protected areas, or of any more extended buffer zones, for the existing protected areas.

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