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**DESCRIPTION OF THE NEW SUBSPECIES
ANOPHTHALMUS PRETNERI CEJI
(COLEOPTERA: CARABIDAE: TRECHINAE) FROM SLOVENIA**

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Abstract – The new subspecies *Anopthalmus pretneri ceji* ssp. n. is described from the cave Snežnica pod Korenom on Mt. Krvavec (Kamniško-Savinjske Alps, 1920 m a.s.l.) Some characteristics of the new taxon are compared with other subspecies of *A. pretneri*. Main diagnostic features of the new subspecies are: pore 1 in *series umbilicata* is above or at the level of pore 2, distinctly angulate elytral shoulders and long aedeagus.

KEY WORDS: *Anopthalmus pretneri ceji* ssp. n., new subspecies, speleobiology, N Slovenia

Izveček – OPIS NOVE PODVRSTE *ANOPHTHALMUS PRETNERI CEJI* (COLEOPTERA: CARABIDAE: TRECHINAE) IZ SLOVENIJE

Opisana je nova podvrsta *Anopthalmus pretneri ceji* ssp. n., ki je bila najdena v jami Snežnica pod Korenom na Krvavcu (Kamniško-Savinjske Alpe) na nadmorski višini 1920 m. Nekatere značilnosti novega taksona so primerjane z ostalimi podvrstami vrste *A. pretneri*. Glavne razlikovalne značilnosti nove podvrste so: pora 1 v *series umbilicata* je nad ali v nivoju pore 2, ramena pokrovk so izrazito robata, penis je dolg.

KLJUČNE BESEDE: *Anopthalmus pretneri ceji* ssp. n., nova podvrsta, speleobiologija, S Slovenija.

Introduction

Daffner (1996) has divided the genus *Anophthalmus* Sturm, 1844 with about 110 described taxa into two major groups. The first group contains more troglophilic and subterranean species, and the second group more troglobiontic species. According to Daffner (1996) there are some characteristics for the second group: ectoskeleton without pigment, long body is thick pubescent in upper parts, elytral pubescences are twice as long as there is space between pubescences. Taxonomic position of species within genus *Anophthalmus* was performed in a complete revision of the second group (Daffner 1996) and in partial revision of the first group (Daffner 1998).

The second group has been further divided into 5 groups (Daffner 1996): *A. micklitzi*-group, *A. ajdovskanus*-group, *A. mayeri*-group, *A. hirtus*-group and *A. temporalis*-group that are also zoogeographically separated.

The *A. ajdovskanus*-group, which includes the taxa described below, inhabits the south-east Alps: Kamniško-Savinjske Alps, Karavanke, Julian Alps, Karnian Alps and Prealpic Furlania. Exceptions are disjunctions in east Slovenia (Gorjanci, Sevnica near river Sava) and Trnovski Gozd (Dinaric Karst). Species from this group live at higher altitudes (up to 2500 m a.s.l.) in alpine regions (Daffner 1996). Daffner (1996) classified 8 species in this group: *A. fabbri* Müller, *A. ravasinii* (Müller), *A. ajdovskanus* (Ganglbauer), *A. haraldianus* Daffner, *A. manhartensis* Meschnigg, *A. pretneri* (Müller), *A. charon* Meggiolaro and *A. nivalis* (Müller). *A. seppenhoferi* Bognolo probably also belongs to this group (Bognolo 1997).

We describe the most southern known population of the species *Anophthalmus pretneri* s. lat. (Müller) as a new subspecies *Anophthalmus pretneri ceji*.

Anophthalmus pretneri ceji ssp. n.

Type material:

Holotype: male; Slovenija, Mt. Krvavec, cave Snežnica pod Korenom, 1900 m a.s.l.; 15.6.1996; leg. D. Cej (coll. Pretner & Drovenik, Biološki inštitut Jovana Hadžija).

Paratypes: the same locality as holotype: 2 males, 16.6.1996, leg. D. Cej; 3 males, 4.10.1997, leg. D. Cej; 1 female, 14.10.1995, leg. D. Cej; 4 females, 4.10.1997, leg. D. Cej (coll. Vrezec, coll. Pretner & Drovenik).

Description:

Unicolorous yellowish brown, males are semilustrous and females are not or only the head feebly shines; body surface with short and thin pubescence (Fig. 1). Biometric data for 7 males and 5 females are shown in Table 1.

Head relatively large with totally reduced eyes. Width – length ratio (measured from anterior margin of clypeus to posterior margin of tempora) is 0.75 – 0.85 (aver. 0.78) in males (holotype 0.81); 0.68 – 0.91 (aver. 0.78) in females. Width of head – width of pronotum ratio is 0.84 – 0.91 (aver. 0.86) in males (holotype 0.91); 0.85 –

0.91 (aver. 0.88) in females. Margins and tips of mandibles dark. Frontal torus extends to the last third of the head, in females more distinct than in males. Tempora indistinctly rounded, orbitae rounded, each orbita with 2 setiferous pores. Antennae rather long and extend to the last fourth of the body. Length of elytra : length of antennae ratio is 0.78 – 0.81 (aver. 0.79) in males (holotype 0.79); 0.79 – 0.84 (aver. 0.82) in females. Average lengths of individual antennal segments (in mm): 0.37 – 0.22 – 0.45 – 0.46 – 0.48 – 0.47 – 0.44 – 0.40 – 0.39 – 0.34 – 0.44 in males (n = 7); 0.37 – 0.25 – 0.49 – 0.49 – 0.50 – 0.48 – 0.45 – 0.40 – 0.40 – 0.37 – 0.44 in females (n = 5).

Pronotum (Fig. 2) relatively small, almost as long as wide. Width : length ratio is 1.02 – 1.16 (aver. 1.10) in males (holotype 1.02); 1.07 – 1.10 (aver. 1.08) in females. Lateral pronotal margins arcuate, moderately narrowed towards the base and slightly concave in the last third of pronotum. Basal margin of pronotum slightly incurved in the middle. Posterior corners short, projecting laterally, and give an impression of small teeth because of the small indent between posterior corner and basal margin of pronotum, more distinctive in males. Pronotum with short and thin whitish pubescence.

Elytra relatively long and flat; length : width ratio is 1.78 – 1.96 (aver. 1.86) in males (holotype 1.96); 1.71 – 1.91 (aver. 1.83) in females. Width of elytra : width of pronotum ratio is 1.59 – 11.71 (aver. 1.64) in males (holotype 1.63); 1.60 – 1.80 (aver. 1.66) in females. Humeral region oblique, elytral shoulders distinctively angulate, lateral margins slightly depressed between the level of posthumeral pores 3 and 4 (visible in most of specimens; in holotype there is only slight depression). Tip of elytron regularly rounded. Pore 1 in series umbilicata above or at the level of pore 2 (in holotype is above pore 2). Distances between pores 2 to 3 and 3 to 4 are approximately equal, although can be variable (in holotype the distance between pores 2 to 3 is longer than between pores 3 to 4). Inner striae 1 to 3 deeply impressed, but stria 1 less than 2 and 3. Stria 4 visible, but less distinct than striae 1 to 3; striae 5 and 6 indistinct. Stria 3 with 4 setiferous pores. Elytra with thin pubescence.

Legs long and slender, with dense pubescence, same colour as the body. Length of elytron : length of metatarsus ratio is 2.17 – 2.45 (aver. 2.29) in males (holotype 2.45); 2.06 – 2.74 (aver. 2.44) in females.

Aedeagus (Fig. 3, 4) 1.90–2.13 mm (aver. 2.02 mm, SD=0.17 mm, n=6) long, holotype 2.08 mm, S-shaped; length of elytron : length of aedeagus ratio = 1.58–1.65 (aver. 1.61), holotype 1.58. Xiphoid long and gently asymmetrically right curved (dorsal view). Parameres subtriangular and usually with 4 setae.

Derivatio nominis:

The new subspecies is named after my friend and enthusiastic cave-explorer Danilo Cej, who collected all the specimens.

Locus typicus and habitat:

North Slovenia, Kamniško-Savinjske Alps, Mt. Krvavec, cave Snežnica pod Korenom, 1920 m a.s.l.

The high-alpine cave or abyss; 41 meters deep, the bottom is covered with stones. It lies in a small high-alpine valley covered with *Pinetum mugii*. Snow may occur through the whole year in some parts of the valley (Stare unpubl.). All specimens were collected by means of pitfall traps.

Differential diagnosis:

The new taxon, *Anopthalmus pretneri ceji* ssp. n., belongs to the *A. ajdovskanus*-group by its external habitus and by the shape and length of aedeagus, especially xiphoid which is long and gently asymmetrically right curved (dorsal view). Long aedeagus and xiphoid are characteristic for the species *Anopthalmus pretneri* (Müller), which has been separated from *A. ajdovskanus* (Ganglbauer) by Daffner (1996). New subspecies differs from the nominotypical *A. p. pretneri* (Müller) by pore 1 in series umbilicata, which is above or at the level of pore 2 (in *A. p. pretneri* is below that level). Pronotum of *A. p. pretneri* is very similar to that of *A. p. ceji* ssp. n. Subspecies *A. p. mixanigi* (Daffner) has similar position of pore 1 in series umbilicata as *A. p. pretneri*, but it differs from the new taxon also by the shape of pronotum. In *A. p. mixanigi* pronotum is heart-shaped with characteristic pointed posterior corners (Daffner 1985, 1996). Subspecies *A. p. mixanigi* and *A. p. fodinae* (Mandl) have larger bowshaped head than *A. p. ceji* ssp. n. Biometrical data of *A. p. fodinae* are very similar to *A. p. ceji* ssp. n. (*A. p. fodinae*, body length 5.5-6.6 mm, aedeagus length 1.87-2.04 mm; after Daffner 1996). *A. p. fodinae* also differs from *A. p. ceji* ssp. n. by the shape of pronotum, which is conspicuously narrowed towards the base. The most similar subspecies to *A. p. ceji* ssp. n. is *A. p. naraglavi* (Mlejnek & Moravec), which is geographically the nearest (Kamniško-Savinjske Alps – Raduha, Velika Planina, Podvolovljek, Zeleniške špice, Kalce) (Mlejnek & Moravec 1995, Daffner 1996). Pronotum of *A. p. naraglavi* (*A. p. savinjscensis* Daffner is supposed to be a synonym of *A. p. naraglavi*) is very similar to the pronotum of *A. p. ceji* ssp. n. Lateral margins of pronotum of *A. p. ceji* ssp. n. are slightly less concave. *A. p. ceji* ssp. n. is larger than *A. p. naraglavi* (Table 2). Females of *A. p. ceji* ssp. n. are distinctly larger than males. That is less noticeable in *A. p. naraglavi* (Table 2). The new taxon, *A. p. ceji* ssp. n., has distinctly angulate elytral shoulders evidently differing from all other subspecies of *A. pretneri*.

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Table 1: Biometric data for 7 males and 5 females of *Anophthalmus pretneri ceji* ssp. n. from the cave Snežnica pod Korenom on Mt. Krvavec (MIN – minimum, MAX – maximum, AV – average, SD – standard deviation, HOL – holotype).

in mm	MALES (n=7)					FEMALES (n=5)			
	MIN	MAX	AV	SD	HOL	MIN	MAX	AV	SD
LENGTH	5.52	5.88	5.73	0.12	5.81	5.69	6.65	6.26	0.33
ANTENNAE LENGTH	4.00	4.40	4.24	0.14	4.35	3.95	4.50	4.33	0.20
HEAD (length)	1.17	1.25	1.21	0.02	1.20	1.07	1.50	1.34	0.14
HEAD (width)	0.90	1.00	0.95	0.03	0.97	0.97	1.07	1.03	0.03
PRONOTUM (length)	0.95	1.07	1.00	0.11	1.05	0.97	1.12	1.08	0.06
PRONOTUM (width)	1.05	1.17	1.1	0.04	1.07	1.07	1.22	1.17	0.05
PRONOTUM BASE (width)	0.67	0.77	0.71	0.03	0.72	0.67	0.77	0.75	0.04
ELYTRA (length)	3.15	3.47	3.35	0.11	3.42	3.22	3.70	3.55	0.17
ELYTRA (width)	1.75	1.90	1.80	0.05	1.75	1.72	2.07	1.94	0.12
ELYTRAL SHOULDER (width)	1.45	1.55	1.50	0.03	1.47	1.42	1.75	1.62	0.11
TIBIA	1.62	1.87	1.75	0.08	1.70	1.70	2.02	1.91	0.12

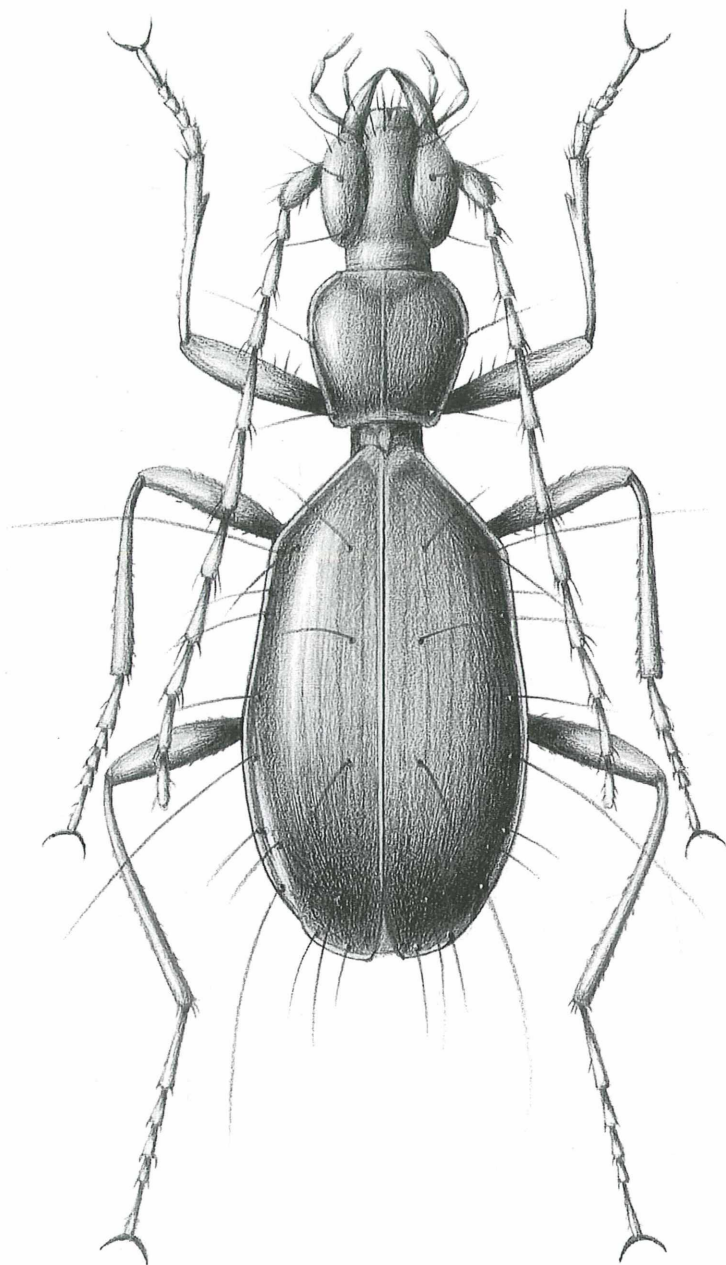


Fig. 1: *Anophthalmus pretneri ceji* ssp. n., male, holotype.

Table 2: Differences in some biometrical data between *Anophthalmus pretneri ceji* ssp. n. and *A. p. naraglavi* (measured on holotype and paratypes of *A. p. savinjscensis* from the collection Pretner & Drovenik, Biol. inšt. Jovana Hadžija, Ljubljana)

in mm	<i>A. p. ceji</i>					<i>A. p. naraglavi</i> (<i>A. p. savinjscensis</i>)				
	MIN	MAX	AV	SD	N	MIN	MAX	AV	SD	N
LENGTH OF MALES	5.52	5.88	5.73	0.12	7	5.04	6.17	5.57	0.28	16
LENGTH OF FEMALES	5.69	6.65	6.26	0.33	5	5.69	6.41	5.87	0.31	4
LENGTH OF AEDEAGUS	1.90	2.13	2.02	0.17	6	1.85	1.90	1.88	0.02	4

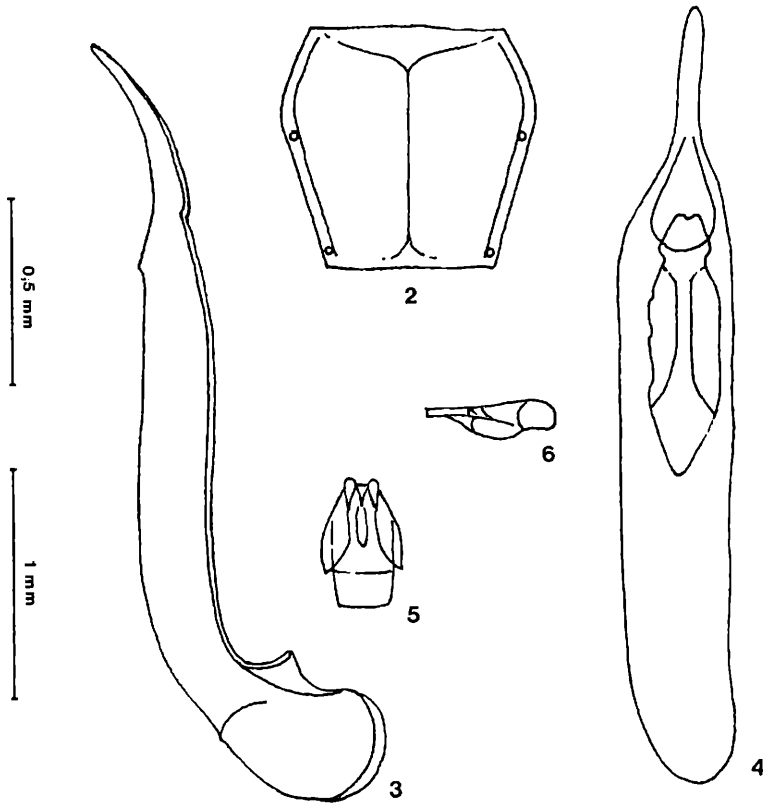


Fig. 2-6: *Anophthalmus pretneri ceji* ssp. n., holotype: 2 – pronotum, dorsally; 3 aedeagus, laterally; 4 – aedeagus, dorsally; 5 – copulatory piece, dorsally; 6 – copulatory piece, laterally. Scale bars: 1 mm = Fig. 2; 0.5 mm = Figs 3, 4, 5 & 6.

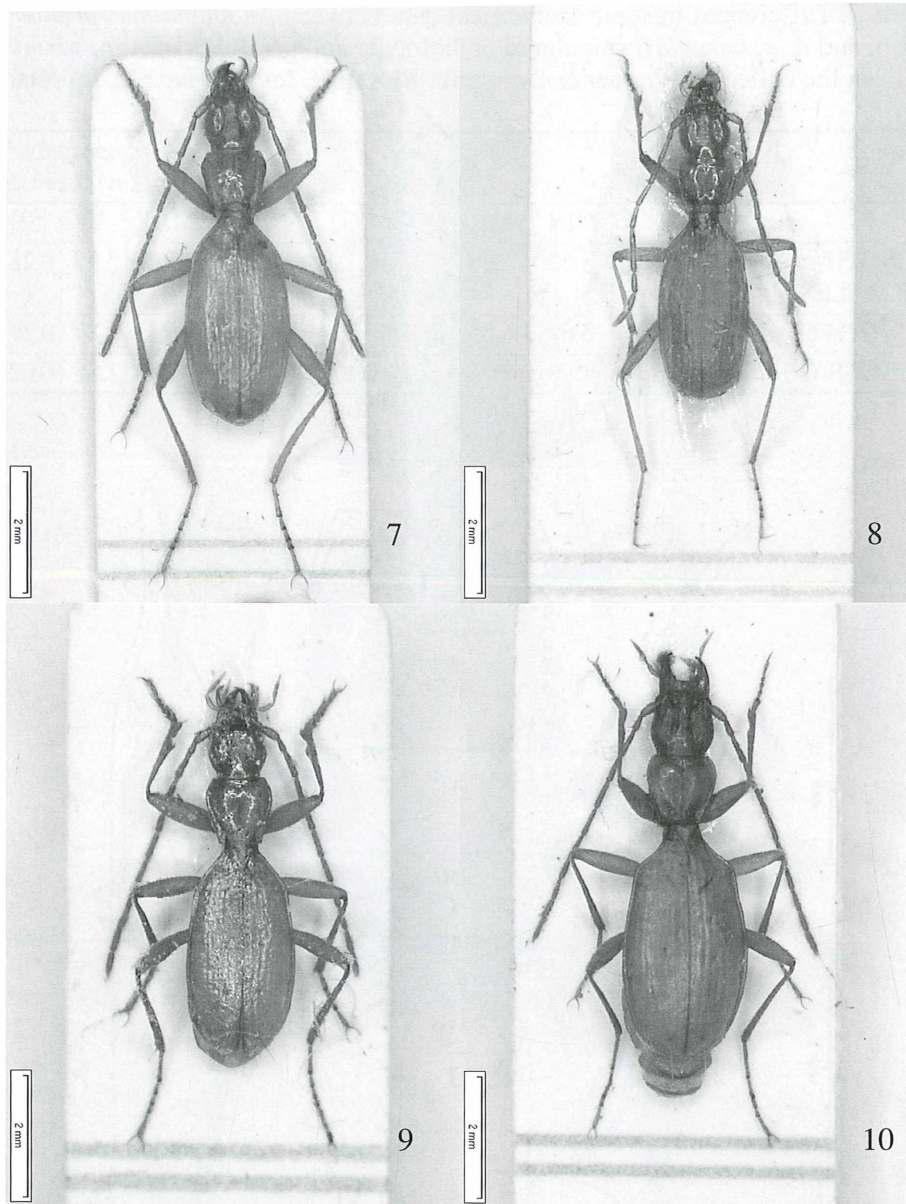


Fig. 7-10: *Anophthalmus pretneri* ssp., dorsally: 7 – *A. p. savinjscensis* Daffner, 1996, male, holotype; 8 – *A. p. savinjscensis* Daffner, 1996, female, paratype; 9 – *A. p. ceji* ssp. n., male, holotype; 10 – *A. p. ceji* ssp. n., female, paratype.

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