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CATOPS CAVICIS N. SP. FROM THE KRUBERA-VORONYA CAVE (ABKHAZIA, CAUCASUS), AN INTERESTING SPECIES OF THE *C. ALPINUS* GROUP (*SENSU* PERREAU, 2000) (COLEOPTERA, CHOLEVIDAE)

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Abstract: *Catops cavicis* **n. sp.** from the Krubera-Voronya cave (Orto Balagán, Arabika Mts, Abkhazia Rep., Caucasus) is described. This new species, belonging to the group of *C. alpinus* (*sensu* Perreau, 2000), is closely related to *C. cavazzutii* Giachino, 1988, of the eastern Pontic Alps, and constitutes its northern vicariant. The author provides ecological and chorological data on the new species and discusses the zoogeographic hypotheses on the origin of the phenomena of differentiation in the south-western species of this group.
Key words: Coleoptera, Cholevidae, new species, cave, taxonomy, distribution, zoogeography, Caucasus.

***Catops cavicis* n. sp. de la cueva de Krubera-Voronya (Abhasia, Cáucaso), una interesante especie del grupo *C. alpinus* (*sensu* Perreau, 2000) (Coleoptera, Cholevidae)**
Resumen: Se describe*Catops cavicis* **n. sp.** de la cueva de Krubera-Voronya (Orto Balagán, montes Arabika, república de Abhasia, Cáucaso). La especie nueva, perteneciente al grupo de *C. alpinus* (*sensu* Perreau, 2000), está estrechamente emparentada con *C. cavazzutii* Giachino, 1988, de los Alpes Pónticos orientales, y es su vicaria septentrional. Se proporcionan datos ecológicos y corológicos sobre esta especie nueva y se discuten las hipótesis zoogeográficas sobre el origen de los fenómenos de diferenciación de las especies suroccidentales del grupo.
Palabras clave: Coleoptera, Cholevidae, especie nueva, caverna, taxonomía, distribución, zoogeografía, Cáucaso.

Taxonomy / Taxonomía: *Catops cavicis* **n. sp.**

Introduction

My friends and colleagues Alberto Sendra of the Museu Valencià d'Història Natural (Spain) and Ana Sofia Reboleira of the Universidade de Aveiro (Portugal), a members of the International Cave Exploration Team (CaveX Team), who conducted a series of explorations of the cave complex of Krubera-Voronya (Abkhazia, Caucasus) in the summer of 2010, wanted to give me in study the abundant material of Coleoptera Cholevidae they collected in this cave, known at the time to be the deepest cave in the world (-2,140 m). The whole series of specimens was found to belong to a single new species of *Catops*, the description of which is the aim of this paper.

Materials and Methods

The examined materials are preserved in the following collections:

MVHN: Museu Valencià d'Història Natural, España
SR: S. Reboleira Collection, Aveiro, Portugal
CCa: A. Casale Collection, Torino, Italia
CFr: J. Fresneda Collection, Lleida, España
CGi: P.M. Giachino Collection, Torino, Italia
CSa: J.M. Salgado Collection, Vigo, España
CVa: D. Vailati Collection, Brescia, Italia

The following acronyms for type material have been used: **HT:** Holotype**, PTT:** Paratypes.

The drawings of the habitus and male genitalia were made using a camera lucida attached to a Leica MZ 12.5 microscope.

Catops cavicis n. sp.

Fig. 1-3.

LOC. TYP.: Abkhazia Rep. Arabika Mts, Orto Balagán, m 2,240, Krubera-Voronya Cave.

TYPE SERIES: HT ♂, Abkhazia Rep. Arabika Mts, Orto Balagán, m 2,240, Krubera-Voronya Cave, -70 m, 24.VII. 2010 CaveX Team leg. (CGi). PTT: 6 ♂♂ 9 ♀♀, same locality, date and collectors; 4 ♂♂ 10 ♀♀, same locality and collectors, 26.VI/24.VII.2010; 1 ♀, same locality and collectors, -1,400 m, 26.VI/24.VII.2010; 4 ♂♂ 2 ♀♀, same locality, 27.VII/9.VIII.2010, S. Reboleira & A. Sendra leg.; 1 ♂ 2 ♀♀, Abkhazia Rep. Arabika Mts, Orto Balagán, m 2,240, smaller cave near Krubera-Voronya Cave, 20.VII.2010, CaveX Team leg. (MVHN, SR, CCa, CFr, CGi, CSa, CVa).

DIAGNOSIS: A *Catops* species of the *C. alpinus* species group (*sensu* Perreau, 2000) for the elytra with punctuation strong but not sunken, not shagreened, without slate grey reflexes, the fore femora of the male without a median tubercle on the ventral side, and the antennae with a very swollen club and the 7th and 9th antennomeres asymmetrical. Closely related to *C. cavazzutii* Giachino, 1988, for the general shape of the median lobe of aedeagus having a triangular apex and being dorsally carinate, it differs from it for the completely black coloration, the pronotum less transverse, and the shape of the apex of the median lobe that, in dorsal view, is subtriangular and abruptly converging.

DESCRIPTION: Total length, with reclined head, mm 3.5 - 3.7. Body pitch black, legs and palpi brownish-ferrugineous; antennae with the first two antennomeres and the basal part of

the 3rd one brown ferrugineous, the remaining articles black. Integument punctured, strongly wrinkled on both the pronotum and elytra, covered with a golden, long and straight pubescence.

Head transverse, retractable, with well-developed eyes, covered with large punctures impressed as much as the pronotum, covered with a golden, long and straight pubescence. Antennae short, robust, hardly exceeding the base of the pronotum when stretched backwards, antennal club evident from the 6th antennomere, with the 7th and 9th ones asymmetric, and the 8th one extremely transverse, about four times wider than long.

Pronotum transverse (maximum width/maximum length ratio: 1.32 – 1.35), with the maximum width about in the middle, and sides longly and regularly curved forward, less arcuate posteriorly, almost straight up to the posterior angles which are obtuse but evident. Base of the pronotum subsinuate and rebordered in the middle, narrower than the base of the elytra, much wider than the front margin. Disc regularly convex, not flattened in the latero-basal area.

Elytra ovate, elongate, slightly convex (maximum width/maximum length ratio: 0.69 - 0.72), with the maximum width just before the half, separately rounded at the apex; elytral disc convex, slightly flattened in the basal third along the suture, abruptly dehiscent apically. Elytral striae missing; sutural stria present, well marked.

Metathoracic wings well developed.

Legs robust; protibiae arcuate and thickened at the apex in the male, straight in the female; mesotibiae arcuate in both sexes; metatibiae slightly arcuate in the male, straight in the female. Pro-tarsomeres 1-3 dilated in the male, but narrower than the apex of the tibia.

Aedeagus (Figs. 2-3) big, frail, regularly arched. Median lobe with the apex narrowly triangular and having a strong carina in the dorsal apical part. Endophallus bearing a basal bunch of bristly-looking spines. Parameres frail and shorter than the median lobe.

ETYMOLOGY: *cavicis* "of Cavex". Dedicated to the joint Ibero-Russian group "CaveX Team" which has been conducting exploration caving since 2000 in the complex Krubera-Voronya Cave.

DISTRIBUTION AND ECOLOGY: *C. cavicis* n. sp. is known at the time from only two caves very close to each other in the Caucasus and situated at an altitude of 2,240 m on Arabika Mts in Abkhazia. This is the Krubera-Voronya Cave, now known as the deepest cave in the world (-2,140 m) and an unnamed minor cavity, probably belonging to the same complex, and situated quite close to the main abyss. *Catops cavicis* n. sp. was collected in large numbers, by the members of the International Cave Exploration Team (CaveX Team), in both caves, at depths between -70 and -1,400 m, both through direct collecting (Fig. 4) and by pit fall traps.

Discussion

Catops cavicis n. sp. is a species closely related to *C. cavazzutii* of the eastern Pontic Alps, of which it represents the northern vicariant, as far as we currently know. As mentioned previously by Giachino (1988), within the group of *C. alpinus* (*sensu* Perreau, 2000), in addition to species with a very wide distribution, such as *C. alpinus* Gyllenhall, 1827, *C. subfuscus* Kellner, 1846, and *C. basilaris* Say, 1823, we find some species with distribution areas of medium size (*C. carinatus* Jeannel, 1936, and *C. egenus* (Horn, 1880)), while all the others show more or less narrow distributions, some even punctiform. Among these short range distribution species, there is also *C. cavicis* n. sp. described here. Concerning the distribution areas of this last category of species, the fact that they are real and not due rather to a lack of research is unknown, however, we note that in the case of *C. cavicis* n. sp. its discovery has been done for the moment only in two caves, where it reaches a very significant depth (-1400 m), although this species does not show any hint to troglomorphy in none of the morphological characters involved in this kind of specialization.

The discovery of *C. cavicis* n. sp., the only species of the *C. alpinus* species group in the Caucasus (the report by Jeannel (1936), also mentioned by Giachino & Vailati (2000), concerning *C. subfuscus* in Armenia is likely to be referred to another species, perhaps the very *C. cavazzutii*), contributes to the completion of the distribution and zoogeographic pattern which was already briefly outlined by Giachino (1988). In the light of the current palaeo-geographic data available (Popov *et al*., 2004) the isolation and differentiation of the south-western species of this group (*C. subfuscus*, *C. cavazzutii* and now also *C. cavicis* n. sp.) can be drawn back to at least the Lower Oligocene (34-32 My) in a time when the Greater Caucasus had already partially emerged and was separated from the Lesser Caucasus and the Eastern Pontic Alps by the sea arm extended in the Kura Depression.

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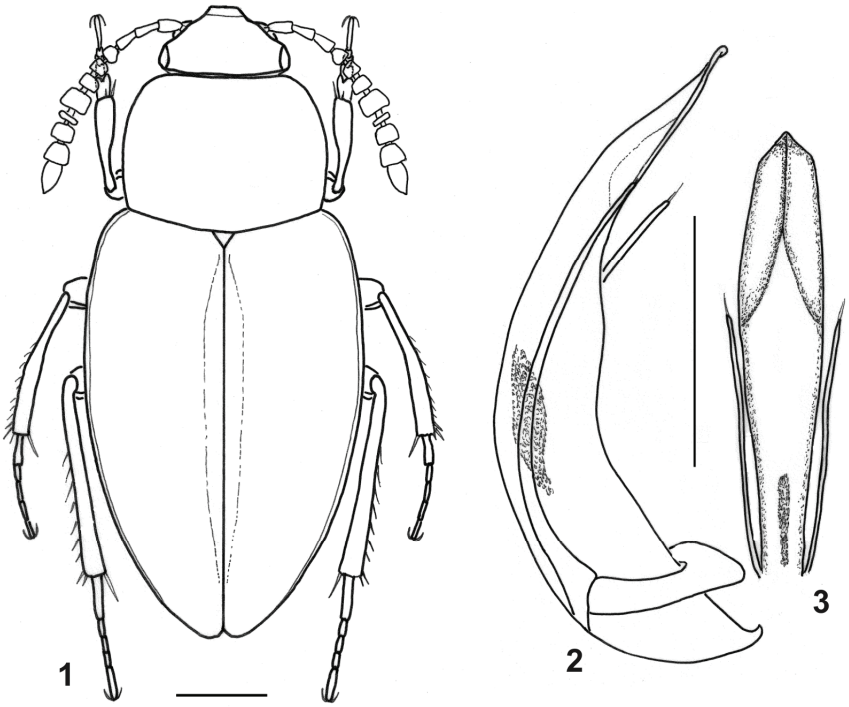

Fig. 1. Habitus of *Catops cavicis* n. sp., HT ♂. Scale bar: 0.5 mm. **Fig. 2-3.** Aedeagus of *Catops cavicis* n. sp., HT ♂: 2) lateral view; 3) dorsal view. Scale bar: 0.5 mm. **Fig. 4.** Living specimen of *Catops cavicis* n. sp. in Krubera Cave at -70 m deep. Photo by A. S. Reboleira.