

**CONTRIBUTION TO THE COGNITION OF THE FAUNAS OF CARABIDAE
(COLEOPTERA - CARABIDAE) FROM THE VINEYARDS FROM THE VINEGROWING
CENTER IN COPOU - IASSY**

**CONTRIBUTII LA CUNOASTEREA FAUNEI DE CARABIDE (COLEOPTERA -
CARABIDAE) DIN PLANTATIILE DE VITA DE VIE DIN CENTRUL VITICOL COPOU IASI**

TALMACIU M., TALMACIU NELA

Department of Entomology, Faculty of Horticulture, University of Agricultural Sciences and Veterinary Medicine, Iassy, Romania
(U.S.A.M.V.I.)

Tel.:+400232/213069, Fax:+400232260650, E-mail: mtalmaciu@yahoo.fr; mtalmaciu@univagro-iasi.ro

Manuscript received: March 4, 2005; Reviewed: April 27, 2005; Accepted for publication: June 10, 2005

ABSTRACT

The researches were made during 1992-2001. There were collected 10704 specimens of carabidae (Coleoptera-Carabidae). The species with the largest number of collected specimens were: *Pseudophonus rufipes*, *Harpalus distinguendus*, *Pseudophonus griseus*, *Brachynus explodens*, *Brachynus crepitans* and *Amara familiaris*.

KEYWORDS: vinegrowing ecosystem, predatory, carabidae, Coleoptera

REZUMAT

Cercetările au fost efectuate în perioada 1992-2001. Au fost colectate 10704 exemplare de carabide (Coleoptera-Carabidae). Speciile cu cel mai mare număr de exemplare au fost: *Pseudophonus rufipes*, *Harpalus distinguendus*, *Pseudophonus griseus*, *Brachynus explodens*, *Brachynus crepitans* și *Amara familiaris*.

CUVINTE CHEIE: ecosistem viticol, pradator, carabide, Coleoptera

INTRODUCTION

Among the most important families from the Coleoptera (Insecta) order, there are the carabidae, which group nearly 25.000 species of insects, distributed throughout the globe.

The species of this family have a trophic regime, largely carnivorous and also the species are vegetarian and carnivorous or vegetarian species (few species).

In the agricultural environments and even in the forest areas, among the carabidae species of by-path ecologic indicator extremely important, reacting immediately to the interference of man, such as pesticides, that causes paralysis or even the death of adult insects and their larvae, a short time after the application treatments.

In the present paper, we bring new contribution to the cognition of the carabid species, which are found in the plantations from the vinegrowing center Copou-Iassy.

MATERIALS AND METHODS

The structure and the abundance of the species carabidae (Coleoptera-Carabidae) were supervised during a 10 years period (1992-2001), beginning with May until September, in the viticultural center Copou-Iasi.

The carabidae were collected with the help of the soil traps Barber of watery type, using the 3-4 % Formalin solution. The materials from the trap were collected every 10-15 days. At each harvest, the Formalin solution was completed or replaced, if necessary. Every year, we made 10-12 collections. The collected material was brought in the laboratory where we separated the species of carabidae and determined them.

RESULTS AND DISCUSSIONS

As far as the structure is concerned, the dynamic and the abundance of the collected carabidae are as it follows (Table 1).

During the period in which the observations were made, from 1992-2001, there were collected 10704 specimens of carabids. The largest number of specimens collected was registered in 1996 (2172 specimens) and the smallest numbers of specimens (386 specimens) were collected in 2000.

If we regard the number of collected species from same period, we could notice that the largest number of species was collected in 1999 (32 of species), then in 2000 (23 species) and 2001 with 21 of species. The smallest numbers of species were collected in 1997 (14 species) and 1992, 1998 (15 species).

The species with the largest number of collected specimens along the observation period were: *Pseudophonus*

rufipes (4971 specimens), *Harpalus distinguendus* (3333 specimens), *Brachynus explodens* (378 specimens), *Brachynus crepitans* (304 specimens), *Amara familiaris* (246 specimens), *Calathus fuscipes* (224 specimens), *Anisodactylus signatus* (177 specimens), *Amara aenea* (141 specimens) and *Poecilus cupreus* (109 specimens).

The smallest number of specimens was registered at the following species: *Microlestes maurus* and *Agonum livens*, each a single specimen, *Carabus violaceus*, *Microlestes minutus*, *Pterostichus niger*, *Zabrus blapoides*, *Amara apricaria*, each 2 specimens, succeeded by the species: *Pterostichus melas* and *Calathus melanocephalus* (5 specimens), *Amara crenata* (6 specimens), *Abax carinatus* and *Trechus quadristriatus* (7 specimens), *Amara eurynota* (9 specimens), *Pogonus litoralis* and *Dolichus halensis* (10 specimens), *Harpalus calceatus* (11 specimens), *Amara ovata* (14 specimens), *Bembidion properans* (16 specimens), *Pterostichus melanarius* (18 specimens), *Carabus cancellatus* (18 specimens), *Cicindela germanica* (23 specimens), *Carabus besseri* (37 specimens) etc.

The genus to which these collected species belong are (Table 2): *Cicindela*, *Trechus*, *Calathus*, *Carabus*, *Bembidion*, *Pogonus*, *Harpalus*, *Anisodactylus*, *Amara*, *Zabrus*, *Pterostichus*, *Cymindis*, *Microlestes*, *Brachynus*, *Abax*, *Dolichus*, *Agonum*, *Licinus* and *Acupalpus*, in all the 19 genus. As far as the number of the collected specimens and species is concerned, we notice that the genus *Harpalus* (with a number of 6 species and a total of 8800 specimens) and the genus *Amara* (with 6 species and with a total of 593 specimens) were the best represented. A number of 9 genus: *Cicindela*, *Trechus*, *Bembidion*, *Pogonus*, *Anisodactylus*, *Cymindis*, *Abax*, *Dolichus* and *Agonum* had only one species.

A number of 5 species were collected during the period of research (Table 3): *Pseudophonus rufipes*, *Harpalus distinguendus*, *Brachynus crepitans*, *Amara familiaris* and *Pseudophonus griseus*. From the five species, the largest number of specimens were registered at two species: *Pseudophonus rufipes* (4971 specimens) and *Harpalus distinguendus* (3333 specimens). The dynamics of species, which have the largest specimens, is graphically represented in Figure 1.

CONCLUSIONS

1. During the 10 years of observations, there were collected 10 704 specimens of carabidae belonging to 41 species.
2. The dominant species, in what concerns the number of specimens collected, were: *Pseudophonus rufipes* (4971 specimens), *Harpalus distinguendus* (3333 specimens), *Brachynus explodens* (378 specimens), *Amara*

CONTRIBUTION TO THE COGNITION OF THE FAUNAS OF CARABIDAES (COLEOPTERA - CARABIDAE) FROM THE VINEYARDS FROM THE VINEGROWING CENTER IN COPOU - IASSY

Table 1. The structure and the abundance of the carabidae species (Coleoptera-Carabidae) in vinegrowing ecosystem Copou-Iassy during 1992-2001

Tabelul 1. Structura si abundenta speciilor de carabide (Coleoptera - Carabidae) colectate in ecosistemul viticol Copou – Iasi in perioada 1992 – 2001

Crt. No. Nr crt	Name of the species Specia	Year Anul										Total
		1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	
1.	<i>Cicindela germanica</i> L.	-	9	2	5	-	-	1	-	2	4	23
2.	<i>Carabus coriaceus</i> L.	7	6	11	7	1	-	14	3	2	5	56
3.	<i>Carabus besseri</i> Fischer	-	2	5	3	1	-	1	5	9	11	37
4.	<i>Carabus cancellatus</i> Illiger	2	7	-	-	-	8	-	1	-	-	18
5.	<i>Trechus quadristriatus</i> Schrank	-	4	-	-	1	-	-	2	-	-	7
6.	<i>Bembidion properans</i> Steph.	-	-	-	7	3	1	2	1	1	1	16
7.	<i>Pogonus litoralis</i> Duft.	-	9	1	-	-	-	-	-	-	-	10
8.	<i>Anisodactylus signatus</i> Panz.	9	26	39	39	62	-	-	2	-	-	177
9.	<i>Pseudophonus rufipes</i> Muller	243	157	1239	556	492	917	545	285	194	343	4971
10.	<i>Pseudophonus griseus</i> Panz.	50	41	6	18	36	31	37	67	36	81	403
11.	<i>Harpalus distinguendus</i> Duft.	205	162	264	220	1496	160	181	130	97	418	3333
12.	<i>Harpalus tardus</i> Panz.	9	11	1	6	17	2	-	3	1	1	51
13.	<i>Harpalus calceatus</i> Duft.	-	1	-	2	6	-	1	1	-	-	11
14.	<i>Poecilus cupreus</i> L.	13	46	39	10	-	-	-	1	-	-	109
15.	<i>Pterostichus melanarius</i> L.	-	-	8	2	1	-	7	-	-	-	18
16.	<i>Abax carinatus</i> Duft.	-	-	6	-	-	-	-	1	-	-	7
17.	<i>Calathus fuscipes</i> Goeze	5	-	-	-	7	145	14	10	17	26	224
18.	<i>Dolichus halensis</i> Schall.	-	5	4	-	-	-	-	1	-	-	10
19.	<i>Agonum livens</i> Gyll.	-	-	1	-	-	-	-	-	-	-	1
20.	<i>Zabrus tenebrioides</i> Goeze	1	4	5	-	-	-	7	2	-	-	19
21.	<i>Amara familiaris</i> Duft.	49	34	30	13	7	11	96	1	1	4	246
22.	<i>Amara aenea</i> Dejean	21	7	7	72	5	5	-	3	4	17	141
23.	<i>Amara ovata</i> F.	5	4	-	-	1	3	-	1	-	-	14
24.	<i>Amara crenata</i> Dejean	1	-	-	-	-	-	-	2	1	2	6
25.	<i>Amara eurynota</i> L.	-	-	-	9	-	-	-	-	-	-	9
26.	<i>Cymindis humeralis</i> L.	-	-	-	3	-	-	-	1	-	-	4
27.	<i>Microlestes minutus</i> L.	-	-	-	1	-	-	-	1	-	-	2
28.	<i>Microlestes maurus</i> L.	-	-	-	1	-	-	-	-	-	-	1
29.	<i>Brachynus crepitans</i> L.	7	22	116	106	10	3	7	10	2	21	304
30.	<i>Brachynus explodens</i> L.	-	-	-	307	-	6	44	15	2	4	378
31.	<i>Calathus melanocephalus</i> L.	-	-	-	-	3	-	1	1	-	-	5
32.	<i>Amara apricaria</i> Payk.	-	-	-	-	-	-	-	1	2	-	3
33.	<i>Metoponus azureus</i> F.	-	-	-	-	2	2	-	16	4	7	31
34.	<i>Calathus ambiguus</i> Payk.	-	-	-	-	21	-	-	1	1	-	23
35.	<i>Zabrus blapoides</i> Creutz.	-	-	-	-	-	2	-	-	-	-	2
36.	<i>Carabus violaceus</i> L.	-	-	-	-	-	-	-	-	1	1	2
37.	<i>Licinus Hofmanssegi</i> L.	-	-	-	-	-	-	-	1	1	1	3
38.	<i>Acupalpus flavicollis</i> Dej.	-	-	-	-	-	-	-	2	2	11	15
39.	<i>Anisodactylus binotatus</i> Duft.	-	-	-	-	-	-	-	2	3	2	7
40.	<i>Pterostichus melas</i> L.	-	-	-	-	-	-	-	1	2	2	5
41.	<i>Pterostichus niger</i> L.	-	-	-	-	-	-	-	-	1	1	2
Total specimens		627	557	1784	1387	2172	1296	958	574	386	963	10704
Total exemplare												
Total species		15	19	18	20	19	14	15	32	23	21	41
Total specii												

Table 2. The genus to which the collected coleoptera species belong and the number of specimens
 Tabelul 2. Genurile la care apartin speciile de coleoptere colectate si numarul de exemplare

Crt. No. Nr. crt.	Genus Genul	Species Speciile	Number of the specimens Numarul de specii
1	Cicindela	1. <i>Cicindela germanica</i> L.	23
2	Trechus	1. <i>Trechus quadristriatus</i> Schrank	7
3	Carabus	1. <i>Carabus coriaceus</i> L.	56
		2. <i>Carabus cancellatus</i> Illig.	18
		3. <i>Carabus besseri</i> Fischer	37
		4. <i>Carabus violaceus</i> L.	2
		Total	143
4	Calathus	1. <i>Calathus fuscipes</i> Goeze	224
		2. <i>Calathus melanocephalus</i> L.	5
		3. <i>Calathus ambiguus</i> Payk.	23
		Total	252
5	Bembidion	1. <i>Bembidion properans</i> Steph.	16
6	Pogonus	1. <i>Pogonus litoralis</i> Duft.	10
7	Harpalus	1. <i>Harpalus distinguendus</i> Duft.	3333
		2. <i>Harpalus tardus</i> Panz.	51
		3. <i>Harpalus calceatus</i> Duft.	11
		4. <i>Pseudophonus rufipes</i> Mull.	4971
		5. <i>Pseudophonus griseus</i> Panz.	403
		6. <i>Ophonus azureus</i> F.	31
		Total	8800
8	Anisodactylus	1. <i>Anisodactylus signatus</i> Panz.	177
		2. <i>Anisodactylus binotatus</i> Duft.	7
		Total	184
9	Amara	1. <i>Amara familiaris</i> Duft.	246
		2. <i>Amara aenea</i> Dejean	141
		3. <i>Amara crenata</i> Dejean	6
		4. <i>Amara ovata</i> F.	14
		5. <i>Amara eurynota</i> L.	9
		6. <i>Amara apricaria</i> Payk	2
		Total	593
10	Zabrus	1. <i>Zabrus tenebrioides</i> Goeze	19
		2. <i>Zabrus blapoides</i> Creutz.	2
		Total	21
11	Pterostichus	1. <i>Pterostichus melanarius</i> L.	18
		2. <i>Poecilus cupreus</i> L.	109
		3. <i>Pterostichus melas</i> L.	5
		4. <i>Pterostichus niger</i> L.	2
		Total	134
12	Cymindis	1. <i>Cymindis humeralis</i> L.	4
13	Microlestes	1. <i>Microlestes minutus</i> L.	2
		2. <i>Microlestes maurus</i> L.	1
		Total	7
14	Brachynus	1. <i>Brachynus crepitans</i> L.	304
		2. <i>Brachynus explodens</i> L.	378
		Total	682
15	Abax	1. <i>Abax carinatus</i> Duft.	7
16	Dolichus	1. <i>Dolichus halensis</i> Schall.	10
17	Agonum	1. <i>Agonum livens</i> Gyll.	1
18	Licinus	1. <i>Licinus Hoffmanssegi</i> L.	3
19	Acupalpus	1. <i>Acupalpus flavicollis</i> L.	15
	19 genus	41 species	10704 specimens

CONTRIBUTION TO THE COGNITION OF THE FAUNAS OF CARABIDAES (COLEOPTERA - CARABIDAE) FROM THE VINEYARDS FROM THE VINEGROWING CENTER IN COPOU - IASSY

Table 3. The species with the largest number of the specimens collected during the research period and their abundance

Tabelul 3. Speciile cu cel mai mare numar de exemplare colectate in perioada de cercetare si abundenta acestora

Crt.No. Nr crt	Name of the species Numele speciei	Year Anul										Total
		1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	
1	Pseudophonus rufipes Mull.	243	157	1239	556	492	917	545	285	194	343	4971
2	Harpalus distinguendus Duft.	205	162	264	220	1496	160	181	130	97	418	3333
3	Pseudophonus griseus Panz.	50	41	6	18	36	31	37	67	36	81	403
4	Amara familiaris Duft.	49	34	30	13	7	11	96	1	1	4	246
5	Brachynus crepitans L.	7	22	116	106	10	3	7	10	2	21	304

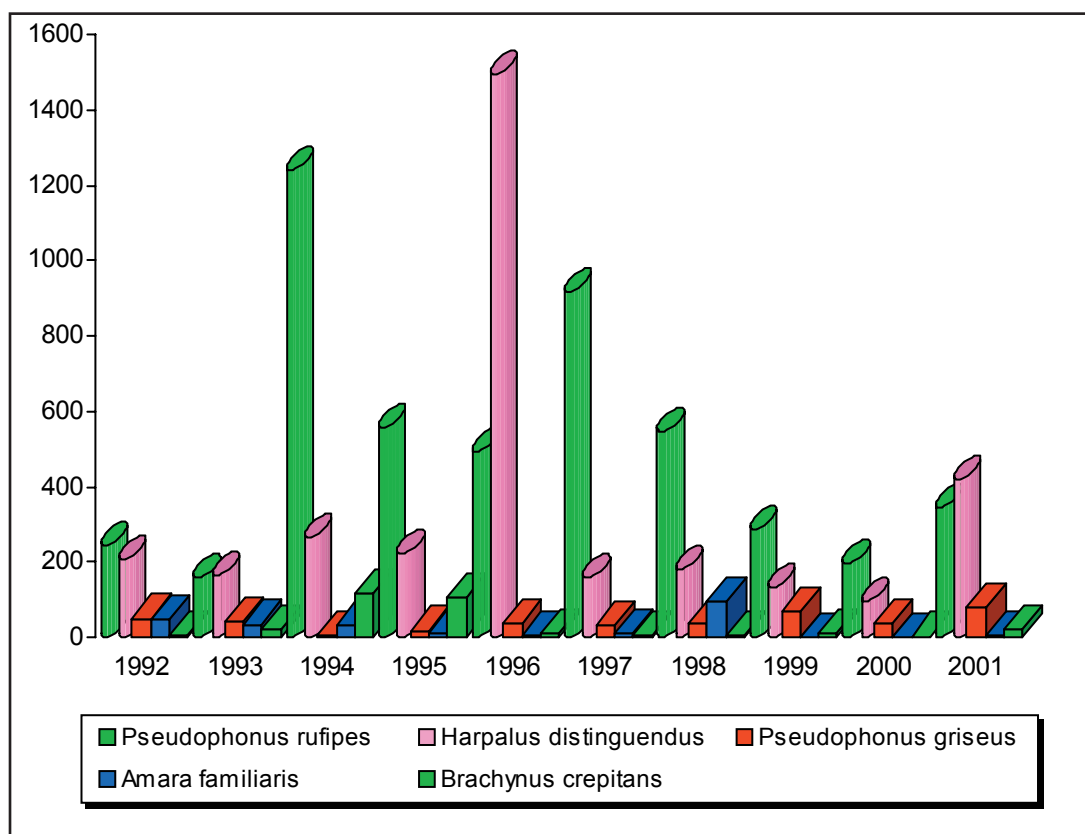


Figure 1. The species with the largest number of the specimens collected during the research period and their abundance

Figura 1. Speciile cu cel mai mare numar de exemplare colectate in perioada de cercetare si abundenta acestora

familiaris (246 specimens), Pseudophonus griseus (366 specimens).

3. A number of 5 species: Pseudophonus rufipes, Harpalus distinguendus, Brachynus crepitans, Bitterly familiaris and Pseudophonus griseus were collected during the 10 years of observations.

4. The 41 species collected during the whole period of research, belonging to a number of 19 genus. The genus with the largest number of collected specimens was Harpalus, with 8800 specimens.



Amara familiaris



Pseudophonus rufipes



Pseudophonus griseus



Harpalus distinguendus



Brachynus crepitans

REFERENCES

- [1] Chatened du Gaetan, 1990 - Guide des Coleopteres d'Europe. Délacrois et Niestlé, Paris.
- [2] Panin I., 1951 - Determinatorul Coleopterelor daunatoare si folositoare din R.P.R. Editura de Stat, Bucuresti.
- [3] Reitter E., 1908 - Fauna Germanica. Die Käfer des Deutschen Reiches Band I, Stuttgart.
- [4] Rogojanu V., Perju T., 1979 - Determinator pentru recunoasterea daunatorilor plantelor cultivate. Editura Ceres, Bucuresti.
- [5] Talmaciu M., Georgescu T., 1993 - Contributii la studiul compozitiei si dinamicii speciilor de carabide (Coleoptera) din plantatiile de vita de vie, din podgoria Copou-Iasi. Lucrari stiintifice, vol. 36, Seria Horticultura, U.S.A.M.V. IASI, pp. 48 - 53.
- [6] Talmaciu M., Georgescu T., Filipescu C., Badeanu Marinela, 1995 - Contributii la cunoasterea structurii si dinamicii populatiilor de carabide (Coleoptera-Carabidae) din cultura de vita de vie, in conditiile podgoriei Cotnari. Lucrari stiintifice, vol. 38, Seria Agronomie, U.S.A.M.V. IASI, pp.258-262.
- [7] Talmaciu M., Georgescu T., Filipescu C., Badeanu Marinela, 1996 - Studii asupra structurii si abundenței speciilor de carabide din cultura vitei de vie. Rev. Cercetari Agronomice in Moldova, vol. I, II., Iasi.
- [8] Talmaciu M., Georgescu T., Mitrea I., Filipescu C., Badeanu Marinela, Radu C., 1996 – Contributions to the knowing of the carabid fauna of the vine plantation in Husi vineyard, Vaslui District. Lucrari stiintifice, vol. 39, Seria Horticultura, U.S.A.M.V. IASI, pp.267 - 271.
- [9] Talmaciu M., Georgescu T., 1998 - Fauna de carabide (Coleoptera-Carabidae) din plantatiile de vita de vie din Moldova. Editura "Ion Ionescu de la Brad" Iasi

