



<http://dx.doi.org/10.11646/zootaxa.3686.4.6>

<http://zoobank.org/urn:lsid:zoobank.org:pub:B4E049AD-9865-47C1-B467-118662F750AE>

Discovery of a new blind ground beetle in western French Pyrenees, and its relevance to the phylogeny of Pyrenean hypogean Trechini

ARNAUD FAILLE^{1,5}, JAVIER FRESNEDA^{2,3}, CHARLES BOURDEAU⁴

¹Zoologische Staatssammlung München, Münchhausenstraße 21, 81247 Munich, Germany. E-mail: faille@mnhn.fr

²Ca de Massa, 25526 Llesp – El Pont de Suert, Lleida, Spain

³Museu de Ciències Naturals (Zoologia), Passeig Picasso s/n, 08003 Barcelona, Spain. E-mail: ffresned@gmail.com

⁴5 chemin Fournier-Haut, F-31320 Rebigue, France. E-mail: aphaenops31@gmail.com

⁵Corresponding author

Abstract

Geotrechus sarpedon **sp. n.**, a new species of blind Trechini is described from Arbailles Massif, western Pyrenees, France. The generic attribution of the new species was challenging as it shares morphological features of both genera *Geotrechus* Jeannel, 1919 and *Aphaenops* subgenus *Hydraphaenops* Jeannel, 1926, confirming their polyphyly, which has been highlighted by previous molecular studies on the group. Molecular data suggests unambiguously strong affinities between the new species and the clade *Aphaenops vasconicus* Jeannel, 1913–*A. galani* Español, 1968 occurring in the same geographic area, and not related with *Aphaenops ehlersi* (Abeille de Perrin, 1872), type species of the subgenus *Hydraphaenops*. The species is included in the paraphyletic genus *Geotrechus* until its affinities with the other species of *Geotrechus* and *A. (Hydraphaenops)* are clarified.

Key words: Carabidae, Trechini, *Geotrechus sarpedon* **sp. n.**, subterranean environment, Pyrenees, Arbailles, France, molecular phylogeny

Introduction

The Pyrenean mountain range is known to be one of the main world hotspots of subterranean biodiversity (Culver & Sket 2000, Culver et al 2006). Arbailles massif is a mid-altitude (800–1000m) isolated karstic unity of about 165 km² located in the northwestern slope of Pyrenees, parallel to the axial range chain (Vanara 2000). The subterranean fauna was considered to be very well known, as the massif was one of the first explored by Jeannel (1905). Oxibar cave has been known for a long time—already visited by Nadar in 1892 (Vuillefroy 1893)—and is the type locality of several hypogean Coleoptera endemic to the western Pyrenees: *Laemostenus navaricus* (Vuillefroy, 1893) (Carabidae: Sphodrini), *Aphaenops jeanneli* Abeille, 1905 (Carabidae: Trechini), *Aphaenops alberti* Jeannel, 1939, *A. (Hydraphaenops) vasconicus* Jeannel, 1913 (Carabidae: Trechini), *Bathysciella jeanneli* (Abeille, 1905) (Leiodidae: Leptodirini) and *Phacomorphus (Phacomorphoides) alexinae* (Jeannel, 1906) (Leiodidae: Leptodirini). It was therefore particularly unexpected to discover a new species of blind beetle in a small cave less than a kilometer from this locality.

Methods and phylogenetic analyses

Specimens were collected alive by hand in the cave and preserved in absolute ethanol (Table 1). Single specimens including the holotype were non-destructively extracted using the DNeasy Tissue Kit (Qiagen GmbH, Hilden, Germany). After extraction, specimens were dry mounted on cards, the genitalia were extracted and included in water-soluble dimethyl hydantoin formaldehyde resin (DMHF) on cards, and pinned beneath the specimen. Vouchers and DNA samples are kept in the collections of the Zoologische Staatssammlung München (ZSM), the Muséum National d'Histoire Naturelle of Paris (MNHN), the Institut of Evolutionary Biology in Barcelona (IBE)