

***Seracamaurops (Seracamaurops) cadmei* n. sp. (Coleoptera: Staphylinidae: Pselaphinae: Amauropini) from Mt. Sniježnica (Konavle): first representative of the genus in Croatia**

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Summary. *Seracamaurops cadmei* n. sp. (Staphylinidae, Pselaphinae, Amauropini) is described from the caves Jezero (altitude 920 m) and Glogova jama (altitude 950 m), both located on Mt. Sniježnica in the Konavle region (southeast of Dubrovnik) in Croatia. It is the first reported representative of the genus *Seracamaurops* in Croatia. This new species clearly differs from other representatives of this genus through several taxonomic characters such as the length of pedicel, male aedeagus, and the fissures of the last tergite in both sexes.

Keywords: Amauropini, biospeleology, Coleoptera, Croatia, new species, Pselaphinae, *Seracamaurops*, Staphylinidae, taxonomy.

INTRODUCTION

The genus *Seracamaurops* Winkler, 1925, includes 14 species. They are a strictly cavernicolous, highly evolved and always eyeless taxa, with a distribution range restricted to the southern Dinaric region, where they inhabit the caves of Bosnia & Herzegovina, Montenegro and southern Croatia (Hlavač et al. 2008; Pavićević et al. 2008). Information about new *Seracamaurops* taxa in Croatia was recently presented at the 20th International Conference on Subterranean Biology in Postojna, Slovenia (Pavićević and Ozimec 2010).

MATERIALS AND METHODS

The first specimen of *Seracamaurops cadmei* n. sp. was collected in March 2002 during biospeleological exploration of a cave named Jezero, conducted by the Croatian Biospeleological Society (CBSS) during research organised as part of a project of cave type localities, resulting in a Catalogue of cave type localities (Bedek et al. 2006) and the cave type localities Atlas of Croatian fauna (Jalžić et al. 2010). Additional material was collected during a visit of members of the Croatian Biospeleological Society to the cave Glogova jama, in August 2005. All collected specimens were preserved in

70% ethanol and afterwards prepared in dry conditions. The morphological features of the beetles were examined using a LEICA MZ 16 stereo microscope. The aedeagi were dissected, cleaned and mounted in Canada balsam on transparent slides. Drawings of aedeagi were obtained using an Olympus BHS microscope. Used instruments for ecology and habitat microclimate measurements were: thermometer TESTO 1 (Austria); thermo-hygro-anemometer Kestrel 3000 (USA).

RESULTS

Seracamaurops (Seracamaurops) cadmei n. sp.
(Figs 1-6)

Etymology

Named after *Mons Cadmeus*, the oldest known name for Sniježnica Mt., Konavle. This mountain was named according to an ancient legend, that the Greek hero Cadmeus or Cadmus (Καδμείος) spent part of his exodus from his homeland in this mountain.

Type locality

Croatia, Konavle, Mt. Sniježnica, Jezero Cave (Synonym: Eskulapova špilja), altitude 920 m.

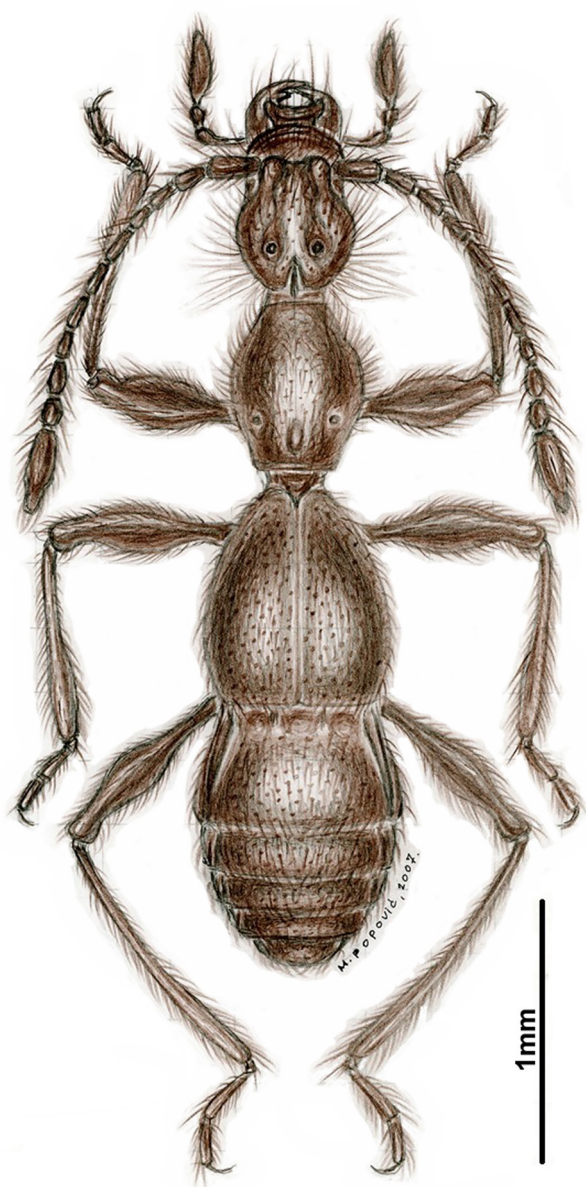


Figure 1. Habitus of *Seracamaurops (Seracamaurops) cadmei* n. sp.

Material studied

HOLOTYPE ♂: Croatia, Konavle, Mt. Sniježnica, Jezero Cave, 16. 03. 2002, leg. R. Ozimec. PARATYPE, 1♂, 1♀: Croatia, Konavle, Mt. Sniježnica, Glogova jama, 20. 08. 2005, leg. P. Rade; 1♀: Glogova jama, Sniježnica, Kuna, Konavle, 20. 11. 2008, leg. B. Jalžić.

Deposition

Holotype ♂ is deposited in the Roman Ozimec Col-



Figure 2. Photo of *Seracamaurops (Seracamaurops) cadmei* n. sp. in Glogova jama (Photo: B. Jalžić).

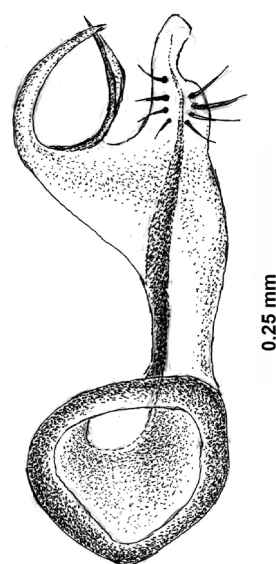


Figure 3. Aedeagus of *Seracamaurops (Seracamaurops) cadmei* n. sp.

lection (ROC). PARATYPES (1♂, 2♀) are deposited in the collections Dragan Pavićević (CDPV), Peter Hlavač (CPHC) and at the Natural History Museum Zagreb (NHMZ).

Description

Length: male 3.2 mm, female 3.00 mm. Body (Fig. 1

and 2) shiny, uncoloured reddish-brown, smooth, with long erected setae. Head markedly longer than wide, in males (0.75/0.45 mm), females (0.73/0.47 mm), narrower but longer than pronotum. Frontal lobe transverse with widely rounded anterior margin, lancet-like shaped; eyes completely atrophied without indication of ocular carinae. Genae weakly rounded and narrowed posteriorly, with long, erected setae.

Frons with two depressions between antennal tubercles, vertexal foveae well defined, deep; maxillary palpi small, III blade shaped (σ : 0.30/0.06 mm; ♀ : 0.37/0.07 mm) as long as I-II together.

Antennae relatively short, all segments elongate; scape (σ : 0.20/0.08; ♀ : 0.24/0.08) subcylindrical, slightly curved; pedicel (σ : 0.12/0.06; ♀ : 0.12/0.06) slightly expanded apically; III (σ : 0.14/0.05; ♀ : 0.14/0.06) as long as pedicel but slightly narrower; IV (σ : 0.12/0.04; ♀ : 0.13/0.04) a little bit shorter and narrower than III; V (σ : 0.14/0.04; ♀ : 0.15/0.04); IV and VI (σ : 0.12/0.04; ♀ : 0.12/0.05); VII (σ : 0.13/0.04; ♀ : 0.14/0.05); VIII (σ : 0.10/0.04; ♀ : 0.10/0.04); IX (σ : 0.12/0.05; ♀ : 0.13/0.05); X (σ : 0.11/0.09; ♀ : 0.12/0.07); terminal segment (σ : 0.31/0.11; ♀ : 0.32/0.12) longer than IX-X together, narrowed apically and pointed.

Pronotum (σ : 0.62/0.50; ♀ : 0.62/0.56) longer than wide, barrel-shaped, widest just behind the middle, shorter than head, median fovea shallow and elongate, lateral foveae well defined, deep.

Elytra (σ : 0.86/0.72; ♀ : 0.84/0.80) simple, slightly longer than wide.

Abdomen slightly wider than elytra, first visible tergite (σ : 0.48/0.78; ♀ : 0.46/0.82) clearly wider than long, about as long as the rest of the visible tergites. External stria diffuse with tergal margin, internal stria very short, distance between them about 0.24 mm, with shallow depression.

Legs long and slender, without any modifications.

Aedeagus as seen in Fig. 3.

Sexual dimorphism

In males, the last tergite in the middle with relatively shallow, triangle-shape fissure with twisted margin, which is sometimes thicker and darkly pigmented (Fig. 4). In females, fissure on the last tergite has a shape of expensed triangle (Fig. 5), pygidium laterally slightly drawn with an obtuse apex (Fig. 6).

Differential diagnosis

The new species shares a set of characters with all other species from the genus *Seracamaurops* such as: head longer than pronotum, same structure of the scapus, the third segment of the antennae, the shape of pronotum, elytrae longer than wide, abdomen wider than elytrae, but differs clearly from all known species through its shorter pedicel, which is almost half of the scapus length, the shape of the aedeagus,

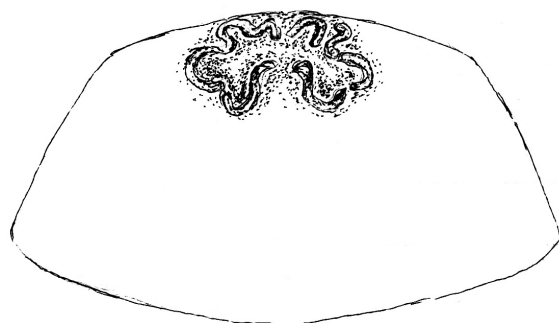


Figure 4. Fissure on the last tergite of the male of *Seracamaurops* (*Seracamaurops*) *cadmei* n. sp.

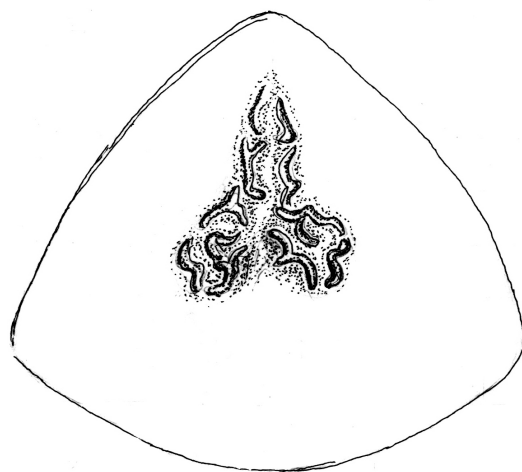


Figure 5. Fissure on the last tergite of the female of *Seracamaurops* (*Seracamaurops*) *cadmei* n. sp.

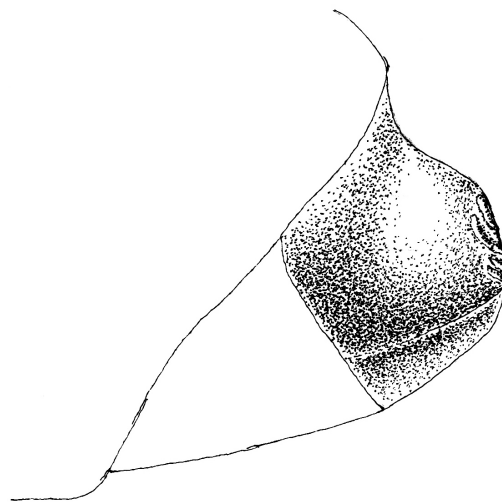


Figure 6. Pygidium of the female of *Seracamaurops* (*Seracamaurops*) *cadmei* n. sp.

and by the different structure of its tergal fissures in both sexes.

DISCUSSION

The closest findings of genus *Seracamaurops* and *S. cadmei* n. sp. are those at the foothill of Mt. Orjen (in the vicinity of Grab and Gubar) south of Trebinje in Herzegovina. These are *S. grandis* Winkler, 1925 and *S. mlejneki* Pavićević, Hlavač & Lakota, 2008. The first one is found on two localities, in a deep pit on W. slopes of Orjen, in the vicinity of Grab (type locality) and Bukova Rupa, in the vicinity of Gubar (Mt. Orjen), both in Herzegovina. The second species is known only from the type locality, Jama Bravenik, in the vicinity of Grab (Mt. Orjen). Mention of *S. grandis* in Croatia in the "Catalogue of the troglobitic Pselaphinae (Coleoptera, Staphylinidae) of the Balkan Peninsula, with a key to genera" (Hlavač et al. 2008) now can be corrected to *S. cadmei*.

Habitat and ecology

Seracamaurops cadmei n. sp. was collected from two caves located on Sniježnica Mt. (Fig. 7), the most western part of the complex of Orjen Mt. (1894 m).

Jezero Cave (UTM: BN81; 920 m altitude) was named according to a water pool ("jezero") in the last part of cave, and is situated on the northern slope of the mountain. The

cave has two different parts, first a big chamber under the influence of the outer climate, diffuse daylight and some organic rests, and second, a smaller part completely in darkness, with a more stabile microclimate and a water pool (Fig. 8). The type specimen was found in this, deeper part of the cave, under a stone, about 55 m from the entrance. Climatic measurements on May 27th, 2004: First chamber: Air temperature: 6.1°C; RH = 93%; Finding place: Air temperature: 7.1°C; Substrate temperature: 6.5 °C; Water temperature: 6.9 °C; RH = 100%.

Glogova jama pit (UTM: BN81; 950 m altitude), 146 m depth, is situated on the karst plateau of the mountain. The pit is very cold, with light up to a depth of ca 100 m (Fig. 8). On the bottom of the pit there is some organic debris and guano produced by yellow-billed or alpine chough (*Pyrrhocorax graculus* Linneus, 1766) colonies, which nest in the upper part of the pit. The deepest parts of the pit are formed mainly by fissures, seasonally with some water streams. Paratype specimen was found under stone on the second bottom of the pit, at a depth of about 120 m, in the same place where *Minosaphaenops croaticus* (Lohaj & Jalžić, 2009) and *Anthroherpon matulici* (Reitter, 1903) have been found. Climatic measurements on June 27th, 2000: Vertical (-70 m): Air temperature: 6.2 °C; Upper bottom (-95 m): Air temperature: 4.1 °C; Lower bottom (-120 m): Air temperature: 3.7 °C; Second bottom (-146 m): Air temperature: 4.5 °C.

According to the NATURA 2000 classification and the Croatian National Habitat Classification (NHC) system (Gottstein 2010), habitats of both caves belong to habitat

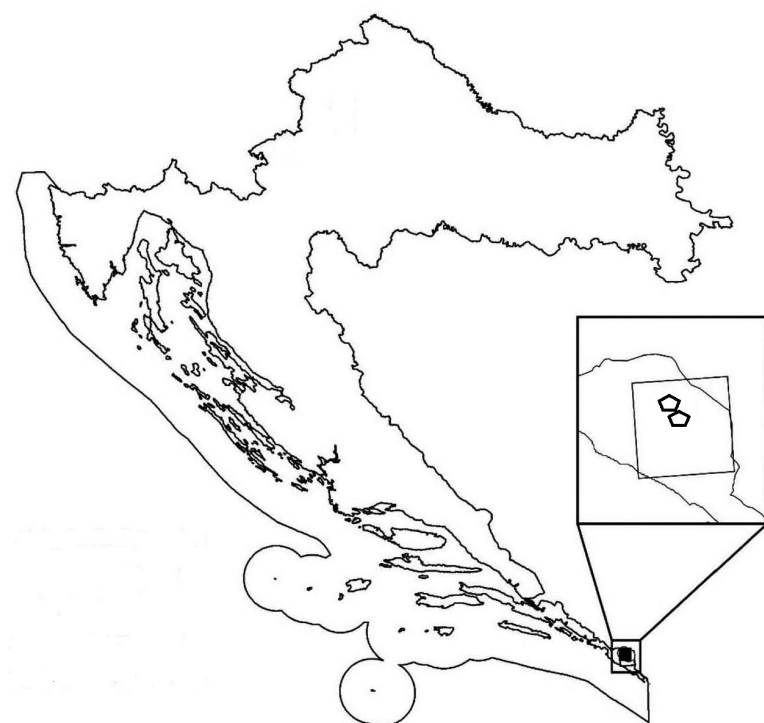


Figure 7. Distribution map of *Seracamaurops (Seracamaurops) cadmei* n. sp. (two caves located on Sniježnica Mt.).

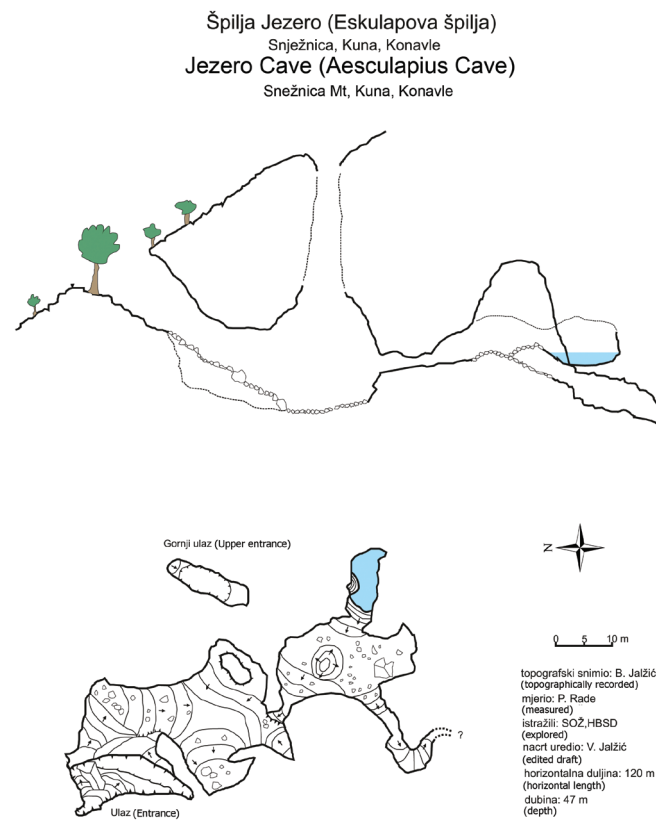


Figure 8. Plan of Jezero Cave (Špilja jezero), type locality of *Seracamaurops* (*Seracamaurops*) *cadmei* n. sp. (After B. and V. Jalžić).

groups: Caves not open to public (8310), Karstic caves and pits (H.1) and Interstitial underground habitats (H.3), and based on this five terrestrial habitats were detected in these caves: Semi caves and cave entrances (H.1.1.1.), Caves and cave systems with troglotic invertebrates (H.1.1.4.), Caves with troglitic invertebrates (H.1.1.5) and Interstitial terrestrial habitats (H.3.1.1.). *Seracamaurops cadmei* are regularly collected in the cave habitat “Caves and cave systems with troglitic invertebrates (H.1.1.4.)”. All specimens were found far from the cave entrance, in the deepest part of the caves in total darkness, with the standard qualities of total darkness, moderate temperature, and high absolute air humidity. All specimens were found beneath deeply embedded stones, a microhabitat of even more stabile absolute humidity.

Biocenosis

Seracamaurops cadmei n. sp. was found among very rich troglitic and troglitic cave fauna. Beside some still undetermined Gastropods and Collembolans, determined are: cave Isopod *Cyphonethes herzegowinensis* (Verhoeff, 1900), five cave Pseudoscorpiones: *Troglochthonius mirabilis* Beier, 1939, *Neobisium heros* Beier, 1938, *N. hadzii* Beier, *N. le-*

theum Beier, 1938, 1939 and *N. vachoni* Beier, 1939, the first three are recognised as vulnerable species (VU D2) (Ozimec et al. 2009). Cave spiders belonging to the family Liniphiidae, *Troglohyphantes* (*Troglohyphantes*) *troglodytes* (Kulczyński, 1914), *Troglohyphantes* (*Troglohyphantes*) *salax* (Kulczyński, 1914) and *Troglohyphantes* (*Troglohyphantes*) *pugnax* Deeleman-Reinhold, 1978. Very rich Coleopteran fauna have also been found: *Neotrechus hilfi hilfi* (Reitter, 1903), *N. suturalis otiosus* (Obenberger, 1917), *Minosaphaenops croaticus* (Lohaj & Jalžić, 2009), *Blattochaeta marianii kusijanovici* (Polak & Jalžić, 2009) and *Anthroherpon matulici* (Reitter, 1903). Other cavernicoles recorded from the cave are: diplopod *Brachydesmus* sp., Acarian *Rhagidia* sp., same as Orthoptera *Troglophilus ovuliformis* Karny, 1907. The biologically interesting Jezero cave and Glogova jama are already the type locality. First for a cave Pseudoscorpion *Neobisium hadzii* Beier, 1939, and Glogova jama cave for two Coleopteran taxa, *Blattochaeta marianii kusijanovici* Polak & Jalžić, 2009, same as *Minosaphaenops croaticus* Lohaj & Jalžić, 2009.

The above species list was published in the description of *Blattochaeta marianii kusijanovici* (Polak and Jalžić 2009), same as *Minosaphaenops croaticus* (Lohaj and Jalžić 2009), but include some newly published data (Ozimec 2004;

Ozimec et al. 2009; Pavlek and Ozimec 2009; Bedek et al. 2011; Karaman et al. 2011).

Bionomy

Bionomy of *S. cadmei* n. sp. is still poorly known. All specimens were found in inaction, fixed on opposite sides of buried rocks in opposite positions. Most probably, their prey represents springtails (Collembola), as well as juvenile terrestrial isopod crustaceans (Isopoda) and maybe juveniles of other groups. No data about sexual activity, larval stadium or other bionomy are currently available.

Distribution

The new taxa is only known from the type and second locality, caves of high altitude on Sniježnica Mt. At present, this new taxa is not only the only taxa representative of the *Seracamaurops* genus for Croatia, but also the only troglobitic Pselaphinae recorded for Sniježnica Mt., where only *Paramaurops kaufmanni* (Ganglbauer 1895) among Pselaphinae, have been recorded thus far in one deep fissure near the village of Stravča (Pretner 1973).

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