

CONTRIBUTIONS TO THE KNOWLEDGE OF THE SPECIES OF BEETLES (*INSECTA: COLEOPTERA*) FROM WHEAT CROP

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Abstract

This paper presents the species of beetles (Insecta: Coleoptera) between in wheat crops from Tișița, in Vrancea county. The observations were made in a crop of wheat in 2013, who were placed the soil traps type Barber, during the two months, May and June.

It was used three variants:

- *Variant 1 - consumption wheat untreated*
- *Variant 2 - consumption wheat treaty*
- *Variant 3 - treated wheat seed*

*The gathering of samples from the traps was done periodically, every 12-15 days. The most species frequent gathered was: *Pentodon idiota*, *Epicometis hirta*, *Opatrum sabulosum*, *Phyllotreta atra*, *Phyllotreta nemorum*, *Tanymecus dilaticollis*.*

Keywords: entomofauna, wheat, Coleoptera

1. INTRODUCTION

The study of Coleopterans (the beetles) seems a scientific and practice necessity, taking in consideration their frequency on Terra meridians, the big number of species contained (across 250.000), the biggest from class Insecta, which group more than one million species, and the numerous species that damage the world agriculture.

The first scientific papers, concerning the study of insects generally and Coleopterans in chief, appeared in XVII th century (Redi); in XVIII th century, were described numerous species of beetles by Fabricius, Latreille and in the XIX century, by Reitter. In our country, the first works concerning the study of Coleopterans refers to Banat and Transilvania regions, and the most representative one belongs to Seidlitz ("*Fauna Transylvanica*"-1891).

By scientifically value is the work of Fleck (1906), in which are described more than 2400 of species, chiefly in Muntenia and Dobrogea regions. The researches on the Coleopterans fauna developed continuously after 1920 in Romania, and after 1950 in Oltenia too, being published numerous works: Marcu (1927-1967) and Bobârnac (1955-1985) for Oltenia; Ienistea (1956-1976) for Dobrogea and Muntenia; Panin (1941-1965) for Romania.

2. MATERIALS AND METHODS

For gathering the materials have been used Barber soil traps. They have been placed in wheat area Tișița Vrancea, each 6 traps in each variant (Talmaciu, 2008), namely:

- Untreated wheat for consumption during the growing season, only to seed;
- Wheat for consumption on treatments that were applied during the growing season against the pathogens and pests;
- Wheat seed which has been applied technology to do so.

The traps have been placed in two rows, each row at distances 3 each between 6 and 8 m and between two rows distance of about 10 m. For capturing and killing species it has been gathered used a solution of concentration of 5.4% formalin into the item (Talmaciu, 2005). The traps have worked from May until late June. The harvesting of the material gathered has been made at intervals of between 10 and 20 days during 2013. Each harvest the species gathered from each of variant and traps have been put in the gauze, previously removing the crop residues, soil particles or other contaminants. Such evidence is in this way was then tagged on the label specifying:

- the date of collection;
- variant;
- the trap of number.

The material was then brought into the laboratory after he was washed in a stream of water, they were selected and identified species of beetles. They counted the specimens gathered for each trap, the variants and species. The determination was made by using the German determinant Reitter, 1908 or the Manual determinator by Rogojanu and Panin with other colaborators and the internet to comparing the different species pictures on the internet.

3. RESULTS AND DISCUSSIONS

In total, the 3 variants were gathered 2612 samples belonging to 106 species (taxons). On variants the situation is as follows (Table 1, Fig. 1):

- For consumption wheat untreated have been collected 822 beetles belonging to a total of 71 species;
- Wheat consumption treated 742 specimens of beetles have been collected in a total belonging to a 62 number of species (taxons);
- Wheat for seed of has been collected 1048 beetles total, belonging to a number of 79 species (taxons)

A number of 25 species gathered were common to in the 3 experimental variants. These include: *Pentodon idiota*, *Opatrum sabulosum*, *Dermestes lanarius*, *Phyllotreta nemorum*, *Epicometis hirta*, *Agriotes lineatus*, *Amara aenea*, *Tanymecus dilaticollis*, *Formicomus pedestris*, *Pleurophorus caesus*, *Pterostichus marginalis*, *Gryllus campestris*, *Harpalus distinguendus*, *Haplothrips tritici*, *Blaps mortisaga*, *Conosoma bipunctata*, *Otiorrhynchus laevigatus*, *Anthicus antherinus*, *Armadillidium vulgare*, *Coccinella 7 punctata*, *Anthicus floralis*, *Colodera nigrita*, *Hypnoidus pulchellus Linnaeus*, *Pteryngium crenatum*, *Emphilus glaber*.

The highest number of beetles gathered from the 3 variants, over 20 samples has a total of 13 species. These were (Table 2) *Conosoma bipunctata*, with 279 specimens representing 10.68% of the total; *Pterostichus marginalis*, with a total of 265 specimens, representing 10.14% of the total; *Opatrum sabulosum* L., with a total of 179 specimens, representing 6.85% of the total; *Epicometis hirta* with 187 specimens, representing 7.16% of the total; *Haplothrips tritici*.

Table 1. The structure and abundance of the collected entomofauna from the wheat crops

No..	The scientific name	Variants			Total
		1	2	3	
1.	Pentodon idiota	33	40	18	91
2.	Cetonia aurata	2	-	1	3
3.	Opatrum sabulosum	73	70	36	179
4.	Pseudocleonus cinereus	2	3	-	5
5.	Dermestes lanarius	28	19	60	107
6.	Ceutorhynchus punctiger	2	-		2
7.	Drasterius bimaculatus	115	31		146
8.	Phyllotreta nemorum	21	108	6	135
9.	Epicometis hirta	58	111	18	187
10.	Agriotes lineatus	11	9	12	32
11.	Amara aenea	1	4	2	7
12.	Tanymecus dilaticollis	20	15	9	44
13.	Pedinus femoralis	23	6		29
14.	Formicomus pedestris	41	22	37	100
15.	Pleurophorus caesus	4	8	14	26
16.	Pterostichus marginalis	3	3	259	265
17.	Pseudophonus rufipes	6	-		6
18.	Anthicus humeralis	13	-	4	17
19.	Metabletus truncatulus	5	5		10
20.	Gryllus campestris	5	21	17	43
21.	Pterostichus lepidus	3	-		3
22.	Harpalus distinguendus	16	10	7	33
23.	Cassida nobilis	2	-		2
24.	Anthicus humilis	6	-		6
25.	Haplothrips tritici	159	5	1	165
26.	Cryptophagus dentatus	21	-		21
27.	Blaps mortisaga	2	1	1	4
28.	Pyrrhocoris apterus	8	51		59
29.	Conosoma bipunctata	11	4	264	279
30.	Corticaria longicornis	3	-	3	6
31.	Orchestes fagi	7	-		7
32.	Aphthona euphorbia	10	-	2	12
33.	Otiorrhynchus laevigatus	6	2	1	9
34.	Otiorrhynchus singularis	2	-		2
35.	Pterostichus aterrimus var. niger	1	1		2
36.	Calosoma inquisitor	1			1
37.	Necrophorus antennatus	1			1
38.	Callistus lunatus	1			1
39.	Anthicus antherinus	13	57	13	83
40.	Anthicus gracilis	11			11
41.	Ityocara rubens	1	-	12	13
42.	Harpalus tardus	4	2		6
43.	Armadillidium vulgare	5	18	21	44
44.	Eurygaster integriceps	2			2
45.	Anisoplia segetum	1			1
46.	Idiochroma dorsalis	1	-	8	9
47.	Coccinella 7 punctata	12	5	1	18
48.	Anthicus floralis	5	5	31	41
49.	Colodera nigrita	10	28	15	53
50.	Hypnoidus pulchellus	4	5	1	10
51.	Pteryngium crenatum	8	9	62	79

52.	<i>Oxyporus rufus</i>	9			9
53.	<i>Zabrus blapoides</i>	1	1		2
54.	<i>Coccinulla quatuordecimpustulata sinensis</i> Wse	2			2
55.	<i>Tachyporus ruficolis</i>	3		15	18
56.	<i>Cypticus quisquilius</i>	1			1
57.	<i>Emphilus glaber</i>	1	1	2	4
58.	<i>Brosicus cephalotes</i>	1			1
59.	<i>Coccinella 5 punctata</i>	1			1
60.	<i>Silpha obscura</i>	-	1	12	13
61.	<i>Onthophagus taurus</i>	-	1		1
62.	<i>Phyllotreta atra</i>	-	17	5	22
63.	<i>Stomodes gyrosicollis</i>	-	3		3
64.	<i>Anobium punctatum</i>	-	5		5
65.	<i>Aphodius fimetarius</i>	-	2		2
66.	<i>Phyllotreta nodicornis</i>	-	17	5	22
67.	<i>Staphylinus caesareus</i>	-	1		1
68.	<i>Microletes maurus</i>	-	7	5	12
69.	<i>Astenus filiformis</i>	-	1		1
70.	<i>Mycetophagus populii</i>	-	1		1
71.	<i>Cephus pygmaeus</i>	-	1		1
72.	<i>Pterostichus cupreus</i>	-	1	1	2
73.	<i>Oulema melanopa</i>	-	1		1
74.	<i>Sipalis circularis</i>	-	1	1	2
75.	<i>Psammobius porcicollis</i>	-	1		1
76.	<i>Chrysopa perla</i>	-	-	2	2
77.	<i>Anisodactylus binotatus</i>	-	-	3	3
78.	<i>Ophonus azureus</i>	-	-	1	1
79.	<i>Harpalus smaragninus</i>	-	-	3	3
80.	<i>Paramecosoma melanocephalum</i>	-	-	3	3
81.	<i>Tanymecus palliatus</i>	-	-	5	5
82.	<i>Atomaria fuscicollis</i>	-	-	1	1
83.	<i>Bidessus geminus</i>	-	-	1	1
84.	<i>Amara eurynota</i>	-	-	3	3
85.	<i>Hister quadrimaculatus</i>	-	-	1	1
86.	<i>Brachynus explodens</i>	-	-	6	6
87.	<i>Ophonus sabulicola</i>	-	-	4	4
88.	<i>Harpalus cupreus</i>	-	-	1	1
89.	<i>Cantharis fusca</i>	-	-	2	2
90.	<i>Calathus fuscipes</i>	-	1	2	3
91.	<i>Tachyusa constricta</i>	-	-	1	1
92.	<i>Scirtes hemisphaericus</i>	-	-	1	1
93.	<i>Anthicus quadriguttatus</i>	-	-	2	2
94.	<i>Selatosomus latus</i>	-	-	1	1
95.	<i>Cercyon lateralis</i>	-	-	7	7
96.	<i>Cryptophagus dorsalis</i>	-	-	1	1
97.	<i>Cartodere ruficollis</i>	-	-	6	6
98.	<i>Paederus limnophilus</i>	-	-	1	1
99.	<i>Cerylon ferrungineum</i>	-	-	1	1
100.	<i>Paradons quadrisignatus</i>	-	-	2	2
101.	<i>Melanotus brunnipes</i>	-	-	1	1

102.	Metabletus foveatus	-	-	1	1
103.	Forficula auricularia	-	-	1	1
104.	Harpalus spp.	-	-	1	1
105.	Zabrus tenebrioides	-	-	1	1
Total species		822	742	1048	2612

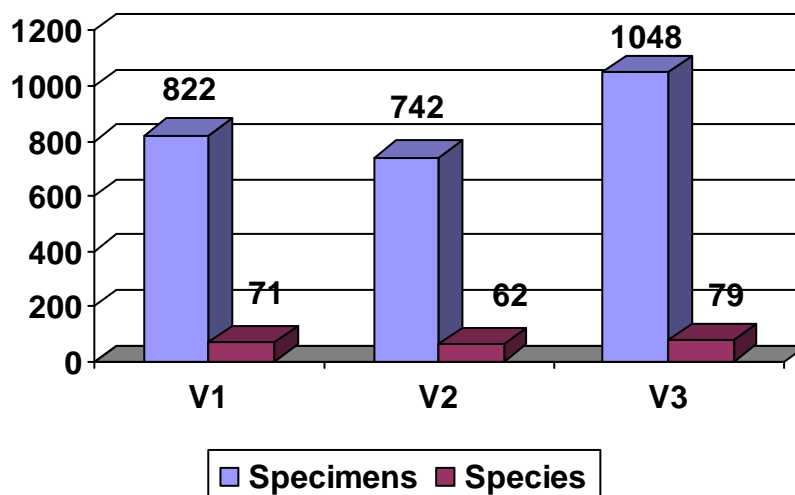


Figure 1. The number of individuals and species collected at the 3 variants

Table 2. The structure of species (taxa) with the largest number of specimens collected

No.	The scientific name	Total	%
1	Conosoma bipunctata	279	10.68
2	Pterostichus marginalis Dejean	265	10.14
3	Opatrum sabulosum L.	179	6.85
4	Epicometis hirta Poda	187	7.16
5	Haplothrips tritici	165	6.32
6	Drasterius bimaculatus Rossi	146	5.59
7	Phyllotreta nemorum	135	5.17
8	Dermestes lanarius L.	107	4.10
9	Formicomus pedestris Rossi	100	3.83
10	Pentodon idiota Hbst	91	3.48
11	Anthicus antherinus L.	83	3.18
12	Pteryngium crenatum Fabricius	79	3.02
13	Colodera nigrita Mnh.	53	2.03
TOTAL		2612	100

With a total of 165 specimens, representing 6.32% of the total; *Drasterius bimaculatus* Rossi, with a total of 146 specimens, representing 5.59% of the total; *Phyllotreta nemorum*, with a total of 135 specimens, representing 5.17% of the total; *Dermestes lanarius* L., with a total of 107 specimens, representing 4.10% of the total; *Formicomus pedestris* Rossi, with a total of 100 specimens, representing 3.83% of the total; *Pentodon idiota* Hbst, with a total of 91 specimens, representing 3.48% of the total; *Anthicus antherinus* L., with a total of 83 specimens, representing 3.18% of the

total; *Pteryngium crenatum* Fabricius, with a total of 79 specimens, representing 3.02% of the total; *Colodera nigra* Mnnh., With a total of 53 specimens, representing 2.03% of the total.

4. CONCLUSIONS

1. In the 3 samples has been collected a number of 2612 specimens belonging to a total of 106 species of beetles in wheat. On variants, the situation is as follows:

- In the variant consumption untreated wheat been collected beetles 822 belonging to a number of 71 species (taxons);
- the variant number 2, the wheat treated, 742 beetles has been collected from a number belonging to 62 species (taxons);
- - The variant number three, wheat for seed of beetles has been collected 1048 to 79 belonging to one species (taxons).

2. A number of 13 species had more than 50 specimens. The species with the greatest number of samples were *Conosoma bipunctata*, with 279 samples representing 10.68% of the total; *Pterostuchus marginalis*, with a total of 265 samples, representing 10.14% of the total; *Opatrum sabulosum*, with a total of 179 samples, representing 6.85% of the total; *Drasterius bimaculatus*, with a total of 146 samples, representing 6.32% of the total; *Phyllotreta nemorum*, with a total of 135 samples, representing 5.17% of the total; *Dermestes lanarius*, with a total of 107 samples, representing 4.10% of the total; *Formicomus pedestris*, with a total of 100 samples, representing 3.83% of the total; *Pentodon idiota*, with a total of 91 samples, representing 3.48% of the total; *Colodera nigra*, with a total of 53 samples, representing 2.03% of the total.

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