

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/343097157>

New records for the ground beetle (Coleoptera: Carabidae) fauna of Romania

Preprint · July 2020

DOI: 10.13140/RG.2.2.27836.05762

CITATIONS

0

READS

62

1 author:



Teodora Teofilova

Bulgarian Academy of Sciences

60 PUBLICATIONS 60 CITATIONS

SEE PROFILE

Some of the authors of this publication are also working on these related projects:



Mapping and assessment of sparsely vegetated land ecosystem services in Bulgaria SPA-EcoServices [View project](#)



SusTaining AgriCultural ChAnge Through ecological engineering and Optimal use of natural resources - STACCATO [View project](#)

Paper Submitted to The North-Western Journal of Zoology

1 ***Handling editor: Adalbert Balog**

2 ***Manuscript Domain: Entomology, short note**

3 ***Manuscript code: nwjz.019.EN23**

4 ***Submission date: 12_9_2019**

5 ***Revised: 21_11_2019**

6 ***Accepted : 03_12_2019**

7 ***No. of words** (without abstract, acknowledgement, references, tables, captions): **930**
8 (papers under 1000 words are not accepted)

9 ***Editors only:**

10

11

12 **Title of the paper: New records for the ground beetle (Coleoptera: Carabidae) fauna of**
13 **Romania**

14

15 **Running head: New records for Romanian Carabidae**

16

17 **Authors** (First LAST - without institution name!): Teodora TEOFILOVA

18

19 **Key Words** (at least five keywords): Carabidae, new data, Romanian ground beetles, distribution,

20 Transylvania

21

22

23 **No. of Tables: 0**

24 **No. of Figures: 0**

25 **No. of Files** (landscape tables should be in separate file): **1**

26

27

nwjz-2

28 **NEW RECORDS FOR THE GROUND BEETLE (COLEOPTERA: CARABIDAE)**

29 **FAUNA OF ROMANIA**

30

31 Teodora TEOFILOVA

32 Institute of Biodiversity and Ecosystem Research (IBER), Bulgarian Academy of Sciences

33 (BAS), 1 Tsar Osvoboditel Blvd., 1000 Sofia, Bulgaria; oberon_zoo@abv.bg

34

35 **Abstract.** The study gives new information on the ground beetle fauna of Romania. Two
36 species are recorded for the first time in Romania: *Brachinus bodemeyeri* Apfelbeck, 1904
37 and *Microlestes apterus* Holdhaus, 1904. Additionally, four other species with no records for
38 Romania in the last edition of the Catalogue of the Palaearctic Coleoptera are discussed:
39 *Agonum viridicupreum* (J.A.E. Goeze, 1777), *Notiophilus germinyi* Fauvel, 1863, *Ophonus*
40 *brevicollis* (Audinet-Serville, 1821) and *Pterostichus melas* (Creutzer, 1799). The material is
41 collected with pitfall traps in oilseed rape (*Brassica napus* L.) fields and adjacent pastures in
42 the Transylvania region, Cluj County, Romania.

43

44 **Key Words:** Carabidae, new data, Romanian ground beetles, distribution, Transylvania

45

46 **Running title:** New records for Romanian Carabidae

47

48 **Introduction**

49

50 The ground beetle (Coleoptera: Carabidae) fauna of Romania is relatively well
51 studied, and the first scientific notes on the topic date from the middle of the 19th century
52 (Máthé 2003–2004). However, an actual check list is not available. In the Internet sources the

53 data vary between 568 species in CARABIDS.ORG (Copyright © 2012-2019,
54 <https://www.carabids.org/portal/en-us/explore>) and 616 species in Coleoptera Europaea
55 (<http://www.eurocarabidae.de/de/ec/>). The main goal of this study is to contribute to the
56 knowledge of the Romanian ground beetle fauna by adding new species, which are not
57 included for Romania neither in the last edition of the Catalogue of the Palaearctic Coleoptera
58 (Löbl & Löbl 2017), nor in the Fauna Europaea (de Jong et al. 2014), or the sited above
59 Internet sources.

60

61 **Material and Methods**

62

63 The material on which this study is based is outcome of a field work carried out in
64 2017 in different localities in the Transylvania region, Cluj County, Romania. This material is
65 collected by pitfall traps with saturated 6% salt-acetic acid solution in oilseed rape (*Brassica*
66 *napus* L.) fields and adjacent pastures, in parallel with the implementation of the Project
67 BiodivERsA-FACCE2014-47 “SusTaining AgriCultural ChAnge Through ecological
68 engineering and Optimal use of natural resources (STACCATO)”. The exact locations and
69 sampling periods are noted for each species separately in the chapter Results.

70 All material is collected by Dr. Tibor Hartel (Sapientia Hungarian University of
71 Transylvania, Romania), and determined by the author. All specimens are deposited in the
72 Institute of Biodiversity and Ecosystem Research (Bulgarian Academy of Sciences, Sofia).

73

74 **Results**

75

76 The present study contains data about six carabid species, of which two are new for
77 the fauna of Romania:

nwjz-4

78

79 ***Notiophilus germinyi* Fauvel, 1863**

80 **Material examined:** 1♂, N Călărași, N 46°29'43", E 23°51'14", 390 m a.s.l., oilseed
81 rape field, 21.VIII–10.IX.2017; 1♂, N Călărași, N 46°29'33", E 23°51'18", 383 m a.s.l.,
82 pasture, 14.VI–06.VII.2017. **World distribution:** Europe (except some southernmost parts,
83 Portugal, Ukraine and Iceland) and small part of Asia (Caucasus, West Siberia) (Löbl & Löbl
84 2017). Sibero-European chorotype (Barševskis 2007). **Ecology:** Mesoxerophilous. Mainly in
85 dry, sedulous habitats; typical and indicative for the species complex that lives in lichens and
86 heather (Barševskis 2001); dwarf shrub heaths and rough grassland up to the summits of
87 mountains; more rarely in coniferous forests. **Notes:** *Notiophilus germinyi* has not been listed
88 for Romania in the last edition of the Catalogue of the Palaearctic Carabidae. However, it is
89 reported from several points in Romania (Merkl 2008).

90

91 ***Brachinus (Brachynidius) bodemeyeri* Apfelbeck, 1904**

92 **Material examined:** 1♀, NW Viișoara, N 46°36'08", E 23°53'15", 429 m a.s.l.,
93 oilseed rape field, 13.VI–05.VII.2017. **World distribution:** Southern and Southeastern
94 Europe, Asia Minor to Central Asia, the Mediterranean countries, spread from Spain to the
95 Caucasus (Löbl & Löbl 2017). **Ecology:** Salty lake banks and coasts; forest edges and regions
96 with steppe vegetation; dry slopes with dense grass vegetation, at the foot of the mountains;
97 abandoned fields, under stones (Teofilova et al. 2012, Forcke 2017). **Notes:** This is the first
98 country record of *Brachinus bodemeyeri* in Romania.

99

100 ***Ophonus (Metophonus) brevicollis* (Audinet-Serville, 1821)**

101 **Material examined:** 1♀, W Borșa, N 46°55'58", E 23°38'39", 400 m a.s.l., oilseed
102 rape field, 15.VI–07.VII.2017. **World distribution:** Western, Southern and Eastern Europe

103 and in Asian Turkey, and for the Balkans it is recorded from Albania, Bulgaria, Croatia,
104 Greece, Republic of North Macedonia, Serbia and Slovenia (Ćurčić et al. 2007, Chehlarov et
105 al. 2016, Löbl & Löbl 2017). **Ecology:** Open habitat species occurring in different types of
106 grasslands (Taboada et al. 2006). **Notes:** *Ophonus brevicollis* has not been listed for Romania
107 in the last edition of the Catalogue of the Palaearctic Carabidae. However, it is often reported
108 from Romania (I. Máthé Jr., Cluj-Napoca, pers. comm. 2019).

109

110 ***Agonum (Agonum) viridicupreum (J.A.E. Goeze, 1777)***

111 **Material examined:** 3♀, NE Crairât, N 46°40'35", E 23°49'42", 455 m a.s.l., oilseed
112 rape field, 13.VI–05.VII.2017. **World distribution:** Western Palaearctic (Löbl & Löbl 2017).
113 **Ecology:** Hygrophilous and thermophilous – open, wet habitats such as marshes, swamps,
114 humid meadows, fens and rain ponds, occasionally in swamped forests or near banks,
115 including halophilic (Drees et al. 2011, Teofilova et al. 2012). Found in agroecosystems
116 (Gotlin Čuljak et al. 2016). **Notes:** *Agonum viridicupreum* has not been listed for Romania in
117 the last edition of the Catalogue of the Palaearctic Carabidae. However, it is reported from
118 several points in Romania (Drees et al. 2011, Kutasi & Szél 2016).

119

120 ***Pterostichus (Feronidius) melas (Creutzer, 1799)***

121 **Material examined:** 1♀, NE Crairât, N 46°40'35", E 23°49'42", 455 m a.s.l., oilseed
122 rape field, 03–23.V.2017; 2♀, NE Crairât, N 46°39'29", E 23°49'14", 412 m a.s.l., oilseed
123 rape field, 20.VIII–09.IX.2017; 1♀5♂, N Călărași, N 46°29'43", E 23°51'14", 390 m a.s.l.,
124 oilseed rape field, 14.VI–10.IX.2017. **World distribution:** Europe, including the European
125 part of Turkey, without the Northern parts and the Iberian Peninsula (Löbl & Löbl 2017).
126 **Ecology:** Eurytopic species, mostly preferring open habitats (Teofilova et al. 2012). Often in
127 agroecosystems (Gotlin Čuljak et al. 2016, Pajač Živković et al. 2018). **Notes:** *Pterostichus*

nwjz-6

128 *melas* has not been listed for Romania in the last edition of the Catalogue of the Palaearctic
129 Carabidae. However, it is reported from several points in Romania (Máthé & Rudner 2002,
130 Varvara 2004, Merkl 2008, Kutasi & Szél 2016).

131

132 ***Microlestes apterus* Holdhaus, 1904**

133 **Material examined:** 1♂, N Călărași, N 46°29'43", E 23°51'14", 390 m a.s.l., oilseed
134 rape field, 04–24.V.2017; 1♀, N Călărași, N 46°29'33", E 23°51'18", 383 m a.s.l., pasture,
135 14.VI–06.VII.2017. **World distribution:** Bulgaria, Greece, Republic of North Macedonia
136 and Lebanon (Löbl & Löbl 2017). **Ecology:** Mesoxerophilous, found in open habitats – dry
137 and mesic meadows, pastures (Teofilova et al. 2012). **Notes:** This is the first country record of
138 *Microlestes apterus* in Romania.

139

140 **Discussion**

141

142 This study contributes to the knowledge of the Romanian ground beetle fauna by
143 adding new species, which are not included for Romania neither in the last edition of the
144 Catalogue of the Palaearctic Coleoptera, nor in the Internet data bases.

145

146 **Acknowledgement.** The present study was carried out thanks to the financial aid and in
147 parallel with the implementation of the Project BiodivERsA-FACCE2014-47 “SusTaining
148 AgriCultural ChAnge Through ecological engineering and Optimal use of natural resources
149 (STACCATO)”, supported by a grant of the Romanian National Authority for Scientific
150 Research and Innovation, CCCDI–UEFISCDI, project code ERA-FACCE-STACCATO-3.
151 The material was collected by Dr. Tibor Hartel. Special thanks to Dr. Borislav Guéorguiev
152 (National Museum of Natural History – BAS, Sofia, Bulgaria) for the confirmation of

153 *Microlestes apterus*. The author expresses gratitude to Dr. István Máthé (Sapientia Hungarian
154 University of Transylvania, Romania) for his help with the collecting of the literary sources
155 and the confirming of the novelty of the obtained data.

156

157 **References**

158 Barševskis, A. (2001): Distribution, phenology and habitat characteristics of *Notiophilus*
159 *germinyi* Fauvel in Grenier, 1863 (Coleoptera: Carabidae) in the Baltic countries. Norwegian
160 Journal of Entomology 48: 71-76.

161 Barševskis, A. (2007): Biogeography of the genus *Notiophilus* Dumeril, 1806 (Coleoptera:
162 Carabidae). Baltic Journal of Coleopterology 7(1): 121-135.

163 Chehlarov, E., Guéorguiev, B., Hristovski, S., Fancello, L., Cvetkovska-Gorgievska, A.,
164 Prelić, D. (2016): New country records and rare and interesting species of Coleoptera from
165 the Balkan Peninsula. Acta Zoologica Bulgarica 68(3): 331-338.

166 de Jong, Y., et al. (2014): Fauna Europaea – all European animal species on the web.
167 Biodiversity Data Journal 2: e4034. <<https://fauna-eu.org/>>

168 Drees, C, Brandmayr, P, Buse, J, Dieker, P, Gürlich, S, Habel, J, et al. (2011): Poleward range
169 expansion without a southern contraction in the ground beetle *Agonum viridicupreum*
170 (Coleoptera, Carabidae). In: Kotze, D.J., Assmann, T., Noordijk, J., Turin, H., Vermeulen, R.
171 (Eds.), Carabid Beetles as Bioindicators: Biogeographical, Ecological and Environmental
172 Studies. ZooKeys 100: 333-352.

173 Forcke, T. (2017): Carabidae collected in Kos. In: Assing, V. On the Staphylinidae of the
174 Greek island Kos, with an appendix on Carabidae and additional records from other islands
175 (Insecta: Coleoptera). Linzer Biologische Beiträge 49/1: 191-205.

nwjz-8

- 176 Gotlin Čuljak, T., Büchs, W., Prescher, S., Schmidt, L., Sivčev, I., Juran, I. (2016): Ground
177 beetle diversity (Coleoptera: Carabidae) in winter oilseed rape and winter wheat fields in
178 North-Western Croatia. *Agriculturae Conspectus Scientificus* 81(1): 21-26.
- 179 Kutasi, C., Szél, G. (2016): Ground beetles from Sălaj County (Romania) (Coleoptera:
180 Carabidae). *Studia Universitatis "Vasile Goldiș", Seria Științele Vieții* 26 (suppl. 1): 81-107.
- 181 Löbl, I., Löbl, D. (Eds.) (2017): *Catalogue of Palaearctic Coleoptera. Archostemata –*
182 *Myxophaga – Adephaga. Vol. 1. Revised and Updated Edition.* Koninklijke Brill NV, Leiden.
- 183 Máthé, I. Jr. (2003–2004): List of the literature published on the Romanian Carabidae
184 (Coleoptera: Carabidae). *Entomologica Romanica* 8-9: 61-74.
- 185 Máthé, I. Jr., Rudner, J. (2002): Ground Beetle Fauna (Coleoptera: Carabidae) of Vlăhița and
186 its Surroundings (Harghita: Romania). *Entomologica Romanica* 7: 37-44.
- 187 Merkl, O. (2008): Data to the knowledge on the beetle fauna of Maramureș Romania
188 Coleoptera. *Studia Universitatis "Vasile Goldiș", Seria Științele Vieții* 18: 243-311.
- 189 Pajač Živković, I., Kos, T., Lemić, D., Čitković, J., Jemrić, T., Fruk, M., Barić, B. (2018):
190 Exclusion nets influence on the abundance of ground beetles (Coleoptera: Carabidae) in apple
191 orchards. *Applied Ecology and Environmental Research* 16(3): 3517-3528.
- 192 Taboada, A., Kotze, D.J., Salgado, J.M., Tárrega, R. (2006): The influence of habitat type on
193 the distribution of carabid beetles in traditionally managed "dehesa" ecosystems in NW Spain.
194 *Entomologica Fennica* 17: 284-295.
- 195 Teofilova, T.M., Markova, E.P., Kodzhabashev, N.D. (2012): The ground beetles
196 (Coleoptera: Carabidae) of the Bulgarian Black Sea coast. *Bulgarian Journal of Agricultural*
197 *Science* 18(3): 370-386.
- 198 Varvara, M. (2004): Variation of the species diversity of Carabidae (Coleoptera, Carabidae) in
199 two vegetal associations in the Bârnova forest, Iași (East of Romania). *Analele Științifice ale*
200 *Universității „Al.I.Cuza” Iași, s. Biologie animală* 50: 117-139.