Second species of the genus *Troglorrhynchus* F. Schmidt (Coleoptera: Curculionidae: Otiorrhynchinae) in the Bulgarian Eastern Rhodopes

Borislav GUÉORGUIEV, Boyan PETROV


**Abstract.** Four unknown populations of the genus *Troglorrhynchus* from the Bulgarian Eastern Rhodopes are recorded. Two of them are referred to *Troglorrhynchus angelovi* sp. n., type locality: Zandana Cave, Dolno Cherkovishte Village. The new species is described, illustrated, and distinguished from *T. beroni*. The other two samples concern the finding of the latter species in the region. For the first time a female representative of *T. beroni* is described too.

**Key words:** Coleoptera, Curculionidae, *Troglorrhynchus angelovi* sp. n., *T. beroni*, taxonomy, Bulgaria, Palearctic Region.

So far, two species of the genus *Troglorrhynchus* are known from Bulgaria (ANGELOV, 1985). *T. gueorgievi* has been described after a single male from the Yalovitsa Cave near Golyama Zhelyazna Village, Troyan District, Vasilyovska Planina Mt. It has a body size ca. 3.9 mm (not noted in the original description) and a big tooth on the inner side of the profemur. *T. beroni* has been found in the Inkaya Cave near Tsvyatovo Village, Djebel Region, Eastern Rhodopes (Fig. 1, localities 1-3). It has a length of 5.5 mm and on the inner side of the profemur there is no tooth. According to ANGELOV (1985), the first species is related to the Caucasian species of the genus, whereas the second one has characters close to the Slovenian *T. anophthalmus* and *T. anophthalmoïdes*, thus to some Caucasian species. Another endogeous weevil, *Echinomorphus balanicus* Osella 1977, with a type locality “Backa” (probably Bachkovo), has also been described from Bulgaria (OSELLA, 1977). According to this author, the species of *Echinomorphus* Fauvel, 1889 are less adapted to endogeous life than some other related genera of Hylobiinae from the Mediterranean – Southwest Asian Region.

The unremitting investigations of the cave fauna in the Bulgarian Rhodopes, carried out by the junior author in the last 10 years, brought about the discovery of four unknown populations of *Troglorrhynchus* in the eastern part of the mountain. Two of them belong to a new, third Bulgarian species of the genus (Fig. 1), and the other two are referred to *T. beroni*. Thus, the examination of the specimens from these localities is the
Fig. 1. Localities of the genus *Troglorrhynchus* in the Bulgarian Eastern Rhodopes.
subject of this article. The material of all samples is kept in the National Museum of Natural History, Sofia (NMNHS).

_Trogloorrhynchus angelovi_ B. Guéorguiev sp. n. (Figs. 1-9)

Type material and type locality. Holotype: 1 ♀, Zandana Cave, Dolno Cherkovishte Village, Madjarovo Region, Eastern Rhodopes, 11.4.2002, under stones on dry sand, B. Petrov & T. Ivanova leg. Paratypes: 2 ♂♂, 4 ♀♀, same date as holotype.

Further material and locality. Paratype female, Gyurgen Dere Valley, at the entrance of the Prilepnata Peshtera Cave, Madjarovo Region, Eastern Rhodopes, 9.2.1998, oak leaf litter, B. Petrov & G. Stoyanov leg.

Differential diagnosis. See Table 1.

Description

Total length: 4.2-5.2 mm (average 4.7 mm; 4.9 mm in holotype). Body - parallel, finely pubescent, tegument - slightly pigmented and lustrous, colour nuances - rusty red, microsculpture - indistinct. Head and rostrum from above, with less expressed furrow in the middle (Fig. 2), from below and laterally between mouth parts and head - brush-like setation; eyes entirely missing; antennomere I as long as (in males) or only a bit shorter (in females) than length of pronotum. Pronotum as long as wide, broadest in the middle; forward and on disc more sparsely punctuated, laterally and backward denser punctuated. Legs - slender, densely and finely pubescent; femori - broadened in the distal third (Fig. 3), without tooth on the inner side; metatibia in both sexes almost straight, the inner side in males provided with 3 big thorns (Fig. 4). Elytrae seriate, strongly elongate, more than twice as long as wide, with rounded apex, and coalesced along suture; shoulders - indistinct; scutellum - present. Ventral surface - shiny and finely pubescent.

External sexual dimorphism. Male specimens with posterior central part of abdominal sternum I subconcave, with a semicircle turned to sternum II; metatibiae inside with 3 pointed thorns, excluding apical one (Fig. 4). Female specimens with the

<p>| Table 1 |</p>
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<th>Some diagnostic characters in <em>T. angelovi</em> sp. n. and <em>T. beroni</em> Angelov</th>
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Fig. 2-6. *Troglorrhynchus angelovi* sp. n., holotype. 2: head, dorsal view; 3: right metafemor, ventral view; 4: right metatibia, ventral view; 5: median lobe, lateral view; 6a: spiculum gastrale, ventral view; 6b: spiculum gastrale, lateral view.
posterior part of abdominal sternum I even and lacking a semicircle turned to sternum II; metatibiae inside without thorns, excluding the apical one (Fig. 7).

Inner morphology. Median lobe somewhat resembling that of *T. beroni* (Fig. 5). Spiculum gastrale (Fig. 6a-b), compared with that of the last taxon, with rounded extremities of basal lobes and strongly curved laterally. Spermateca with clear outlined foramen ducti (Fig. 8). Spiculum ventrale (sternum VIII) thin, with parallel sides distally, bilobate proximally, each lobe with 13-15 visible setae (Fig. 9).

Etymology. The specific epithet of the new taxon follows the latinized family name of the notable Bulgarian weevil specialist – Prof. Dr. Pavel Angelov (Plovdiv University “Paisiy Hilendarski”).

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**Fig. 7-9. Trogllorrhynchus angelovi** sp. n., female paratype, Zandana Cave. 7: right metatibia, ventral view; 8: spermatheca; 9: spiculum ventrale.
Co-habitants: The population from the Zandana Cave lives together with some other troglobious and troglophilous arthropods: the pseudoscorpions Roncus sp. and Chthonius sp. (second author, unpublished data); the beetles Trechus (Trechus) crucifer La Brulerie, 1875, Duvialis (Paraduvialis) sp. (Guéorguiev, in press), as well as Bureshiana cf. drenskii Guéorguiev, 1963 (Guéorguiev, 2004).

_Troglorrhynchus beroni_ Angelov, 1985 (Figs. 1, 10-16)

Material and locality. 1 σ', Hasarskata Peshtera Cave, Gorna Snejinka Village, Karadjali Region, Eastern Rhodopes, under a stone on dry clay, 3.8.1999, B. Petrov & V. Beshkov leg. 2 σ', 1 ♂, Karaguk Cave, Turnovtsi Village, Djebel Region, Eastern Rhodopes, under stones, 22.10.2003, P. Beron & B. Petrov leg.

External morphology. Total length, including also holotype data (cfr. Angelov, 1985): 5.4-5.5 mm (average 5.45 mm). Head and rostrum with well expressed furrow in the middle (Fig. 10). Ventral aspect of the right metafemor on Fig. 11. Inner side of male metatibia provided with 3 big thorns in the middle (Fig. 12).

Inner morphology. Median lobe in a lateral aspect on Fig. 13. Spiculum gastrale (Fig. 14a-b), shorter, with more pointed extremities of basal lobes and almost straight laterally, if compared with that of _T. angelovi_ sp.n. Spermateca (Fig. 15). Spiculum ventrale (Fig. 16) also distinctly different from those of the new species.

Discussion

The localities of both _Troglorrhynchus_ species studied are situated in isolated karstic areas, as described by POPOV (1982) and KOLEV (1991). Thus, _T. beroni_ inhabits the Ardino karstic region, and _T. angelovi_ sp. n. - the Krumovgrad karstic region. As far as each of these regions consists of small-sized limestone spots, occurrence of both species seems to be allopatric for the present (Fig. 1). Geographic isolation could explain the morphological differences between both related endogenous species. These morphological differences ascertained the presumed formation of _T. beroni_ and _T. angelovi_ sp. n. as the result of local isolation of conspecific populations and their subsequent divergence, probably in the Pleistocene.

In the majority of cases, many soil-dwelling invertebrates are know only from caves simply because their underground environment is amongst the few accessible to man. Considering their morphology and occurrence patterns, none of the weevil species (Curculionidae) was therefore recognized as troglobitic, even though they were found exclusively in cave environment: “The soil and cave colonization has been certainly supported by high hygrophily and by rhizophagous or xylophagous diet.” and “the caves act as traps” (Osella & Zuppa, 1994). The hygrophilic affinity of the new species is supported by the field data. It was discovered in Gyurgen Dere Valley, at the entrance of the Prilepnata Peshtera Cave, in wet oak litter during the winter (9.2.1998), when humidity of the soil reaches its highest values. During none of the earlier or subsequent spring or summer visits were we able to collect any weevil, though the litter at the entrance was continuously
Fig. 10-14. *Troglorrhynchus beroni* Angelov, male, Hasarskata Peshtera Cave. 10: head, dorsal view; 11: right metafemor, ventral view; 12: right metatibia, ventral view; 13: median lobe, lateral view; 14a: spiculum gastrale, ventral view; 14b: spiculum gastrale, lateral view.
sifted. We could suppose that like the other *Troglorrhynchus*-species, the ectophytic larvae and the adults of the two species from the Rhodopes are rhizophagous on broad leaves (cf. OSELLA & ZUPPA, 1994). Nevertheless, none of the collected specimens were found directly on tree roots or other plant debris from the shallow soil stratum, though they were carefully examined during the sampling.

For a long period of time, only three arthropods had been known from the caves in the Bulgarian part of the Eastern Rhodopes (BERON, 1994), e.g. *Centromerus milleri* Deltchev, 1974 (Araneae), *Bureschiana drenskii* Guéorguiev, 1963 (Leiodidae), and *Troglorrhynchus beroni* Angelov, 1985 (Curculionidae), all of them local endemics for the region.

**Fig. 15-16.** *Troglorrhynchus beroni* Angelov, female, Karaguk Cave. 15: spermatheca; 16: spiculum ventrale.
After intensive field researches were carried out in the last 10 years, six other species of this kind were discovered as new for the science or were proved to be new for the regional fauna. These are: *Roncus* sp. and *Chthonius* sp. (second author, unpublished data) (Pseudoscorpiones), *Balkanopetalum petrovi* Stoev & Enghoff, 2003 (STOEV & ENGHOFF, 2003) (Diplopoda), *Duvatius (Paraduvatius)* sp. (GUÉORGUEV, in press) (Carabidae), *Bureschiana tbraica* Giachino, 1989 (GUÉORGUEV, 2004) (Leiodidae), *Troglorrhynchus angelovi* sp.n. (Curculionidae). Out of this number, two other beetle species live in the Greek part of the mountain - *Pterostichus (Cryobius)* sp. ex. gr. “brevis” (first author, unpublished data) (Carabidae) and *Maroniella beroni* Casale & Giachino, 1985 (Leiodidae). All these species, excluding only the undescribed *Pterostichus* sp., could be regarded as associated with the limestone habitats.

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Authors’ addresses:
Borislav Gueorguiev, Boyan Petrov
National Museum of Natural History
Bulgarian Academy of Sciences
1, Tsar Osvoboditel Blvd.
1000 Sofia, Bulgaria
E-mail: bobivg@yahoo.com, boyanpp@nmnh.bas.bg
Дискутираха с четири популации на род *Troglorrhynchus* от българската част на Източните Родопи. Две от тях са определени като *Troglorrhynchus angelovi* sp. n. Новият вид (типово находище: пещера Зандана, с. Долно Черковище) е описан, илюстриран и сравнен с близкия *T. beroni*. Останалите две находки са нови за *Troglorrhynchus beroni* и включват намерени на женски екземпляр, който е описан за първи път.