

Project Update: November 2015

Our biospeleological expedition to the West Caucasus took place from 13 August until 25 September 2015. It consisted of two main parts: work in Abkhazian caves and work in caves of the region of Sochi (Russia). In total, we visited 20 caves (Fig. 1) and provided a sampling of several groups of cave fauna. Our team consisted of three participants (Alexander Koval, Illya Turbanov, and Robert Vargovitsh). Besides, scientists and speleologists Ivan Marin (Moscow) and Evgeny Romanov (Simferopol) joined the expedition on different stages and our cooperation was useful and resulting.



Fig. 1. Map with marked investigated caves

Abkhazian caves

1) **Caves in the vicinity of Otapa Village.** Golova Otapa Cave (~1 km length) is a very important site as a habitat for rich and endemic speleofauna. A colony of several thousand (over 4000 in 2006) bats of 5 species (*Miniopterus schreibersi*, *Rh. euryale*, *Rhinolophus ferrumequinum*, *Rh. hipposideros* and especially numerous *Myotis blythi*) used the cave for reproduction and hibernation. Besides, this cave is a type locality for troglobiont trechine beetle *Meganophthalmus medvedevi* Belousov et Koval, 2009 and an important site for troglobiont shrimp *Troglocaris ablaskiri* Birstein, 1939 and several amphipod species. Surprisingly, during expedition we observed that unlike in previous years the entrance is closed by iron bars and a large part of the cave became a show object for tourist visitors. The watered part (stream along the cave) was equipped with wooden bridges, the surface of which shortly after installation became covered with mold. The factor of introducing of alien organic things and frequent touristic visits became harmful factors for the cave ecosystem, particularly for invertebrate fauna and especially for bats, the number of which now is drastically reduced. Undoubtedly, this cave should get a conservation status.



Fig. 2. Golova Otapa Cave and its troglobiont fauna. A: entrance in 2013; B: entrance in 2015; C: fragment of wooden bridge covered with mold; D: collecting Collembola on the water surface; E: Diplopoda; F: Isopoda; G: trechin beetle *Jeannelius* sp.; H: spider *Nesticus* sp.

Abrskila Cave (2,2 km). The proximal part of the cave has been equipped for a guided tour during last decades. Bats numerous in past, rather rarely use the cave now. Meanwhile, cave

remains an important site for invertebrate troglobiont endemic fauna. It is a type locality for shrimp *Troglocaris ablaskiri*, amphipod *Niphargus ablaskiri* Birstein, 1940, woodlice *Trichoniscus aphoniscus codoricus* Borutzky, 1977. Besides, we made here an exclusive finding of great interest – a new species of Palpigradi from genus *Eukoenenia*. Before our findings, the order Palpigradi was unknown from the enormous territory of ex-USSR.

Apart from these two large caves, we also provided the first biospeleological investigation of several vertical caves of the region: Samshytovaya, Uatapykh Shaft, Marshania-1 and Marshania-2. We had a great help in searching for these caves from our friends among the local people: Adleiba family and Marshania family.



Fig. 3. Abrskila Cave. A: microwhip scorpion *Eukoenenia* sp.; B: *Troglocaris ablaskiri*; C: about 1 km from entrance; D: vertical entrance to Marshania-1 Cave

2) **Caves in Arabika Massif.** Krubera Cave – the deepest cave in the world (-2198 m). We visited this cave twice during the expedition and sampled invertebrates by hands as well as by means of traps down to -250 m depth. Very important finding concern new troglobiont taxa of millipedes and also interesting springtail species as well as beetles, false scorpions, crustaceans, and others. The other task was to find a type locality for trechine *Duvalius sokolovi* Ljovuschkin, 1963 – Trechus Grotto. Male specimens are needed for comparison *D. sokolovi* and *D. abyssimus* recently described from Krubera Cave to confirm or refuse their independent status. After several efforts, using climbing rock technique we found previously unknown “Pseudotrechus Grotto” and fortunately a goal – Trechus Grotto. Barber’s traps were installed.

3) **Caves of Novy Afon.** Thanks to Abkhazian speleologists (Stas Kotsba) we managed to visit hardly accessible and hidden vertical Akuja Cave – the type locality for woodlice *Borutzkyella revasi* (Borutzky, 1973) which we managed to find. Another cave in the Canyon of Psyrtskha River is Psyrtskha Cave – the type locality for springtail *Arrhopalites abchasicus* Vargovitsh, 2013. We collected here some additional material, including some new species of Collembola. This cave is easy to access and its protection should be provided due to interesting and rare

troglobiont fauna. We also investigated Anukhvinskaya Cave – the type locality of extraordinary troglomorhpic springtail *Arrhopalites macronyx* Vargovitsh, 2012 and found here some other outstanding springtails as well as several troglobiont crustacean species, pseudoscorpions, leeches and so on. Besides, we found several entrances of caves which lead to Anukhvinskaya Cave as well as previously unknown caves.



Fig. 4. Arabika Massif. A: Searching for Trechus Grotto; B: entrance to Krubera Cave; C: springtail *Anurida stereodorata*; D: false scorpion *Neobisium* sp.

4) **Caves of Sukhum Region.** Mikhailovskaya Cave near Guma Vill. Well known before the war in early 1990-s was then forgotten and became hardly accessible and was suspected as mined. With the help of local speleologist Vladimir Kakalia and Halo Trust officer Timur Azhiba, we obtained the opportunity to visit and investigate this important site for rich cave fauna. In Sukhum Region, we also visited two more caves near Eshera Village: Adzaba – an important site for bat colonies and rich aquatic and terrestrial invertebrate fauna, and vertical Verkhnyaya Esherskaya Cave – an unexplored biologically cave shown by a local man.

5) **Caves of Tsebelda Karstic Massif.** Nizhnyaya Shakuranskaya Cave is one of the most beautiful and biologically interesting Abkhazian cave. It is an important site for over 30 invertebrate taxa, including several undescribed species. It is a type locality for aquatic mollusks *Paladilhiopsis schakuranica* Starobogatov, 1962, *Paladilhiopsis aculeus* Starobogatov, 1962, *Belgrandiella abchasica* Starobogatov, 1962, *Geyeria horatieformis* Starobogatov, 1962, isopod *Caucasoligidium cavernicola amtkelicum* Borutzky, 1950, amphipod *Niphargus inermis* Birstein, 1940, *Niphargus magnus* Birstein, 1940, shrimp *Troglocaris osterloffii* Juzbaš'jan, 1940, harvestmen *Nemaspela abchasica* (Ljovuschkin & Starobogatov, 1963), microwhip scorpion *Eukoenergia vargovitshi* Christian, 2014 and monotypic springtail genus *Troglopalites stygios*

Vargovitsh, 2012. We managed to collect here rich troglobiont faunistic material including several new species. This cave is a faunistic treasure of Caucasus and deserves further scientific study and strict conservation.



Fig. 5. Nizhnyaya Shakuranskaya Cave and its troglobionts. A: rimstone; B: centipede *Lithobius* sp.; C: harvestmen *Nemaspela abchasica*; D: springtail *Troglomalites stygios*

In the Abkhazian territory we worked in close coordination with State Committee of the Republic Abkhazia on Ecology and Nature management, with Institute of Ecology of Academy of Sciences of Abkhazia and its director Dr. Roman Dbar, chiropterologist Alexander Ivanitsky and other biologists. We actively cooperated with local speleologists Stas Kotsba, Vladimir Kakalia and others and with hospitable local people. Many questions concerning protection of caves and cave fauna were discussed.



Fig. 6. Our team in Abkhazian Institute of Ecology with director Roman Dbar

Caves of Sochi region (Russia)

Four caves of Alek Mt Ridge (Sochi National Park) were explored: vertical Gigantov Cave (-210 m; 1210 m), part of vertical Medvezhya Cave (over -400 m), Sokolova Cave (660 m) and Atsynskaya Cave. Rich material, containing many troglobionts was obtained: Trechinae and Pselaphinae beetles, springtails, isopods, amphipods, harvestmen, pseudoscorpions and other groups. In region of Sochi we obtained invaluable help and support from the local speleologist Evgeny Zakharov and we worked in coordination with Sochi National Park.



Fig. 7. Caves of Alek Mt. Ridge and troglobiont fauna: A: Isopoda; B: Diplopoda; C: Pseudoscorpiones; D: Pselaphinae beetle; E: springtail *Typhlogastrura* sp.; F: entrance to Gigantov Cave