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Original paper

Two new species of the genus *Seracamaurops* Winkler (Coleoptera: Staphylinidae: Pselaphinae: Amauropini) from Montenegro

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Summary. Nearly two hundred years of continuous and systematic research in the Dinaric karst subterranean habitats has resulted in the recognition of more than 400 narrowly distributed and specialized subterranean beetles. The majority of these belong to the families Leiodidae (tribe Leptodirini) and Carabidae (tribe Trechini). Although Staphylinidae is one of the most wide-spread and species rich families of Coleoptera in the world, only a small portion of these species have successfully adapted to subterranean habitats. In this contribution, we present a description of two new species of subterranean Pselaphinae, Amauropini from Montenegro; *Seracamaurops* subgenus *Seracamaurops* s. str.: *S.* (*S.*) *delici* sp. nov. from Kučke planine Mts. and *S.* (*S.*) *rumijaensis* sp. nov. from Rumija Mt. Both species are described, illustrated and compared with related species. They are clearly distinguished from all known *Seracamaurops* species by several taxonomic characters, i.e. shape of the aedeagus, the female pygidium and fissures of the last tergite in both sexes. An annotated catalogue of the genus *Seracamaurops* is also presented.

Keywords: Amauropini, Coleoptera, Kučke planine, Montenegro, Pselaphinae, Rumija, *Seracamaurops*, Staphylinidae, subterranean habitat.

INTRODUCTION

Genus *Seracamaurops* Winkler comprises eyeless, depigmented and relatively large (up to 4 mm) species of Pselaphinae beetles with elongated appendages. Genus representatives predominantely inhabit the subterranean habitats of the Southern Dinarides, where they are exclusively found in the caves in Bosnia and Hercegovina, southern Croatia and Montenegro (Pavićević et al. 2008, 2013; Pavićević and Ozimec 2013). In addition, a single species, described from Baribana cave in the western Caucasus Mts., was placed in the genus (Hlaváč et al. 1999; Nonveiller and Pavićević 2008).

Speleological and biospeleological research of Planina Rumija Mt., southern Montenegro, was executed by members of the Czech Speleological Society in 2005-2006, and led to the discovery of an undescribed species of *Seracamaurops*. Another new species of this genus was discovered by the members of the SubBio Lab team (University of Ljubljana, Slovenia) and a Montenegrin speleologist during speleological and biospeleological exploration of two vertical caves situated on Kučke planine Mts., southeastern Montenegro. Both new species are described below.

MATERIAL AND METHODS

The morphological structures of the beetles were exam-

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ined using the stereoscopic microscopes WILD M 8 ZOOM, LEICA MZ 16, LEICA APO S and LEICA S8 WILD (Leica, Wetzlar, Germany) and CARL ZEISS AXIOSCOPE 40 microscope. Male and female genitalia were dissected, cleaned and mounted in Canada balsam or DMHF on transparent slides and pinned under the dry prepared specimens.

Measurements:

TL: total body length (measured from the apex of mandibles to the apex of last tergite).

HL: head length (measured from the anterior margin of the clypeus to the neck constriction).

HW: maximum head width.

AL: antennal length (measured from the base of antennal scape to the apex of terminal antennal segment).

PL: pronotum length (measured along the median line).

PW: maximum pronotum width, as the greatest transverse distance.

EL: elytral length (as linear distance measured along the suture from the elytral base to the apex).

EW: maximum elytra width.

Forward slash indicates separate labels.

Acronyms:

HNHM: Hungarian Natural History Museum, Budapest (Hungary)

MHNG: Muséum d'Histoire Naturelle, Geneva (Switzerland)

NHMM: Zoological Collection of Natural History Museum of Montenegro, Podgorica (Montenegro)

SUBBIOLAB: Zoological Collection of the Department of Biology, Biotechnical Faculty, University of Ljubljana (Slovenia)

CDCa – private collection of Daniel Čáha, Prague (Czech Republic)

CDCe – private collection of Dávid Čeplík, Košice (Slovakia)

CDP – private collection of Dragan Pavićević, Belgrade (Serbia)

CJB – private collection of Jiří Brestovanský, Mělník (Czech Republic)

CJL – private collection of Ján Lakota, Ružomberok (Slovakia)

CPH – private collection of Peter Hlaváč, Prague (Czech Republic)

CRL – private collection of Roman Lohaj, Limbach (Slovakia)

The present study is based on examination of the following material:

Seracamaurops (*Amauroleucus*) *komarovi* Hlaváč, Kodada & Koval, 1999: 3 females labelled "NW Caucasus, Sochi, Alek Mt., Baribana cave, traps, 26.VIII.2004 – 22.VI.2006, A.G.Koval leg". (CRL);

Seracamaurops (*Cordiamaurops*) *fritschi* Besuchet, 1986: 2 males labelled "Montenegro, Lovćen Mts, Dobrota, Duboki do, 30.04.2018, Borko, Delić, Premate, Škufca" / "DNA extraction XA572, XA573" / "DNA PROJECT AMAUROPINI: 2021-2023 P.Hlaváč & T.Delić" (blue labels, printed) (SUBBIOLAB); 1 male, 1 female labelled: "Montenegro, Lovćen Mts, Zverinjačke rupe, Pala Skala pit, 17.05.2019, Borko, Delić, Premate, Zagmajster" / "DNA extraction XA578, XA579" / "DNA PROJECT AMAUROPINI: 2021-2023 P.Hlaváč & T.Delić" (blue labels, printed) (SUBBIOLAB); 1 female labelled "Montenegro, Cetinje, Štitari, Sokolska pećina cave, 16.05.2019, Borko, Delić, Premate, Zagmajster" / "DNA extraction XA581" / "DNA PROJECT AMAUROPINI: 2021-2023 P.Hlaváč & T.Delić" (blue labels, printed) (SUBBIOLAB); 1 male, 1 female labelled: "Montenegro, Grahovo, Dragalj, Vodna jama u Dragaljskom polju, 17.06.2019, Delić, Lohaj, Premate" / "DNA extraction XA580, RL39" / "DNA PROJECT AMAUROPINI: 2021-2023 P.Hlaváč & T.Delić" (blue labels, printed) (SUBBIOLAB, CRL); 4 males, 5 females: "Montenegro, Lovćen Mts, Rajćevići, Jama Boljanovica pit, 11.8.2003, D.Čeplík" (CDCe, CRL); 1 male labelled: "Montenegro, Lovćen Mts., Rajćevići, unnamed cave near Jama Boljanovica, 17.7.2008, R.Lohaj" (CRL); 1 male labelled: "Montenegro, Lovćen, Njeguši, Vršanj, Bezdan jama cave, 27.6.2001, J.Lakota" (CRL), 1 male, 1 female labelled: "Montenegro, Cetinje, Cetinska pećina cave, 6.7.2010, R.Lohaj" (CRL);

Seracamaurops (*Cordiamaurops*) *perreaui*, 2008: Nonveiller & Pavićević, 2008: holotype male labelled "Montenegro, Krivošije, Knezlaz, Bukavička pećina, 6.VII.1997, leg. I. Karaman (CDP); paratype female the same locality but 1-5/6. VII.1997, leg. D. Pavićević (CDP), paratype male labelled: "Ericova jama, 1038 m, Orjen, Crkvice, 5.VIII.2007, Montenegro, Ollivier & Quéinnec leg." (CRL); 1 male, 3 females, the same locality / "DNA extraction XA584, XA585, XA586, XA587" / "DNA PROJECT AMAUROPINI: 2021-2023 P.Hlaváč & T.Delić" (blue labels, printed) (SUBBIOLAB, CRL); 3 males labelled: "Montenegro, Orjen Mt., Crkvice, Križna jama pit, 1.5.2018, Borko, Delić, Premate, Škufca" / "DNA extraction XA574, XA575, XA576" / "DNA PROJECT AMAUROPINI: 2021-2023 P. Hlaváč & T.Delić" (blue labels, printed) (SUBBIOLAB, CRL); 2 females labelled: "Montenegro, Risan, Krivošije, Kameno More, jama Dvestotka", 13.09.2009, leg. I. Njunjić (CDP);

Seracamaurops (*Seracamaurops*) *cadmei* Pavićević & Ozimec, 2014: paratype female labelled: "Croatia, Konavle, Mt. Sniježnica, Glogova jama, 20.08.2005, leg. P. Rade" (CDP); 1 male the same locality but 09.09.2019, B.Jalžić lgt. / DNA extraction RL-70 (CRL);

Seracamaurops (*Seracamaurops*) *fodori* Székessy, 1943: 1 female labelled: "Montenegro, Nikšić, Carev Most, Velja

pećina, 16.04.09 – 10.08.09, traps, Čeplík & Lohaj" (CDCe);

Seracamaurops (*Seracamaurops*) *frieseni* Winkler, 1925: 1 female labelled: "BiH, Hercegovina, Turica, Bjelasnica planina, Mt. Motka env., Pećina u Mravinjac cave, 21.7.08, D. Čeplík" (CDCe), 1 female, the same locality but 6.4.2007, J. Lakota (CJL), 1 female, the same locality but 15.11.2008, J. Lakota (CJL);

Seracamaurops (*Seracamaurops*) *grabowskii* Müller, 1926: 1 male labelled: "Bosnia, Treskavica Mts., Kalinovik, Borija vill. Env., Dobra Voda, Borija (U Glavićinama) pećina cave, V.2018 – 15.VI. 2019, Delić, Lohaj, Premate" / DNA extraction RL-33; 1 female, the same data (CRL), 1 female, the same locality but 29.10.2011, J.Lakota (CJL);

Seracamaurops (*Seracamaurops*) *grandis* Winkler, 1925: holotype female labelled: "Hercegovina mer, Orjen Gebiet, Travničevina bei Grab, leg. A. Winkler" (MNHG), 5 females labelled: "Hercegovina, Trebinje, Konjsko, Jama u Konjskom, 25.09.2008, S. Ognjenović lgt." (CDP, CRL);

Seracamaurops (*Seracamaurops*) *mlejneki* Pavićević, Hlaváč & Lakota, 2008: 1 male labelled: "Bosna i Hercegovina, Trebinje, Grab, Zubačko polje, Jama Bravenik, -120 m, 19.7.2018, J.Brestovanský" (CJB); 1 female, the same locality but 3.7.2019, D.Čáha (CDCa); 1 male, the same locality but 21.7.2022, D.Čáha (CDCa);

Seracamaurops (*Seracamaurops*) *nonveilleri*: Pavićević, Hlaváč & Lakota, 2008: holotype male labelled: "Bosna i Hercegovina, Republika Srpska, Kobilja Glava, Pećina Veliko Djatlo, 1100 m, 14.09.2003, leg. S. Ognjenović" (CDP); paratype female, the same locality but 21.06.2003,. leg. S. Ognjenović (CDP); 6 males, 10 females, the same locality but 11.4.2022, individually, J. Brestovanský, D.Čáha & R. Lohaj lgt." (CDCa, CJB, CRL);

Seracamaurops (*Seracamaurops*) *novaki* Svirčev, 1936: holotype male labelled: "Hercegovina, Bjelašica pl., "Dvogrla", (1300), 20.07.1930, Svirčev" (CDP);

Seracamaurops (*Seracamaurops*) *ognjenovici* Pavićević, Hlaváč & Lakota, 2008: holotype male and paratype female labelled: "Crna Gora, Bijele Rudine, Podbožur, Bajov Do, Brankova jama, 14.09.2003., leg. S. Ognjenović (CDP); paratype male labelled: "Montenegro, Podbožur, Lipovac, Manja pećina, traps 03. – 07.06.2004, Čeplík, Lakota, Lohaj" (CRL);

Seracamaurops (*Seracamaurops*) *perovici* Pavićević, Njunjić & Plećas, 2014: holotype male labelled: "Montenegro, Somina Mt., Donje Čaradje, cave Prljača pećina, 1150 m, 08.08.2010, leg. M. Plećaš (CDP); paratype female labelled: "Montenegro, Somina Mt., Donje Čaradje, cave Prljača pećina, 1150 m, 8.08.2010, leg. M. Plećaš (CDP); paratype female labelled: "Montenegro, Jasikovica, 1000 m, cave Vodena pećina, 11.08.2010, leg. M. Plećaš" (CDP);

Seracamaurops (*Seracamaurops*) *popovici* Pavićević, Hlaváč & Lakota, 2008: holotype male and paratype female labelled: "Bosna i Hercegovina, Republika Srpska, Dabarsko Polje, pećina Golubinka, 500 m, 18.09.2006, leg. S. Ognjenović" (CDP); 1 male, 3 females labelled "Miloboda pećina, BiH Jugovići, 2.VI.2019, Ollivier & Quéinnec lgt." (CRL);

Seracamaurops (*Seracamaurops*) *weiratheri* Reitter, 1913: Holotype male labelled: "Herzegowina Reitter" (white label, printed) / "*Troglamaurops Weiratheri* m Type" (white label, handwritten) / "coll Reitter" (white label, printed) / "Monotypus 1913 *Troglamaurops Weiratheri* Reitter (white label with red boundaries, printed/handwritten), "*Seracamaurops weiratheri* Rtt. Cl. Besuchet dét. VI. 1986" (white label, handwritten, printed) (HNHM).

SYSTEMATIC PART

Genus ***Seracamaurops*** Winkler

Amaurops subg. *Seracamaurops* Winkler, 1925: 147. Type species: *Amaurops* (*Seracamaurops*) *frieseni* Winkler

Amaurops subg. *Seracamaurops* Winkler: Müller, 1926: 17; Székessy, 1943: 163 (distribution of the genus, catalogue of species); Müller, 1944: 97. (key to species)

Troglamaurops subg. *Seracamaurops* Winkler: Karaman, 1961: 151 (*Seracamaurops* as a subgenus of *Troglamaurops,* new combination); Jeannel, 1948: 13. (key to species)

Seracamaurops Winkler: Besuchet, 1986: 459 (key to species), Pavićević, Hlaváč & Lakota, 2008 (4 new species, catalogue + map of distribution)

Seracamaurops subg. *Cordiamaurops* Nonveiller & Pavićević, 2008: 251. Type species: *Seracamaurops perreaui* Nonveiller & Pavićević, 2007

Seracamaurops subg. *Amaurolecus* Nonveiller & Pavićević 2008: 260. Type species: *Seracamaurops komarovi* Hlaváč, Kodada & Koval, 1999: 242.

Key for the identification of subgenera of the genus *Seracamaurops* Winkler

1 (2) Pronotum with medial furrow reaching middle of pronotum, flanked with pair of spines, male mesotibia with tooth ..... sg. *Amaurolecus* Nonveiller & Pavićević, 2008

2 (1) Pronotum without medial furrow and spines, male mesotibia without tooth.

3 (4) Base of first visible tergite normal, with distinct lateral margin .... *Seracamaurops* s. str. Winkler, 1925

4 (3) Base of first visible tergite strongly constricted, covered with dense, yellow setae .... sg. *Cordiamaurops* Nonveiller & Pavićević, 2008

***Seracamaurops* (*Seracamaurops*) *delici* sp. nov.**

(Figs 1 and 2)

Type series

Holotype male labelled: "MONTENEGRO, Podgorica, Korita vill. near Orahovo, Kučke planine Mts., Opasna jama pit, 1355 m a.s.l.,. 30.6.2019, T.Delić lgt." (white label, printed) / "HOLOTYPE *Seracamaurops delici* sp. nov. Lohaj, Pavićević & Lakota, des. 2023" (red label, printed) (SUBBIOLAB).

Paratypes (2 males, 9 females): 1 female, the same data as Holotype; 6 females: the same data as Holotype, but 28.4.2018, Borko, Delić, Premate, Zagmajster lgt., DNA extraction XA588, XA589, XA590, XA591, XA592, XA593" (white labels, printed) / "DNA PROJECT AMAUROPINI: 2021-2023 P.Hlaváč & T.Delić" (blue labels, printed) /; 1

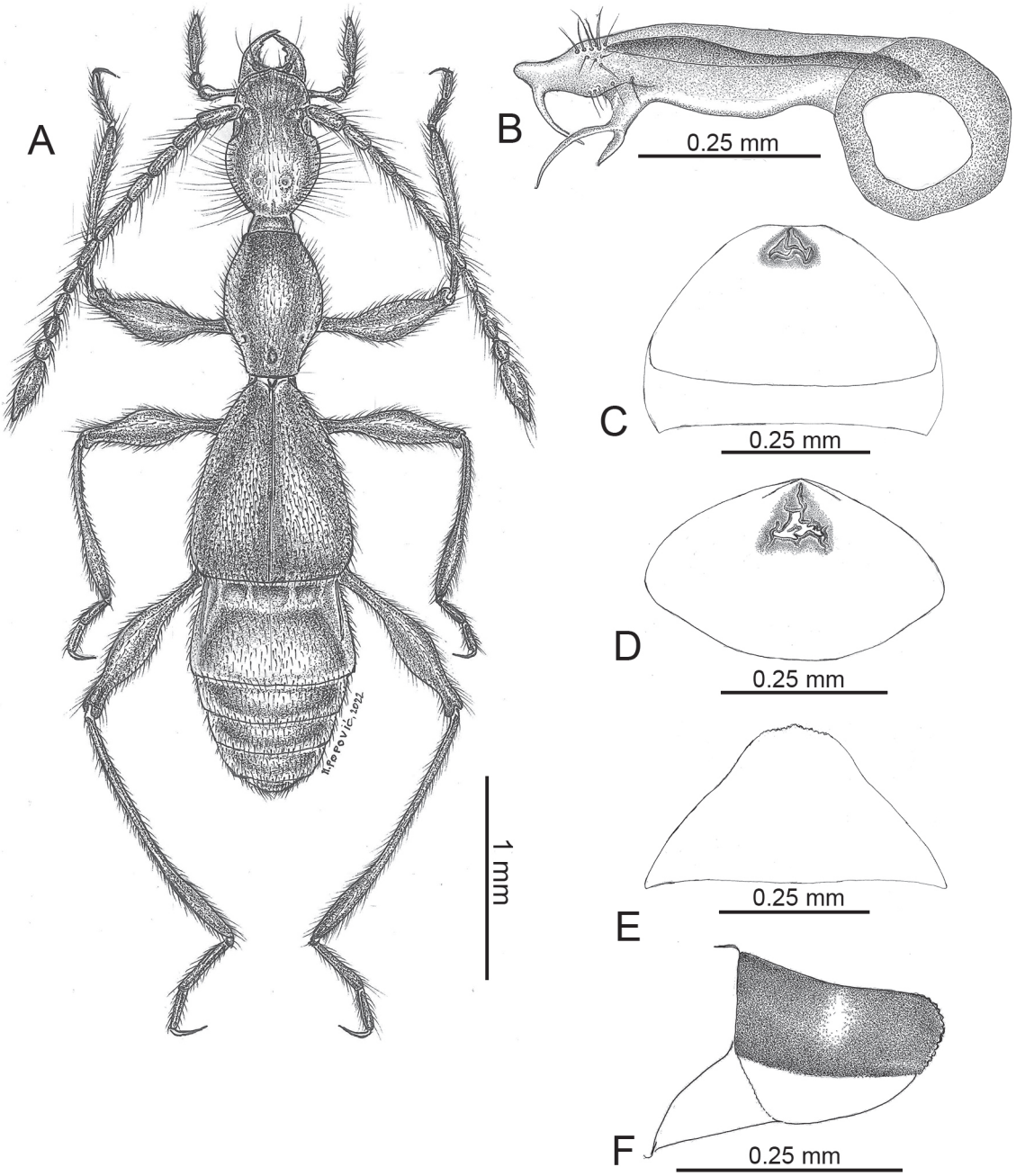

Fig. 1. *Seracamaurops* (*Seracamaurops*) *delici* sp. nov. **A**, habitus; **B**, aedeagus, ventral view; **C**, last tergite of male, ventral view; **D**, last tergite of female, ventral view; **E**, pygidium of female, dorsal view; **F**, pygidium of female, lateral view.

Fig. 2. *Seracamaurops* (*Seracamaurops*) *delici* sp. nov., Opasna jama pit, Kučke planine Mts. (Photo Teo Delić)

male, 1 female, the same data as Holotype but 15.6.2014, Borko & Pavićević lgt.; 1 male, 1 female labelled: MONTENEGRO, Podgorica, Kaženik, Poprat, Kučke planine Mts., C-95 pit, 28.6.2019, Naglić & Zagmajster lgt. DNA extraction XA582, XA583" / "DNA PROJECT AMAUROPINI: 2021-2023 P.Hlaváč & T.Delić" (blue label, printed) /. All paratypes are labelled with red printed labels "PARATYPE *Seracamaurops delici* sp. nov. Lohaj, Pavićević & Lakota, des. 2023" (SUBBIOLAB, NHMM, CDP, CPH, CRL).

Diagnosis

Large sized Pselaphinae beetle belonging to *Seracamaurops* s. str., depigmented, reddish – yellow, eyeless, with very long and slender legs and antennae, whole body covered with long and dense pubescence. It can be easily distinguished from all other known representatives of the genus by the shape of the aedeagus; by the different structures of the last tergite fissures in both sexes, as well as by the shape of pygidial protuberance in females.

Description of holotype

Body (Fig. 1A) shiny, reddish-brown, smooth, covered with long errected setae; TL 3.8 mm. Head longer than wide, HL 0.65 mm, HW 0.49 mm, distinctly narrower than pronotum. Frontal lobe transverse with widely rounded anterior margin, lancet shaped; eyes completely atrophied without indication of ocular carinae. Genae rounded and narrowed posteriorly, with long and erected setae. Frons with two depressions between antennal tubercles, vertexal foveae well-defined, deep. Maxillary palpi small, palpomere 3 blade shaped, 0.35 mm long / 0.08 mm wide, as long as I –II together.

Antennae relatively short, distinctly shorter then body, AL 1.95 mm. All antennomeres elongate, scape 0.19 mm long / 0.11 mm wide, subcylindrical, slightly curved, pedicel 0.14 mm long / 0.07 mm wide, slightly expanded apically. Length of antennomeres in mm (from III to XI): 0.14 / 0.14 / 0.18 / 0.14 / 0.14 / 0.11 / 0.14 / 0.14 / 0.36. Antennomeres III – X almost equally wide, ca 0.07 mm, antennomere XI 0.11 mm wide.

Pronotum slightly longer than wide, PL 0.69 mm, PW 0.56 mm, barell-shaped, widest behind the middle, shorter than head, median foveae shallow and elongate, lateral foveae well defined, deep.

Elytra distinctly longer than wide, EL 0.95 mm, EW 0.77 mm.

Abdomen almost as wide as elytra, first visible tergit transverse (0.55 mm long / 0.80 mm wide).

External stria diffuse with a tergal margin, internal stria

very short, distance between them about 0.20 mm, with basal shallow depression.

Legs long and slender, mesofemura club-shaped.

Adeagus 0.68 mm long (Fig. 1B).

Variability: TL 3.2 – 4.0 mm.

Sexual dimorphism: In males, the last abdominal tergit with small transverse, oval shaped fissure (Fig. 1C), in females, fissure of the last tergite is triangle shaped (Fig. 1D), pygidium is produced into an obtuse protuberance, rectangle at apex, shallowly incised (Fig. 1E- F).

Etymology

Patronymic, dedicated to Teo Delić (Ljubljana, Slovenia), dear friend of the senior author (RL), speleologist and speleobiologist, specialist on the subterranean Crustacea and one of the discoverers of this new species.

Topographic location and ecology

Mountain range Kučke planine (often intermixed also with Žijovo or Žijevo), with its highest peak Surdup (2184 m a.s.l.), is situated northeast of the Montenegrian capital Podgorica and Skadar Lake, at the border with Albania. Except for caves situated in the so-called Zatrijebački katun, which were speleobiologically explored in the first half of the 20th century, little was known about the area. This has largely changed since the beginning of the year 2000. Several speleological expeditions, organized by clubs from Montenegro, Poland, and the USA, were executed in the wider areas of Kučke planine, Žijovo and Zatrijebački katun.

Both caves where the new species were found were largely shaped by glacial outflows, which reshaped the wider area of Kučka korita plateau. Opasna jama (meaning Dangerous pit) situated in the highly fissured limestones, has two large entrances, the larger opening is at an altitude of 1370 m a.s.l. (Fig. 3). The channels, leading from the two entrances, cross in a large gallery with the bottom at approximate depth of 120 m. The ledge, approximately 15 m above the bottom of the gallery, leads to a meander, and continues into the "main" channel through a series of pitches. At an approximate depth of 200 m the main channel splits into two parallel shafts, which again intersect at the largest pit in the object, more than 100 m deep shaft, with the bottom at an approximate depth of 460 m. Recent exploration, led by Montenegrin speleologist Miloš Pavićević, revealed that the cave, through a similar series of pits, is more than 650 m deep. C-95 pit (1374 m a.s.l.), which is situated at the ridge of Kaženik, is similar to Opasna jama but has three entrances (Fig. 4A-B). Due to their size, use of the smaller two was abandoned, and the third was used for cave exploration. All three entrances lead to a central channel, situated below the 30 m deep main entrance pit. The central channel splits into two channels leading westwards and northwards. The westward channel is smaller in dimensions, characterized by a meander, intercepted by squeezes, and finishes with a small sump. The northward directed channel is larger in dimensions and intersected with several local faults, which introduce dynamics into the cave by forming pits that need to be traversed. The exploration of C-95 pit is still ongoing and led by a joint team of USA and Slovenian cavers. At the moment, the pit is approximately 267 m deep and 1070 m long.

All of the specimens were found in the deeper portions of the object. Most of the specimens were found on vertical walls coated with a microbiologically altered surface, visually similar to cave moonmilk.

Associated fauna of Coleoptera: *Neotrechus suturalis* (Schaufuss, 1864) (Carabidae, Trechini), *Anthroherpon taxi* (Müller, 1913) (Leiodidae: Leptodirini).

Distribution

So far known only from two pits, Opasna jama and C-95, situated on Kučke planine Mts., southeastern Montenegro.

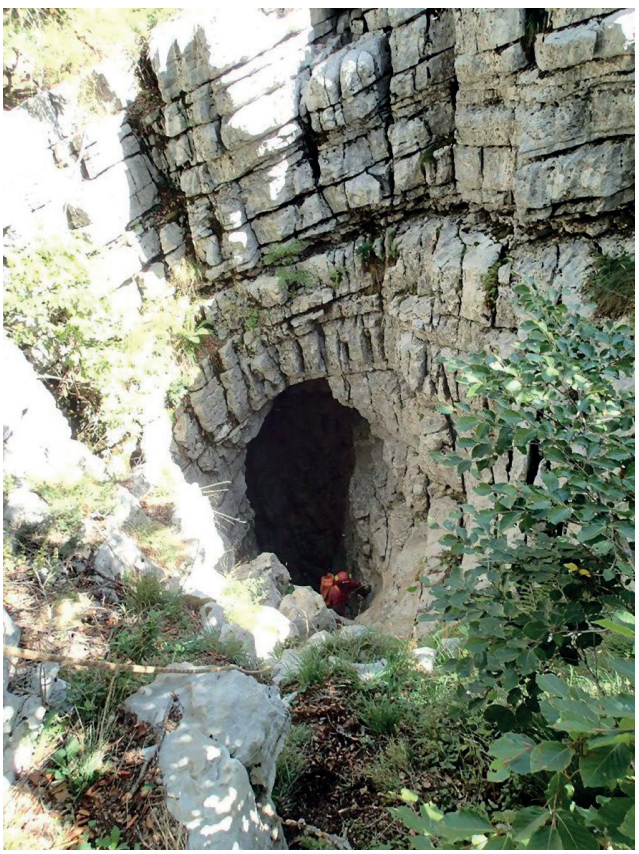

Fig. 3. Opasna jama pit, Kučke planine. (Photo Miloš Pavićević)

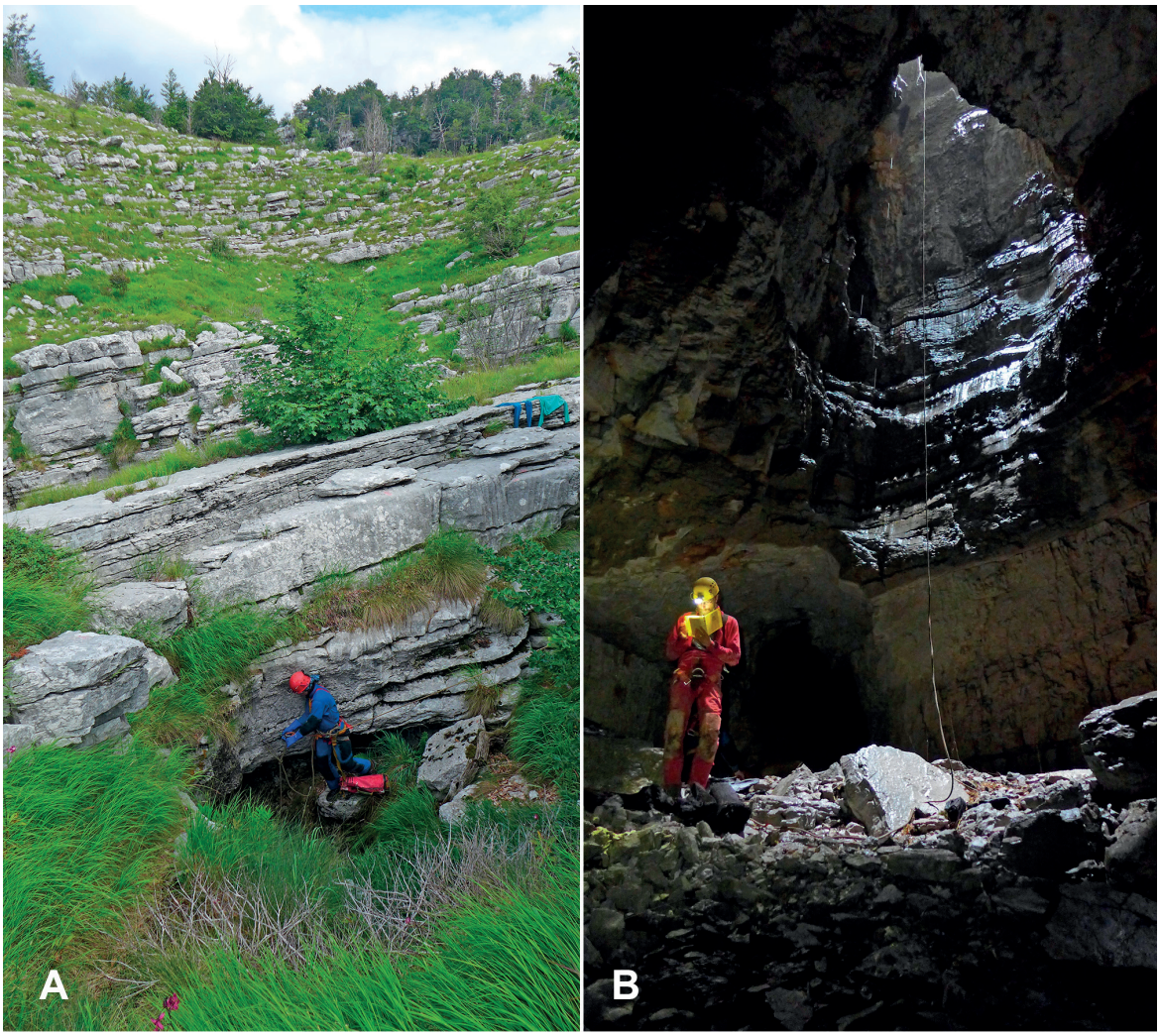

Fig. 4. C-95 pit, Kučke planine. **A**, entrance; **B**, entrance part of the pit. (Photo Mike Ficco)

***Seracamaurops (Seracamaurops) rumijaensis* sp. nov.**

(Fig. 5)

Type series

Holotype male labelled: "MONTENEGRO, Virpazar, Rumija Mts., Rumija hill, 1100 m a.s.l., Ice Virgin Pit (Ledová panna), - 50 m, 02.08.2005, R. Mlejnek lgt." (white label, printed) / "HOLOTYPE *Seracamaurops rumijaensis* sp. nov. Lohaj, Pavićević & Lakota, des. 2023" (red label, printed) (CJL).

Paratypes (2 males, 7 females): 2 males, 6 females, the same data as Holotype, 1 female labelled: "MONTENEGRO, Virpazar, Rumija Mts., Rumija hill, 1100 m a.s.l., Phoenix pit, - 50 m, 06.08.2005, R. Mlejnek lgt.". All paratypes are labelled with white, printed locality labels and with red printed labels "PARATYPE *Seracamaurops rumijaensis* sp. nov. Lohaj, Pavićević & Lakota, des. 2023" (NHMM, CDP, CJL, CRL).

Diagnosis

Large size Pselaphinae beetle belonging to *Seracamaurops* s. str., depigmented, reddish–yellow, eyeless, body strongly flattened dorso-ventrally, with very long and slender legs and antennae, whole body covered with long and dense pubescence. It can be easily distinguished from all other known representatives of the genus by the angular incision on the male mesofemura situated near the base (Fig. 5A), by the shape of the aedeagus; by the different structures of the last tergite fissures in both sexes, as well as by the shape of pygidial protuberance in females.

Description of holotype

Body (Fig. 5A) shiny, reddish-brown, smooth, covered with long erected setae; TL 3.5 mm. Head longer than wide, HL 0.80 mm, HW 0.48 mm, distinctly narrower than

pronotum. Frontal lobe transverse with widely rounded anterior margin, lancet shaped; eyes completely atrophied without indication of ocular carinae. Genae rounded and narrowed posteriorly, with long and erected setae. Frons with two depressions between antennal tubercles, vertexal foveae well defined, deep. Maxillary palpi small, palpomere 3 blade shaped, 0.32 mm long / 0.08 mm wide, as long as 1 – 2 together.

Antennae relatively short, distinctly shorter then body, AL 1.95 mm. All antennomeres elongate, scape 0.20 mm long / 0.10 mm wide, subcylindrical, slightly curved, pedicel 0.13 mm long / 0.04 mm wide, slightly expanded apically. Length of antennomeres in mm (from III to XI): 0.13 / 0.13 / 0.19 / 0.13 / 0.17 / 0.12 / 0.14 / 0.16 / 0.34. Antennomeres III – X almost equally wide, ca 0.04 mm, antennomere XI 0.10 mm wide.

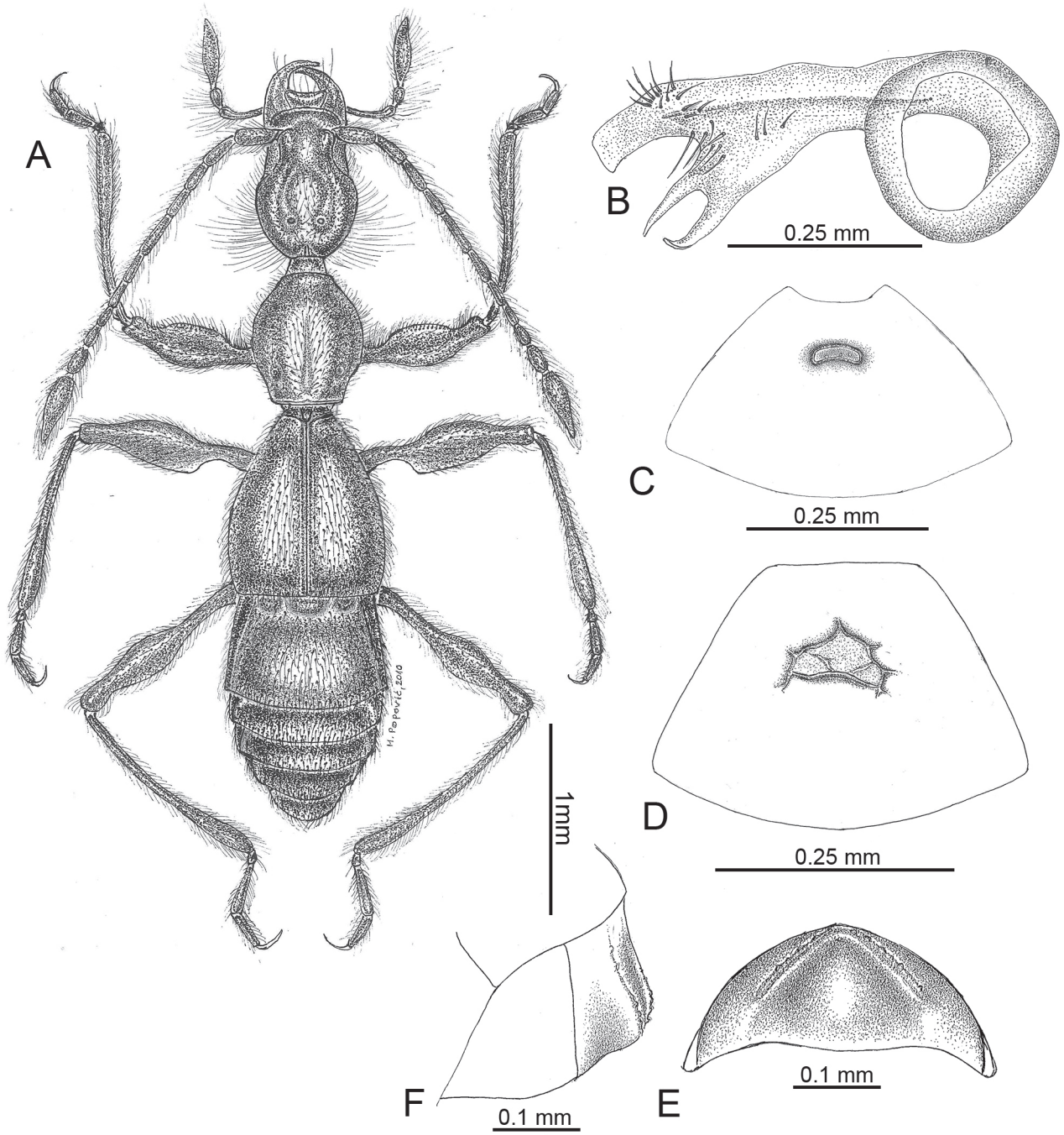

Fig. 5. *Seracamaurops* (*Seracamaurops*) *rumijaensis* sp. nov. **A**, habitus; **B**, aedeagus, ventral view; **C**, last tergite of male, ventral view; **D**, last tergite of female, ventral view; **E**, pygidium of female, dorsal view; **F**, pygidium of female, lateral view.

Pronotum slightly longer than wide, PL 0.62 mm, PW 0.53 mm, barell-shaped, widest behind the middle, shorter than head, median foveae shallow and elongate, lateral foveae well-defined, deep.

Elytra distinctly longer than wide, EL 0.92 mm, EW 0.80 mm.

Abdomen almost as wide as elytra, first visible tergit transverse (0.53 mm long / 0.82 mm wide).

External stria diffuse with a tergal margin, internal stria very short, distance between them about 0.28 mm, with shallow depression.

Legs long and slender. In males, mesofemuri are angularly incised near the base (Fig. 5A).

Adeagus 0.60 mm long (Fig. 5B).

Variability: TL 3.2 – 3.7 mm.

Sexual dimorphism: In males, the last abdominal tergit with small transverse, oval shaped fissure (Fig. 5C), in females, fissure of the last tergite is triangular-shaped (Fig. 5D), pygidium is produced into an obtuse protuberance, apicaly rectangularly incised (Fig. 5E-F).

Etymology

Topotypic, referring to the type locality, Rumija mountain range in southern Montenegro.

Topographic location and ecology

The Mountain range Rumija, with its highest peak Rumija, 1594 m a.s.l., is situated between Skadar Lake and the Adriatic sea, and is the southern most Montenegrin mountain range. Up until the 21st century, Rumija was speleologically almost unexplored. Research executed during 2005 and 2006 by the members of Czech Speleological Society (Roman Mlejnek and Petr Zajíček) was focused on the surroundings of the peak Rumija and the saddle Bijela Skala (903 m a.s.l.), resulting in the discovery and exploration of six caves. Two of them have delivered a new species of *Seracamaurops*.

The Ice Virgin pit (Fig. 6A): has two entrances, situated at ca 1100 m a.s.l. The larger one, measuring 18 × 8 m, leads into a 32 m deep chasm, called the Ice Cauldron, the bottom of which was completely filled by snow on 19/05/2005.

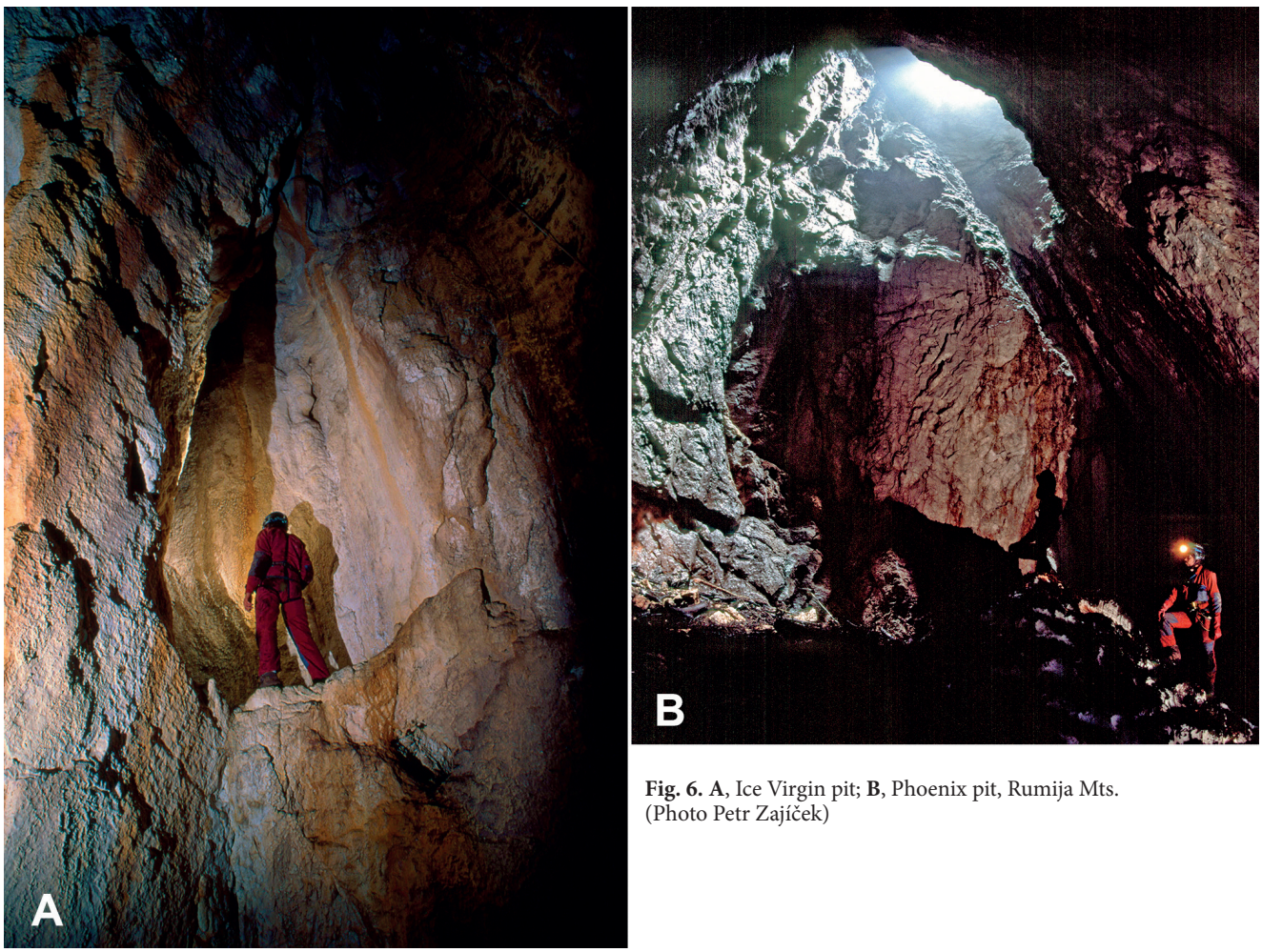

Fig. 6. A, Ice Virgin pit; **B**, Phoenix pit, Rumija Mts. (Photo Petr Zajíček)

The second entrance (2 × 3 m) goes into a 80 m deep shaft that descends through smaller steps. The bottom of the pit is covered with sinter. The holotype and eight paratypes were found at an approximate depth of 50 m, on the bottom side of large stones.

Phoenix pit (Fig. 6B): the entrance of the pit, ca 1100 m a.s.l., is situated in a large (ca 400 × 400 m) slope sinkhole field near the peak Rumija. The entrance part of the pit is formed out of a 15 meters deep depression, and continues into an widening shaft, which ends in a large hall (ca 12 × 13 m) at a depth of 70 m. The total depth of the pit is 78 meters. During visits in May and August, almost the whole bottom of the hall was filled with snow and ice. Air temperature at the bottom was about 2 °C. The single paratype specimen was found at a depth of ca 50 meters, on the bottom side of a large stone.

Associated fauna of Coleoptera: *Adriaphaenops rumijaensis* Lohaj, Lakota, Queinnec, Pavićević & Ceplic, 2016, *Neotrechus suturalis* (Schaufuss, 1864) (Carabidae, Trechini), *Laemostenus (Antisphodrus) cavicola* (Schaum, 1858) (Carabidae, Sphodrini), *Anthroherpon matulici* (Reitter, 1903), *Anthroherpon taxi* (Müller, 1913) and *Blattochaeta peterhlavaci* D. Čeplík, Lakota & J. Čeplík, 2021 (Leiodidae, Leptodirini).

Distribution

So far known only from two pits, Phoenix and Ice Virgin, situated on Rumija Mt., south Montenegro.

DISCUSSION

Pselaphinae tribe Amauropini are represented by seven genera (*Amauropus* Reitter, 1918, *Paramaurops* Jeannel, 1948, *Protamaurops* Müller, 1944, *Pseudamaurops* Jeannel, 1948, *Seracamaurops* Winkler, 1924, *Troglamaurops* Ganglbauer, 1903 and *Zoufalia* Reitter, 1918) and ca 50 described species and subspecies (Hlaváč et al. 2008, 2017) in the Balkan Peninsula. Most genera are found in wet and humid habitats such as cave entrances, MSS, organic matter in sinkholes, near springs or roots of large trees, and under deeply inserted stones; while *Seracamaurops* and *Troglamaurops* inhabit subterranean habitats, i.e. caves and pits. Members of Amauropini are generally depigmented, with reduced or completely lacking eyes, characterized by elongated appendages and covered by dense pubescence.

Together with the herein described two new species, genus *Seracamaurops* currently comprises 17 species, divided into three subgenera: *Amaurolecus* Nonveiller & Pavićević, 2008 (single species), *Cordiamaurops* Nonveiller & Pavićević, 2008 (two species) and nominotypical *Seracamaurops* s. str. Winkler, 1925 (14 species). Subgenus *Amaurolecus* was established for a single species, *Seracamaurops* (*Amaurolecus*) *komarovi*, described from the western Caucasus Mts., Russia. This species exhibits habitus similar to the typical *Seracamaurops* or *Cordiamaurops*, but also possesses unique morphological characters, such as pronotum with medial furrow flanked with two spines and mesotibia with tooth (in males). Such differences could easily fulfill the taxonomic criteria for a separate genus. Another question is if the same genus of strictly subterranean beetles can inhabit such remote territories as the Caucasus and the Dinarides. Except for the widely distributed genus *Duvalius* Delarouzée, 1859 (Coleoptera, Carabidae, Trechini), no taxa of true subterranean Coleoptera common to the Caucasus and Dinarides are known. However, not all *Duvalius* species can be regarded as troglobionts. In addition to highly modified species living exclusively in caves and deep MSS, there are many less modified species inhabiting forests or high altitude habitats, found under deeply inserted stones, pieces of woods etc.

However, new data on subterranean fauna revealed some groups of presumably closely related organisms distributed over various geological formations and geographic regions, for example the subterranean harvestman genus *Nemaspela* Šilhavý, 1966 (Opiliones: Dyspnoi: Nemastomatidae). This genus comprises nine species from three geographically distant karstic regions: the Caucasus, the Crimea, and the Dinaric Karst (Karaman 2013; Kozel et al. 2020). Alternatively, similar external morphology could be a result of convergent evolution or morphological stasis, both of which are frequent in subterranean habitats. Therefore, the taxonomic position of *Amaurolecus* needs to be confirmed by comprehensive morphological or molecular analysis.

Generally, representatives of *Seracamaurops* s. str. share a similar external habitus with a characteristic shape of head and pronotum, as well as body covered with long and dense setation, especially on the head. They differ in the peculiar shape of male genitalia, by the shape of fissures on the last male and female tergites, as well as by the shape of female pygidium.

Molecular analysis: together 8 species – both known *Cordiamaurops* and 6 *Seracamaurops* s. str. were analyzed so far as a part of the project on molecular phylogeny of the tribe Amauropini (T. Delić & P. Hlaváč). Average distance in barcoding fragments of COI1 gene between species varies from 1.8% to 2.1% in *Cordiamaurops*, and from 4.1% to 4.6% in *Seracamaurops* s. str.

The findings of both new species extend the hitherto known area of occurrence of the genus towards the south and southeast (Fig. 7). Geographically, *Seracamaurops delici* sp. nov. is the eastern most species of the genus in the Balkans, and the only one known so far from the Prokletije region. Preliminary results, based on COI barcoding region, show that the new species is phylogenetically closest to the spe-

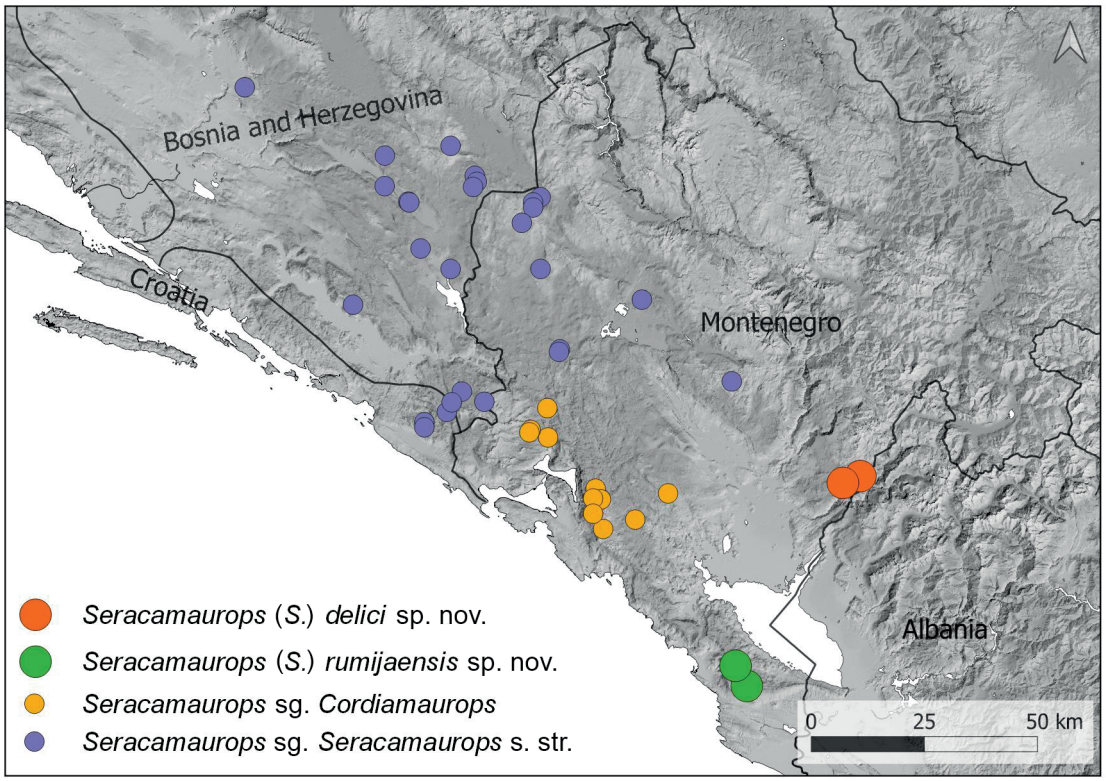

Fig. 7. Distribution map of the genus *Seracamaurops* Winkler.

cies from Northeast Herzegovina. However, these relations remain to be scrutinized using other molecular genes, as well as thorough morphological analyses (T. Delić, personal communication, data in prep.).

Annotated Catalogue of the genus *Seracamaurops* Winkler

Seracamaurops Winkler, 1925: 147, type species *Amaurops frieseni* Winkler, 1925.

Subgenus *Amaurolecus* Nonveiller & Pavićević, 2008: 260, type species *Seracamaurops komarovi* Hlaváč, Kodada & Koval, 1999.

1. komarovi Hlaváč, Kodada & Koval, 1999

Type locality: W Caucasus, Sochi, Alek Mt. R., Baribana cave.

Distribution: Russia, Sochi, Western Caucasus.

Subgenus *Cordiamaurops* Nonveiller & Pavićević, 2008: 251, type species: *Seracamaurops fritschi* Besuchet, 1986.

2. fritschi Besuchet, 1986: 451 (*Seracamaurops*)

Type locality: Yugoslavia, Monténegro: Bojanovica špilja (= Boljanovica pećina cave, Njeguši, Lovćen).

Other known localities: Lovćen Mts: Dobrota, Duboki do pit, Dvorupa jama pit, Rajćevići, Bezdan jama pit, unnamed small pit near Rajćevići; Zverinjačke Rupe pit, Pala Skala pit; Dragaljsko polje, Vodna jama pit; Cetinje, Štitari, Sokolska pećina cave; Cetinje, Cetinjska pećina cave.

Distribution: Montenegro, Lovćen, Cetinje.

3. perreaui Nonveiller & Pavićević, 2008: 252 (*Seracamaurops*)

Type locality: Bukavička pećina, pres du village Knezlaz, dans la région des Krivošije au Monténegro.

Other known localities: Orjen Mt., Crkvice, Križna jama pit, Ericova jama pit.

Distribution: Montenegro, Krivošije.

Subgenus *Seracamaurops* Winkler, 1925: 147, type species *Amaurops frieseni* Winkler, 1925.

4. cadmei Pavićević & Ozimec, 2014: 62 (*Seracamaurops*)

Type locality: Croatia, Konavle, Mt. Sniježnica, Jezero cave (Eskulapova špilja), 920 m.

Other known localities: Sniježnica Mts., Glogova jama pit.

Distribution: Croatia, Sniježnica.

5. delici sp. nov.

Type locality: Montenegro, Podgorica, Korita vill. near Orahovo, Kučke planine Mts., Opasna jama pit, 1355 m a.s.l.

Other known localities: Kučke planine Mts., C-95 pit.

Distribution: Montenegro, Kučke planine.

6. fodori (Székessy, 1943): 160 (*Amaurops* subg. *Seracamaurops*)

Type locality: Montenegro, ca. 600 m, Höhle des

zwischen Podgorica und Niksic ziehenden Gebirgszuges.

Other known localities: Banići, Riđanska pećina cave; Nikšić, Carev most, Lisac Mt., Velja peć cave.

Distribution: Montenegro, Nikšić, Podgorica.

7. frieseni (Winkler, 1925): 147 (*Amaurops*)

Type locality: in 35 m tiefen Schaft in Gebirgszuge nordwestlich von Trebinje; Tukalska Bjelina (Čavčina jama, nomen fictum Weirather, = Pećina u Mravinjac cave).

Other known localities: Dolovi env., Djavolja (Vragina) jama pit.

Distribution: Bosnia & Hercegovina, Bjelašnica planina north of Popovo polje.

8. grabowskii (Müller, 1926): 17. (*Amaurops*)

Type locality: Höhle "Borja III" in der Umgebung von Kalinowik in Süd-Bosnien (= Glavičina, = Borija, = Pećina kod Dobrih Voda cave).

Distribution: Bosnia & Hercegovina, Treskavica.

9. grandis (Winkler, 1925): 147. (*Amaurops*)

Type locality: in tiefen Schaft an westlichen Ausläufer des Orjen bei Grab.

Other localities: Orjen, Bukova rupa; Trebinje, unnamed pit near Konjsko.

Distribution: Bosnia & Hercegovina, Orjen.

10. mlejneki Pavićević, Hlaváč & Lakota, 2008: 272. (*Seracamaurops*)

Type locality: Bosnia i Hercegovina, Republika Srpska, pl. Orjen, Jama Bravenik.

Distribution: Bosnia and Hercegovina, Orjen.

11. nonveilleri Pavićević, Hlaváč & Lakota, 2008: 274 (*Seracamaurops*)

Type locality: Bosna i Hercegovina, Republika Srpska, Korita, Kobilja Glava, Pećina Veliko Djatlo.

Other known localities: Korita, Kobilja Glava, Golubinka jama pit; unnamed pit.

Distribution: Bosnia and Hercegovina, Korita.

12. novaki (Svirčev, 1936): 34. (*Amaurops* subg. *Seracamaurops*)

Type locality: Bjelašica planina Mt., Dvogrla jama pit, 1280 m, Vučja Bara region.

Distribution: Bosnia and Hercegovina, Gacko, Bjelašica planina Mt.

13. ognjenovici Pavićević, Hlaváč & Lakota, 2008: 276 (*Seracamaurops*)

Type locality: Crna Gora, Bijele Rudine, Podbožur, Bajov Do, Brankova jama pit.

Other known localities: Podbožur, pećina sa vodom na Troglavu kod Bajovog dola (Manja pećina sa vodom by Pretner).

Distribution: Montenegro, Bijele Rudine.

14. ***perovici*** Pavićević, Njunjić & Plećaš, 2013: 282 (*Seracamaurops*)

Type locality: NW Montenegro, Somina Mt., village Donje Čaradje, cave Prljača pećina, 1150 m.

Other known localities: Donje Čarađe, Ćurilo, Jama u Katunu pit, Jama pod Prijenkom pit (= Jama na Previji); Jasikovica, cave Lazareva pećina, cave Vodena pećina; Stozi, cave Stozi pećina (= Stoška pećina).

Distribution: Montenegro, Somina planina Mt.

15. popovici Pavićević, Hlaváč & Lakota, 2008: 270 (*Seracamaurops*)

Type locality: Bosna i Hercegovina, Republika Srpska, Dabarsko Polje, pećina Golubinka cave.

Other known localities: Fatnica, Fatničko polje, Lepirnica pećina cave; Jugovići, Miloboda pećina cave.

Distribution: Bosnia and Hercegovina, Dabarsko polje, Fatničko polje.

16. rumijaensis sp. nov.

Type locality: Montenegro, Virpazar, Rumija Mt., 1100 m a.s.l., Ice Virgin Pit (Ledová panna), - 50 m.

Other known localities: Rumija Mt., Phoenix pit.

Distribution: Montenegro, Rumija Mt.

17. weiratheri (Reitter, 1913): 157 (*Troglamaurops*)

Type locality: Herzegowina, Vodena pećina cave, nordwestlich von Bilek.

Other known localities: Bileća, Zvjerina, Granica, Zagradište jama pit.

Distribution: Bosnia and Hercegovina, Bileća.

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