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Limnebius zaerensis, a new species from the Pays Zaër-Zaïane, central Morocco (Coleoptera: Hydraenidae)

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Abstract

Limnebius zaerensis sp.n. (Coleoptera: Hydraenidae) is described from the Pays Zaër-Zaïane, in central Morocco. According to the structure of the aedeagus and the sequences of several mitochondrial genes it seems to be most closely related to *L. ignarus* BALFOUR-BROWNE, 1979 from the extreme south of Spain.

Key words: Coleoptera, Hydraenidae, *Limnebius*, taxonomy, new species, cox1, rrnL, tRNA-leu, nad1, W Mediterranean.

Introduction

The genus *Limnebius* LEACH, 1815 forms a well defined, distinctive group of small (0.8–2.8 mm) water beetles with a rather similar external morphology. Most species can only be reliably distinguished on the basis of the aedeagi (JÄCH 1993). The genus has a world-wide distribution, with more than 120 described species (HANSEN 1998), of which more than 2/3 are from the Palaearctic Region (JÄCH 2004). The last comprehensive revision of the Palaearctic species (JÄCH 1993) did not recognise subgenera, although for practical reasons the genus was divided in six informal species groups. In this paper we describe a new species of the *Limnebius truncatellus* group sensu JÄCH (1993), which was collected in central Morocco.

Material and Methods

The soft tissue from one male specimen preserved in the field in 96 % ethanol was digested and the DNA isolated using a standard non-destructive phenol–chloroform extraction, and stored with ref. No. MNCN-AC14. The extracted specimen (paratype) is kept in the general collection of the MNCN (with the same reference number), with the aedeagus mounted in a transparent card. With the aim to investigate the phylogenetic relationships of the new species, some mitochondrial genes were sequenced: a fragment of ca. 800 bp of the 3' end of the cytochrome oxidase subunit 1 (cox1) (primers "jerry" and "pat", SIMON et al. 1994), and a fragment of ca. 800 bp spanning the 3' end of the large ribosomal unit (rrnL), the full transfer RNA for Leucine (tRNA-leu), and the 5' end of the gene NADH dehydrogenase 1 (nad1) (primers "16Sbi" and "fawND1", SIMON et al. 1994) (see RIBERA et al. 2001 for general sequencing conditions). Sequences were submitted to GeneBank with accession numbers EU365865-EU365868.

MNCN Museo Nacional de Ciencias Naturales, Madrid, Spain
NMW Naturhistorisches Museum Wien, Austria

Limnebius zaerensis sp.n.

TYPE LOCALITY: Morocco, Pays Zaër-Zaïane, affluent of the river Korifla near Rommani.

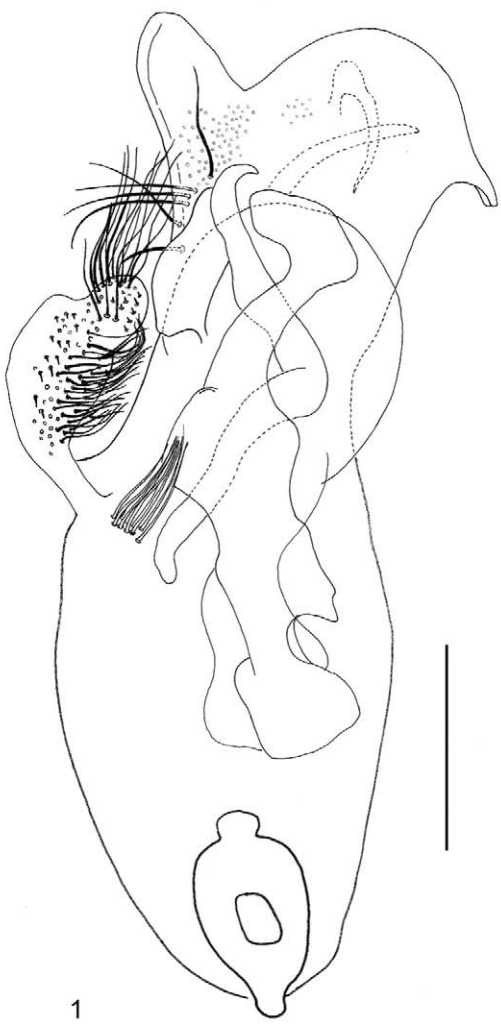

Fig. 1: Aedeagus of *Limnebius zaerensis* sp.n., holotype (ventral view). Scale bar: 100 µm.

TYPE MATERIAL: **Holotype** ♂ (MNCN): "73 MOROCCO 10.4.2007 / gorges Rd. Rommani-Ben Slimane / str. in Nerium, afl. Oued Korifla / 265m N33º32'59.4" W6º44'54.9" / Aguilera Hernando & Ribera leg.". **Paratypes**: 7 ♂♂ (MNCN, NMW, author's collections), same locality data as holotype.

One paratype (MNCN) was used for DNA extraction, labelled "MNCN-AC14".

DESCRIPTION: Measurements: 1.6–1.7 mm long (males). Black to dark brown, with pronotal side and hind margins broadly paler; dorsal surface covered with fine, adpressed pubescence.

Head and pronotum with sparse, distinct punctation; disc of pronotum glabrous; pronotum with well developed shagreen towards sides. Elytra with a denser punctation, entirely shagreened. Legs, antennae and palpi testaceous. Elytral apices truncate.

Figs. 2–3: Type locality of *Limnebius zaerensis* sp.n., affluent of the river Korifla near Rommani, Pays Zaër-Zaïane, Morocco.

Aedeagus (Fig. 1). Main piece broad, flattened, not twisted, with a deep incision forming two lobes of unequal size. Left paramere short and wide, distinctly separate from the main piece, covered with a dense tuft of setae, and a few long apical setae. Appendage "A" of JÄCH (1993) enlarged and flattened apically.

SEXUAL DIMORPHISM: Males with a prominent hook-like protuberance in ventrite VI. Due to the presence of some additional species of *Limnebius* with a similar external morphology in the same habitat (see below), we do not include females among the type material, although a number of putative females were identified.

ETYMOLOGY: Named after the area in which the type series was found.

DISTRIBUTION: So far only known from the type locality.

HABITAT: Specimens were found in a small stream excavated in the Zäer-Zaïnae Plateau, affluent of the river Korifla. The bed of the stream had no vegetation, although the shores were covered by dense stands of *Nerium oleander* ("baladre"), some of them arboreal (Figs. 2–3). The water beetle fauna was dominated by Hydraenidae, with eleven species in addition to *Limnebius zaerensis* sp.n.: *L. bacchus* BALFOUR-BROWNE, 1979, *L. kocheri* BALFOUR-BROWNE, 1979, *L. maurus* BALFOUR-BROWNE, 1979, *L. evanescens* KIESENWETTER, 1866, *Ochthebius dilatatus* STEPHENS, 1829, *O. mediterraneus* IENIŞTEA, 1988, *Hydraena bisulcata* REY, 1884, *H. capta* d'ORCHYMONT, 1936, *H. rigua* d'ORCHYMONT, 1935, *H.* cf. *testacea* CURTIS, 1830, *Hydraena* sp. (females). Another interesting coexisting species was *Hydrocyphon gereckei* HERNANDO, AGUILERA & RIBERA, 2004, of which only larvae and pupae could be found (reared to adults).

AFFINITIES: The general structure of the aedeagus of *Limnebius zaerensis* is similar to that of *L. ignarus* BALFOUR-BROWNE, 1979, *L. pilicauda* GUILLEBEAU, 1986 and *L. kamali* SÁINZ-

CANTERO & BENNAS, 2006, with obvious differences in the main lobe and the main appendices (see Fig. 1; JÄCH 1993, SÁINZ-CANTERO & BENNAS 2006). The close relationship with *L. pilicauda* and *L. ignarus* was confirmed with the molecular data (*L. kamali* was not available for study), with the smallest difference being ca. 4.3 % for cox1 and 1.3 % for rrnL+ tRNA-leu+nad1 from a male of *L. ignarus* from Almeria (Abrucena, Río Nacimiento, 19.V.2006 A. Castro leg.). The three species were more distantly related to *L. mucronatus* BAUDI, 1872. *Limnebius ignarus* is at present known only from southern Spain (Málaga, Cádiz, Granada and Almería) (JÄCH 1993; SÁINZ-CANTERO & ACEITUNO-CASTRO 1997; JÄCH et al. 1999), though its presence in northern Morocco cannot be discarded. The recently described *Limnebius kamali* is known from northern Morocco, and *L. pilicauda* is one of the commonest and most widely distributed species in Morocco and the Maghreb (JÄCH 1993, 2004; SAÍNZ-CANTERO & BENNAS 2006).

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