

Project Update: June 2016

Biological material, collected during our August-September 2015 biospeleological expedition to the caves of the western Caucasus was further studied in the lab. Naturally, the complex taxonomic study of many invertebrate taxa requires a long period of time and collaboration with many specialists working with particular groups. In fact, “harvest” from expedition is being only particularly involved and we hope it will give additional fruitful results during next years.

To date, regarding this material, I have examined several collembolan species from the families Arrhopalitidae and Onychiuridae. Three new species and hopefully one new genus are being described. Two of them from the genus *Pygmarrhopalites* are submitted for publishing in Zootaxa and a new taxon from Onychiurinae is still under preparation. All these species are very interesting and troglomorphic i.e. morphologically adapted to the cave environment; they occur only in caves and thus are troglobionts. Besides, their distribution is quite restricted, consequently, their conservation, as well as protection of their habitats, are necessary. The figures of habitus and brief information on these species are given below. I avoid noting the names of new taxa before they are published.



Fig. 1. Places of finding of *Pygmarrhopalites* sp. nov. 1 (mark 1) and *P. sp. nov. 2* (marks 2-4)

Collembola, family Arrhopalitidae

1) *Pygmarrhopalites* sp. nov. 1. (Fig. 2).

Type and the only locality discovered so far is Psyrtskha Cave in Novy Afon, Abkhazia (Fig. 1). The species occurs in the distant aphotic zone of the cave. Not numerous specimens were collected on the water surface of the siphon and nearby. They occur together with two *Pygmarrhopalites* species from *pygmaeus*-group and with *Arrhopalites abchasicus*. Thus, relatively small Psyrtskha Cave is inhabited by four sympatric species of the family. Unlike *A. abchasicus*, *P. sp. nov. 1* was not found in neighbour and hydrologically connected huge Novoafonskaya Cave as well as in other caves of the region. Due to its morphology (poor or absent pigmentation, elongated antennae, thin claws with short empodia) and topical preferences, this species can be classified as troglomorphic troglobiont. For now it looks like

quite rare species with extremely restricted distribution and should be added to the list of protected species.



Fig. 2-3. Habitus of new taxa: 2 - *Pygmarrhopalites* sp. nov. 1; 3 – *Onychiurinae* gen. sp. nov.

2) *Pygmarrhopalites* sp. nov. 2.

This is a troglobiont springtail species inhabiting dark zone of several caves of Tsebelda Karst Massif (Fig. 1). It occurs on the wooden organics and on the water surface. It cohabits with four Arrhopalitidae species from genera *Pygmarrhopalites* and *Troglopalites*. As a previous species, this one belongs to *Pygmarrhopalites principalis* group, which was known in the Caucasus by a single species only. Discovery of these two species as well as some other undescribed representatives of this species group (under study) suggests their origin from a single widely distributed epigeal ancestor with further speciation in underground environment of isolated karstic massifs.

Collembola, family Onychiuridae

An outstanding new species (Fig. 3) was found in the single cave of Gumishkha Karst Massif, Abkhazia. Generally, representatives of Onychiurinae are soil dwellers and morphologically pre-adapted to the cave environment, they possess regressive troglomorphic characters such as absence of eyes and pigmentation, but very rarely demonstrate features of progressive evolution. This new species lives in epineustonic and higropetric environments and shows much elongated and thinned troglomorphic claws. Besides, it has several characters very unusual or even unique for the family and deserves its systematic position in a new separate genus. Due to its extremely restricted distribution, extraordinary morphology and uniqueness, the species after description should be immediately referred to the conservation category.