

**A new subspecies of *Carabus cavernosus* E. Frivaldszky, 1837  
(Coleoptera: Carabidae) from Romania**

I. RETEZÁR<sup>\*1</sup> & GY. SZÉL<sup>2</sup>

<sup>1</sup>H-1115 Budapest, Bartók Béla út 86, Hungary. E-mail: retezar@t-online.hu

<sup>2</sup>Department of Zoology, Hungarian Natural History Museum,  
H-1088 Budapest, Baross utca 13, Hungary. E-mail: szel@nhmus.hu

**Abstract** – *Carabus (Pachystus) cavernosus rozneri* ssp. n. is described from the Apuseni Mountains (Munții Apuseni) in Transylvania (Romania). This isolated spot is the northermost occurrence of the species. The new subspecies differs from the nominative subspecies in the sculpture of the elytron and the shape of the aedeagus and endophallus. With 15 figures.

**Key words** – Apuseni Mountains, *Carabus, cavernosus, Pachystus*, Romania, Transylvania

INTRODUCTION

*Carabus (Pachystus) cavernosus* (Figs 1–2) was described by E. FRIVALDSZKY (1837) from Kalofer (in the description: Kalophr) in Central Bulgaria. COSTA (1839) described *C. cavernosus* var. *variolatus* from the region Abruzzo, Central Italy, which is now regarded as a subspecies. From this region further taxa were described, which are regarded as synonyms of *C. cavernosus variolatus*: *C. cavernosus* var. *rosti* Beuthin, 1885 and *C. cavernosus* var. *seriatofoveatus* Reitter, 1896. BREUNING (1936) described *C. (Pachystus) cavernosus* m. *sterbai* as a small sized high mountain form from the Mount Korab, North Albania. Another small sized high mountain form, *C. cavernosus* m. *cavernosulus* was described by MANDL (1961) from the Mt Botev (Stara Planina) in Central Bulgaria. The latter two names are synonyms of *C. cavernosus cavernosus*.

In July 1998 I. Rozner, a Hungarian amateur coleopterist collected a female specimen of *C. cavernosus* on the Piatra Secuiului (Székelykő) near the village Rimetea (Torockó) in the Apuseni Mountains (Munții Apuseni, Erdélyi-szigethegység) in Transylvania, Romania (KUTASI *et al.* 2000). To confirm this date I. Retezár visited the site several times. In 2003 and in the following years

\* Corresponding author.

(2004, 2005, 2008, 2010 and 2011) more specimens were collected by I. Retezár and other persons (see the data of the type specimens). In the locality of Piatra Secuiului a strong population of *C. cavernosus* exists, together with the following *Carabus* species: *C. coriaceus rugifer* Kraatz, 1877, *C. violaceus porolissensis* Csiki, 1944, *C. intricatus intricatus* Linnaeus, 1760, *C. ulrichii ulrichii* Germar, 1824, *C. convexus simplicipennis* Dejean, 1826 and *C. scabriusculus lippii* Dejean, 1826. Further interesting Carabidae species in the locality include *Poecilus szepligetii szepligetii* (Csiki, 1908), *Pterostichus melas* (Creutzer, 1799), *Pterostichus hungaricus* (Dejean, 1828) and *Abax schueppeli biharicus* Mařan, 1955.

In this paper the Romanian population is described as a new subspecies of *C. cavernosus*.

#### TAXONOMY

##### ***Carabus (Pachystus) cavernosus rozneri* ssp. n.**

(Figs 3–5, 7–9, 11–12)

*Type material* – Holotype, male: Romania, Transylvania, Torockó (Rimetea), Mt Trascău, Székelykő (Piatra Secuiului), 1100 m, N 46° 26.839', E 23° 35.343', 30.VI.–3.VIII.2005, leg. I. Retezár & Gy. Szél.

Paratypes: 25 males, 31 females: same collecting data as holotype; 1 female: Transylvania, Fehér megye [= Alba county], Torockó, Székelykő, 7–9.VII.1998, leg. I. Rozner; 3 males, 4 females: Romania, Transylvania, Torockó (Rimetea), Mt Trascău, Székelykő (Piatra Secuiului), 970 m, N 46° 26.933', E 23° 35.275',

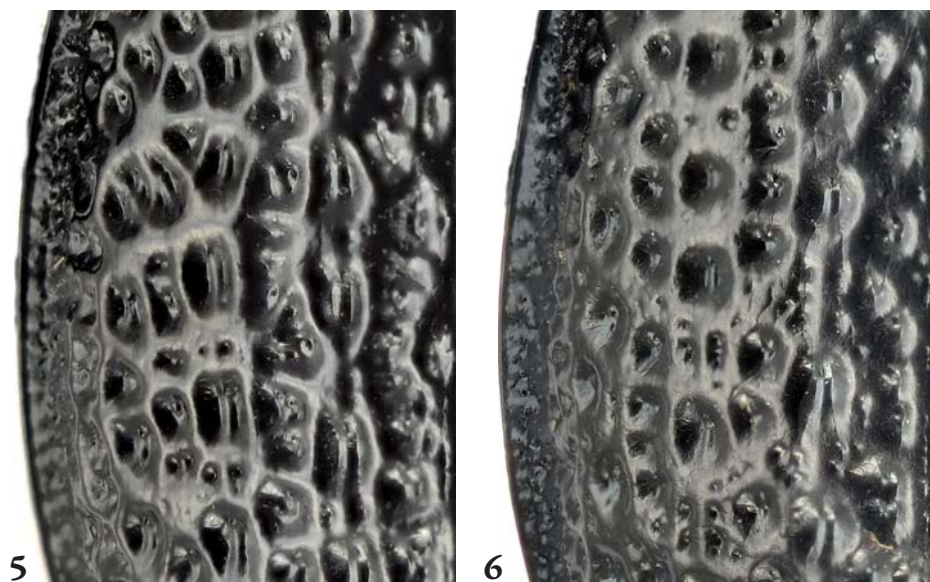


**Figs 1–4.** Habitus: 1 = *Carabus cavernosus cavernosus* E. Frivaldszky, 1837 (from Sliven, Bulgaria), male, 2 = female, 3 = *C. cavernosus rozneri* ssp. n., male, 4 = female

21.V.–2.VIII.2003, leg. I. Retezár; 12 males, 17 females: same locality, 25.VI.–26.VII.2004, leg. I. Retezár; 9 males, 7 females: same place, 26.VII.–3.VIII.2004, leg. I. Retezár, Gy. Szél & P. Lie; 23 males, 31 females: Romania, Transylvania, Torockó (Rimetea), Mt Trascău, Székelykő (Piatra Secuiului), 1100 m, N 46° 26.839', E 23° 35.343', 30.VI.–3.VIII.2005, leg. I. Retezár & B. Tallósi; 43 males, 53 females: same locality, 27.V.–11.VIII.2008, leg. I. Retezár & B. Tallósi; 4 males, 6 females: Romania, Apuseni Mts, Rimetea, VII.2008, leg. S. Budka & J. Kynkor; 2 females: same locality, VI.2010, leg. J. Kynkor & V. Martinek; 17 males, 26 females: same locality, VI.2011, leg. S. Budka, J. Kynkor & V. Martinek.

The holotype is deposited in the Hungarian Natural History Museum, Budapest (HNHM); paratypes are in HNHM (15 males, 15 females); in the collections of I. Rozner, Budapest (4 males, 5 females); I. Retezár, Budapest (67 males, 93 females); B. Tallósi, Szolnok (20 males, 20 females); K. Székely, Budapest (4 males, 4 females); R. Sehnal, Unhošť (3 females); M. Pasek, Třebotov (5 males, 4 females); S. Budka, Písek (8 males, 12 females); J. Kynkor, Písek (8 males, 13 females); and V. Martinek (5 males, 9 females).

*Description* – *Habitus*: Figs 3–4. Body length 25–30 mm (including mandibles). Colouration black. Head normal, frons and neck moderately wrinkled. Pronotum convex, moderately wrinkled, broadest before middle, 1.4–1.5 times as wide as long. Lobes of hind angles short, rounded. Elytra broadly oval, 1.4–1.5



Figs 5–6. Male left elytron, median part: 5 = *Carabus cavernosus rozneri* ssp. n., 6 = *C. cavernosus cavernosus* E. Frivaldszky, 1837

times as long as wide, broadest at middle. Foveae of elytra deep, closely set, their size and shape variable, interspaces between them narrow. Rows of foveae irregular (Fig. 5). Aedeagus differing from the nominative subspecies as follows: in lateral view broader (Fig. 7), in dorsal view narrower (Fig. 8), apical part shorter (Fig. 9). Endophallus as in Figs 11–12.

Differences between the new subspecies and the nominotypical *C. cavernosus cavernosus* are summarised in the Table 1.

*Etymology* – The new subspecies is dedicated to our friend and colleague István Rozner (Budapest), who discovered this subspecies when collected the first specimen.

*Distribution* – This subspecies is known only from the closed, mesophilous grasslands with numerous dicots and scattered shrubs (970–1100 m a.s.l., Fig. 14) of the mountain Piatra Secuiului (Székelykö) near the village Rimetea (Torockó) in the Trascău Mountains, which is part of the Apuseni Mountains, Romania. This northernmost population of *C. cavernosus* is widely separated from those occurring in the Mediterranean, from Italy to Bulgaria.

The distribution of *Carabus (Pachystus) cavernosus* includes Bulgaria, Romania, Macedonia, Kosovo, Serbia, Albania, Montenegro, Bosnia and Herzegovina as well as Italy. The northernmost locality up to the present was the Fruška Gora



**Figs 7–10.** Aedeagus: 7 = *Carabus cavernosus rozneri* ssp. n., right lateral view, 8 = dorsal view, 9 = apical part, 10 = *C. cavernosus cavernosus* E. Frivaldszky, 1837, dorsal view

**Table 1.** Comparison of *Carabus cavernosus rozneri* ssp. n. and *C. cavernosus cavernosus* E. Frivaldszky, 1837

Character	<i>C. cavernosus rozneri</i>	<i>C. cavernosus cavernosus</i>
Body length	25–30 mm	19–30 mm
Pronotum, form	in average 1.4–1.5 times as wide as long	in average 1.35 times as wide as long
Pronotum, maximum width	before middle	behind middle
Elytra, maximum width	at middle	in posterior third
Elytra, arrangement of foveae	irregular, closely set (Fig. 5)	more or less in regular rows, situated far from each other (Fig. 6)
Elytra, size of foveae	variable	same within rows
Elytra, form of foveae	deep, mostly longitudinal	shallow, mostly rounded
Aedeagus, lateral view	broader	narrower
Aedeagus, dorsal view	narrower (Fig. 8)	broader (Fig. 10)
Aedeagus, apical part	shorter	longer
Endophallus	as in Fig. 12	as in Fig. 13

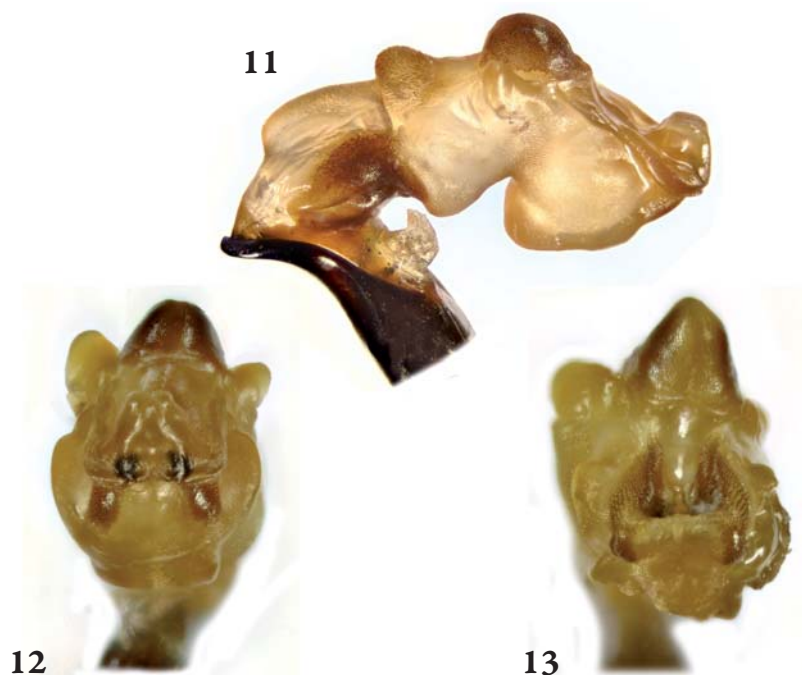
**Figs 11–13.** Endophallus: 11 = *Carabus cavernosus rozneri* ssp. n., right lateral view, 12 = dorsal view, 13 = *C. cavernosus cavernosus* E. Frivaldszky, 1837, dorsal view



Fig. 14. Habitat of *Carabus (Pachystus) cavernosus rozneri* ssp. n. on Piatra Secuiului, Transylvania, Romania

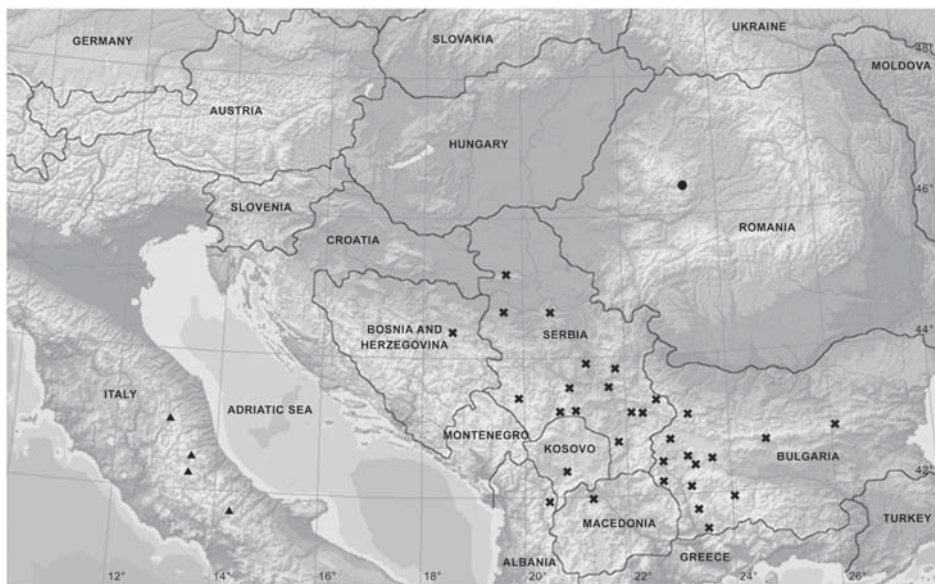


Fig. 15. Distribution map of *Carabus cavernosus* E. Fivaldszky, 1837: × = *C. cavernosus cavernosus* E. Fivaldszky, 1837, ▲ = *C. cavernosus variolatus* Costa, 1839, ● = *C. cavernosus rozneri* ssp. n.

Mts, Serbia (ĆURČIĆ *et al.* 2007, TALLÓSI 1984). The distribution of *C. cavernosus* is depicted in Fig. 15. The map is based on the data of the collection of the Hungarian Natural History Museum, those of the private collection of I. Retezár and by the following literature sources: BREUNING (1936), CASALE *et al.* (1982), ĆURČIĆ *et al.* (2007), GUÉORGUIEV (2007), GUÉORGUIEV & GUÉORGUIEV (1995), TURIN *et al.* (2003).

#### REFERENCES

- BREUNING S. 1936: Ergänzende Bemerkungen zur Gattung *Carabus* L. – In: *Festschrift zum 60. Geburtstag von Professor Dr. Embrik Strand, Vol. I.* Izdevniecība "Latvija", Riga, pp. 325–326.
- CASALE A., STURANI M. & TAGLIANTI A. V. 1982: *Fauna d'Italia, Carabidae I. Introduzione, Pausinae, Carabinae.* – Edizioni Calderini, Bologna, 499 pp.
- COSTA O. G. 1839: Specie nuovi di Coleotteri trovate sugli alti Appennini degli Abruzzi nel 1838. – *Corrispondenza Zoologica* 1: 3–8.
- ĆURČIĆ S. B., BRAJKOVIĆ M. M. & ĆURČIĆ B. P. M. (eds) 2007: *The carabids of Serbia. Monographs, Volume 11.* – Faculty of Biology, Institute of Zoology, University of Belgrade, Committee for Karst and Speleology, Serbian Academy of Sciences and Arts, Department of Conservation Biology, Vegetation- and Landscape Ecology, Faculty of Life Sciences, University of Vienna and UNESCO MAB Committee of Serbia, Belgrade–Vienna, 1083 pp.
- FRIVALDSZKY E. 1837: Balkány vidéki természettudományi utazás. Második közlés. [Natural history journey taken in Balkan region. Second account.] – *A Magyar Tudós Társaság' Évkönyvei* 3(3): 156–184.
- GUÉORGUIEV B. V. 2007: *Annotated catalogue of the carabid beetles of Albania (Coleoptera: Carabidae).* – Pensoft Publishers, Sofia-Moscow, 243 pp.
- GUÉORGUIEV V. B. & GUÉORGUIEV B. V. 1995: *Catalogue of the ground-beetles of Bulgaria (Coleoptera: Carabidae).* – Pensoft Publishers, Sofia-Moscow, 279 pp.
- KUTASI CS. MUSKOVITS J. & ROZNER I. 2000: Adatok Torockó (Erdély) és környékének bogárfaunájához (Insecta: Coleoptera). [Data to the beetle fauna of the village Torockó (Rimetea, Alba County) and its environs.] – *Acta 1999, Muzeul National Secuiesc, Sf. Gheorghe* 1: 75–82.
- MANDL K. 1961: Carabologische Notizen. – *Zeitschrift der Arbeitsgemeinschaft Österreichischer Entomologen* 13(1): 20–21.
- TALLÓSI B. 1984: Prilog poznavanju faune trčuljaka (Col. Carabidae) u nekim šumskin zajednicama Fruške gore. [Contribution to the knowledge of ground beetles (Col. Carabidae) in some forest communities of the Fruška Gora.] – *Zbornik studentkih radova Instituta za biologiju Prirodno-matematičkog fakulteta Univerziteta u Novom Sadu* 1984: 5–26.
- TURIN H., PENEV L. & CASALE A. 2003: *The genus Carabus in Europe. A synthesis. Fauna Europaea Invertebrata No. 2.* – Pensoft Publishers, Sofia-Moscow, 511 pp.