



<http://dx.doi.org/10.11646/zootaxa.3754.3.3>

<http://zoobank.org/urn:lsid:zoobank.org:pub:F6749B0E-1F58-4B02-BFB1-5D1564B201A4>

## Redescription of the stygobitic shrimp *Troglocaris* (*Xiphocaridinella*) *jusbaschjani* Birštein, 1948 (Decapoda: Caridea: Atyidae) from Agura River, Sochi, Russia, with remarks on other representatives of the genus from Caucasus

IVAN MARIN<sup>1</sup> & AGNIYA SOKOLOVA<sup>1,2</sup>

<sup>1</sup>A. N. Severtzov Institute of Ecology and Evolution of RAS, Moscow, Russia.

E-mail: [coralliodecapoda@mail.ru](mailto:coralliodecapoda@mail.ru), [vanomarin@yahoo.com](mailto:vanomarin@yahoo.com)

<sup>2</sup>Biological Faculty, Moscow State University. E-mail: [enfado@yandex.ru](mailto:enfado@yandex.ru)

### Abstract

The complete re-description of Caucasian local endemic stygobitic atyid shrimp *Troglocaris* (*Xiphocaridinella*) *jusbaschjani* Birštein, 1948 is firstly presented after its original description given by Dr. Ya. A. Birštein (1948) under the name *Troglocaris schmidti jusbaschjani*. The species is still known exclusively from the type locality, hydrogen sulfide bathes of the small Agura River, Sochi area, Russian Federation. Remarks on morphology, coloration of both females and males and data on ecology of *Troglocaris* (*Xiphocaridinella*) *jusbaschjani* Birštein, 1948 as well as remarks on morphology of relative congeneric species from Caucasus, *Troglocaris* (*Xiphocaridinella*) *kutaissiana* (Sadowsky, 1930) (type species of the subgenus) and *Troglocaris* (*Xiphocaridinella*) *fagei* Birštein, 1939, are provided. Discussion on the validity of some subgenera within the genus *Troglocaris* s. str. Dormitzer, 1853 are also presented.

**Key words:** Crustacea, Decapoda, Atyidae, *Troglocaris*, *Xiphocaridinella*, hydrogen sulfide bathes, stygobiont, shrimps, fauna, Russia

### Introduction

European stygobitic atyid shrimp of the genus *Troglocaris* s. l. Dormitzer, 1853 are presently subdivided into 4 valid subgenera: *Spelaecaris* Matjašič, 1956 (4 species), *Troglocaridella* Babić, 1922 (1 species), *Xiphocaridinella* Sadowsky, 1930 (5 species) and *Troglocaris* s. str. (3 species) (e.g. Sket & Zakšek, 2009)). The main morphological feature distinguishing *Troglocaris* s.l. from other European atyid shrimps (*Atyaephyra* de Brito Capello, 1867, *Dugastella* Bouvier, 1912 *Gallocaris* Sket & Zakšek, 2009 and *Typhlatya* Creaser, 1936 (following Sket & Zakšek, 2009)) is the length of spines (long strong setae) on appendix masculine of males which are significantly smaller than the diameter of appendix masculine in all representatives of the genus *Troglocaris* s. l. (see key in Sket & Zakšek, 2009). In addition, Caucasian species of the genus are poorly described and their morphological features were not used for the most recent key of the European atyid shrimp presented by Sket & Zakšek (2009). Separation into subgenera is not presently satisfactory since morphologically most of the used features greatly vary within species of the same subgenus (for example, the length of rostrum within *Xiphocaridinella*) but mainly based on geographical subdivision (see below).

Caucasian stygobitic atyid shrimp in the subgenus *Xiphocaridinella* Sadowsky, 1930 currently includes 5 valid species, *Troglocaris* (*Xiphocaridinella*) *kutaissiana* (Sadowsky, 1930) (the type species), *Troglocaris* (*Xiphocaridinella*) *ablaskiri* Birštein, 1939, *Troglocaris* (*Xiphocaridinella*) *fagei* Birštein, 1939, *Troglocaris* (*Xiphocaridinella*) *jusbaschjani* Birštein, 1948, *Troglocaris* (*Xiphocaridinella*) *osterloffii* Juzbaš'jan, 1940, presently known from Russian Caucasus, Abkhazia and Georgia (see Fig. 16). *Troglocaris* (*Xiphocaridinella*) *jusbaschjani* Birštein, 1948 was first described from the Agura River (Sochi area, Russian Federation) by Dr. Ya. A. Birštein (1948) under the name *Troglocaris schmidti jusbaschjani*. Later, D'Udekem d'Acoz (1999) transferred this species into the genus *Typhlatya*. At the same time, the brief text description, poor and incomplete drawings as

& Zakšek, 2009; Zakšek *et al.*, 2009) but dealing with the species of the subgenus *Xiphocaridinella* a more careful morphological examination of all species is needed because of poor original descriptions (Juzbaš'jan, 1940; Birštein, 1948). Furthermore, DNA analysis should be performed for taxonomical research of this group of species as it has been accomplished for the genus *Troglocaris* s. l. (Zakšek *et al.*, 2007; Sket & Zakšek, 2009; Jugovic *et al.*, 2012).

## Acknowledgements

The project was supported by grants of the President of the Russian Federation MK-1235.2012.4 and MK-4481.2014.4, PADI Foundation and the Russian Foundation for Basic Research (RFFI project 12-04-00540\_a, 12-04-31221\_mol\_a and 14-04-31155\_mol\_a). The authors are very thankful to Sergey Anosov (VNIRO) for the help during the field sampling, Dmitry Palatov (MSU) for help during the sampling material in Abkhazia and Georgia and valuable comments to the manuscript, and Dr. Nicolay Muge (VNIRO) for the information about the current presence of stygobitic shrimp in Agura river.

## References

- Birštein, Ya.A. (1939) About cave shrimps of Abkhazia. *Zoologicheskij Zhurnal*, XVIII, 960–974. [in Russian]
- Birštein, Ya.A. (1948) The occurrence of the cave shrimp *Troglocaris* in underground water of Mazesta and related problems. *Byulleten' Moskovskogo Obshchestva Ispytatelei Prirody, Otdel Biologicheskii*, 53, 3–10. [in Russian]
- De Grave, S. & Fransen, C.H.J.M. (2011) Carideorum catalogus: the recent species of the dendrobranchiate, stenopodidean, procarididean and caridean shrimps (Crustacea: Decapoda). *Zoologische Mededelingen*, Leiden, 85 (9), 195–589.
- D'Udekem d'Acoz, C. (1999) Inventaire et distribution des crustacés décapodes de l'Atlantique nord-oriental, de la Méditerranée et des eaux continentales adjacentes au nord de 25. N. *Patrimoines Naturels (MNHN/SPN)*, 40, 1–383. [http://dx.doi.org/10.1016/s0990-7440\(02\)01163-4](http://dx.doi.org/10.1016/s0990-7440(02)01163-4)
- Jaume, D. & Bréhier, F. (2005) A new species of *Typhlatya* (Crustacea: Decapoda: Atyidae) from anchialine caves on the French Mediterranean coast. *Zoological Journal of the Linnean Society*, 144, 387–414. <http://dx.doi.org/10.1111/j.1096-3642.2005.00175.x>
- Jugovic, J., Jalžić, B., Prevorènik, S. & Sket, B. (2012) Cave shrimps *Troglocaris* s. str. (Dormitzer, 1853), taxonomic revision and description of new taxa after phylogenetic and morphometric studies. *Zootaxa*, 3421, 1–31.
- Jugovic, J., Prevorènik, S., Blejec, A. & Sket, B. (2011) Morphological differentiation in the cave shrimps *Troglocaris* (Crustacea: Decapoda: Atyidae) of the Dinaric karst—a consequence of geographical isolation or adaptation? *Journal of Zoological Systematic and Evolutionary Researches*, 49 (3), 185–195. <http://dx.doi.org/10.1080/00222933.2010.502258>
- Jugovic, J., Prevorènik, S., Aljancic, G. & Sket, B. (2010) The atyid shrimp (Crustacea: Decapoda: Atyidae) rostrum: phylogeny versus adaptation, taxonomy versus trophic ecology. *Journal of Natural History*, 44, 41–42, 2509–2533.
- Juzbaš'jan, S.M. (1940) On a cave shrimp from Shakuran. *Trudy biologiceskoj stancii Narkomprosa Gruzinskoj SSR*, 1, 73–86. [in Russian]
- Matjasic, J. (1956) Ein neuer Höhlendecapode aus Jugoslawien. *Zoologischer Anzeiger*, 157, 65–68.
- Sadowsky, A.A. (1930) *Xiphocaridinella kutaissiana* nov. gen. et sp. (Fam. Atyidae) aus einer unterirdischen Höhle bei Kutais. *Zakavkazskij kraevedstenny sbornik naucnoissledovatel'nogo kraevedstvenogo kabineta Universiteta Tiflis*, 1, 93–104. [in Russian]
- Sanz, S. & Platvoet, D. (1995) New perspectives on the evolution of the genus *Typhlatya* (Crustacea, Decapoda): first record of a cavernicolous atyid in the Iberian Peninsula, *Typhlatya miravetensis* n. sp. *Contributions to Zoology*, 65, 79–99.
- Sket, B. (2003) Distribution of *Proteus* (Amphibia: Urodela: Proteidae) and its possible explanation. *Journal of Biogeography*, 24 (3), 263–280. <http://dx.doi.org/10.1046/j.1365-2699.1997.00103.x>
- Sket, B. & Zakšek, V. (2009) European cave shrimp species (Decapoda: Caridea: Atyidae), redefined after a phylogenetic study; redefinition of some taxa, a new genus and four new *Troglocaris* species. *Zoological Journal of the Linnean Society*, 155 (4), 786–818. <http://dx.doi.org/10.1111/j.1096-3642.2008.00473.x>
- Zakšek, V., Sket, B. & Trontelj, P. (2007) Phylogeny of the cave shrimp *Troglocaris*: Evidence of a young connection between Balkans and Caucasus. *Molecular Phylogenetics and Evolution*, 42, 223–235. <http://dx.doi.org/10.1016/j.ympev.2006.07.009>
- Zakšek, V., Sket, B., Gottstein, S., Franjevic D. & Trontelj, P. (2009) The limits of cryptic diversity in groundwater: phylogeography of the cave shrimp *Troglocaris anophthalmus* (Crustacea: Decapoda: Atyidae). *Molecular Ecology*, 18, 931–946. <http://dx.doi.org/10.1111/j.1365-294x.2008.04061.x>