

**Description of *Limnebius millani* sp.n.
(Insecta: Coleoptera: Hydraenidae)
from the Sierra de Alcaraz (Southeast Spain)**

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Abstract

Limnebius millani sp.n. is described from the Sierra de Alcaraz, in the southeast of the Iberian Peninsula. The species belongs to the *Limnebius nitidus* subgroup sensu JÄCH (1993), which has a predominantly Ibero - North African distribution, being most closely related to *L. hilaris* BALFOUR-BROWNE, 1978.

Key words: Hydraenidae, *Limnebius millani*, new species, taxonomy, Iberian Peninsula.

Zusammenfassung

Limnebius millani sp.n. aus der Sierra de Alcaraz im Südosten der Iberischen Halbinsel wird beschrieben. Die Art ist nahe verwandt mit *L. hilaris* BALFOUR-BROWNE, 1978 und gehört zur *Limnebius nitidus* Untergruppe sensu JÄCH (1993), welche ihr Hauptverbreitungsgebiet auf der Iberischen Halbinsel und in Nordafrika hat.

Introduction

The genus *Limnebius* LEACH, 1815, with an almost world-wide distribution (JÄCH 1993), is one of the most diverse genera of Hydraenidae. In a recent revision of the Palaearctic species JÄCH (1993) tentatively recognized six species groups, based on both the external morphology and the structure of the male genitalia. Among them, the *Limnebius nitidus* group includes 17 species with a rather similar external morphology: 1.2 - 1.7 mm long, dark in colour, apex of the elytra usually more or less acuminate in both sexes, and male ventrite VI without modifications. The group was further subdivided into four subgroups, one of them, the *L. nitidus* subgroup, with seven species: *L. gerhardti* HEYDEN, 1870 (Iberian Peninsula with the exception of the extreme NE), *L. hilaris* BALFOUR-BROWNE, 1978 (province of Almería, SE Spain), *L. irmelae* JÄCH, 1993 (Tunisia), *L. maurus* BALFOUR-BROWNE, 1978 (Iberian Peninsula and N Morocco), *L. montanus* BALFOUR-BROWNE, 1978 (N Portugal and central Spain), *L. nitidus* (MARSHAM, 1802) (Western Europe, reaching only the extreme NE of Spain), and *L. nitifarus* D'ORCHYMONT, 1938 (N Algeria) (VALLADARES & MONTES 1991, JÄCH 1993). To these, a recently described species close to *L. maurus* from south Morocco has to be added (RIBERA & MILLÁN, in press).

All these species share a similar aedeagal structure, with a long main piece, without lateral appendages or complex structural modifications, one paramere (left) also long, well

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separated from the main piece and with two well defined rows of setae, and a long and sinuous appendix emerging from the base of the main piece, with a superficial resemblance to a paramere (the pseudoparamere *sensu* JÄCH 1993). The origin of the pseudoparamere is still not fully understood; it may be homologous to other appendages present in the aedeagus of different species of the genus, having its origin in a group of strongly modified and coalescent setae, as suggested by the presence of longitudinal striae in some species of several groups (JÄCH 1993). The presence of these more or less defined longitudinal striae in most species of the *L. nitidus* subgroup is thus likely to be a plesiomorphy.

In a survey of the aquatic Coleoptera of the Sierra de Alcaraz, in the head of the Segura river basin (province of Albacete), a new species was collected in two nearby localities. According to its external morphology and male genitalia structure it has to be assigned to the *L. nitidus* subgroup.

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Limnebius millani sp.n.

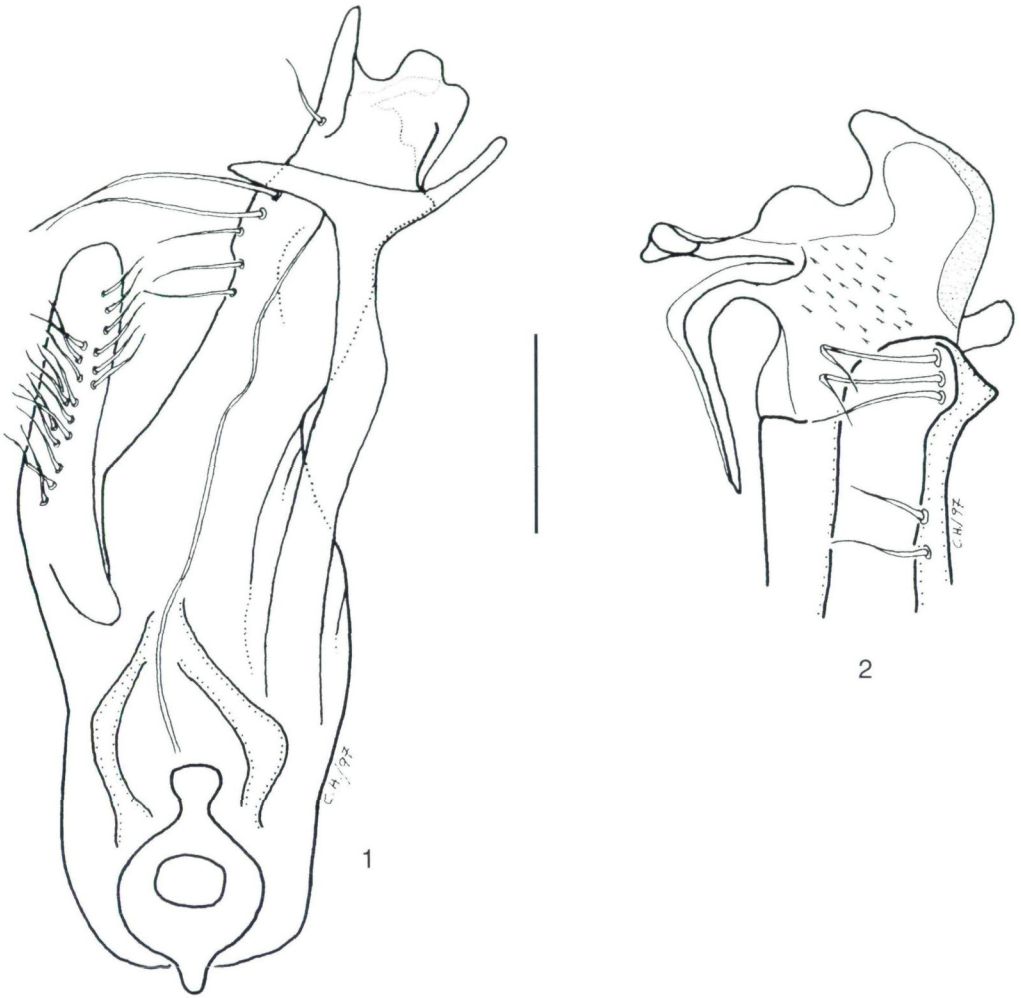
Holotype ♂: "SPAIN Albacete / Arroyo Fuenfría 16.iii.1997 / leg. Ribera, Hernando, Millán & Aguilera" (Naturhistorisches Museum, Vienna). **Paratypes**: 2 ♂♂ same locality and date as holotype; 7 ♂♂ same locality, 9.vi.1997, leg. Ribera & Millán; 9 ♂♂ same locality, 15.vi.1997, leg. Ribera; 7 ♂♂ same locality, 6.ix.1997, leg. Ribera & Aguilera; 1 ♂ "SPAIN Albacete / Riopar, río de la Vega 2.iii.1997 / leg. Ribera & Millán" (Naturhistorisches Museum, Vienna; coll. Aguilera, Barcelona; coll. Fresneda, Lleida; coll. Hernando, Barcelona; coll. Millán, Murcia; coll. Ribera, Barcelona; Museu de Zoologia, Barcelona).

Type locality: small stream (Arroyo de la Fuenfría) in the head of the river Madera, Paterna del Madera, in the Sierra de Alcaraz, province of Albacete, SE Spain. U.T.M. grid square 10 x 10 km 30TJW56, 1,400 m a.s.l.

Due to the difficulty in separating the females of the different species of the subgroup that regularly coexist in the type locality, only males are designated as types of this new species.

Diagnosis (males): 1.50 - 1.70 mm long, 0.75 - 0.80 mm wide. Black, with elytral and pronotal margins paler. Head with a paler preocular area in most specimens, sometimes extended to the eye margins. Head and pronotum with sparse puncturation, smooth and shiny between the punctures. Pronotum finely bordered. Pubescence of the pronotum scarce, whitish in colour. Elytra with a denser puncturation, shagreened throughout. Pubescence as in the pronotum. Elytral apices truncate. Ventrite VI of male elongated, without any other apparent modification. Palpi, antennae, and legs testaceous. Anterior tibiae slightly dilated, middle and hind tibiae with series of dorsal spines. Ventral side black, with dense hydrophobic pubescence on the mesosternum.

Aedeagus (Figs. 1, 2): Main piece wide and flat, slightly twisted along its longitudinal axis, with a small group of long subapical setae on the left margin, with a blunt prominence at the start of the longest group of setae (clearly visible in lateral view). With a



Figs. 1 - 2: (1) Ventral view of the aedeagus of *Limnebius millani* sp.n. traced from photographs (scale bar, 0,1 mm); (2) detail of the apex of the main piece, left lateral view.

sort of flap partly covering the apex of the main piece (visible on the left in dorsal view). Apex of the main piece weakly sclerotised, with a complex structure clearly visible only in lateral view (Fig. 2). Pseudoparamere long, with a preapical narrow digitiform expansion and with fine longitudinal striae. Left paramere robust, with the apex flat and curved towards the ventral side in lateral view, with a distinct protuberance in the middle, at the start of the longest row of setae.

Distribution: So far only known from two nearby localities (less than 10 km apart) in the NE and SE sides of the Sierra de Alcaraz, one in the head of the river Madera (Arroyo de la Fuenfría) and the other in the head of the river Mundo (Río de la Vega, Riopar, U.T.M. grid square 30TWJ46, 1,200 m a.s.l.), both tributaries of the river Segura.

Etymology: Named after our friend Andrés Millán, a specialist of the aquatic Coleoptera and Heteroptera of the river Segura basin.

Ecology: The species has so far been found in two small mountain streams, with clean and very calcareous waters (with concretions), which are almost devoid of vegetation. In the type locality the species coexisted with two other species of the *L. nitidus* subgroup, *L. maurus* and *L. gerhardti*.

Discussion

The relationships within the *L. nitidus* subgroup are complex and still poorly understood. The comparative study of the aedeagus is one of the possible approaches to the problem (J. FRESNEDA & I. RIBERA, in prep.). A preliminary analysis places the new species close to *L. hilaris*: both species share a main piece twisted along its longitudinal axis, with the apex wide and flat in lateral view, with three distinct very similar expansions: the first ventral, short and round, the second straight and directed backwards, and the third narrow and curved downwards (Fig. 2) (studied specimens of *L. hilaris* were collected in river Aguas, Almería, 16.ii.1997, leg. Ribera). They differ by the strong denticle in the middle of the paramere of *L. hilaris*, clearly visible in lateral view (only a round protuberance in *L. millani*), the details of the membranous expansions of the distal piece, the absence of a digitiform expansion in the pseudoparamere in *L. hilaris* (which is simple) and by the different general shape of the main piece.

The restricted distribution of *L. hilaris* and *L. millani*, occurring in nearby mountain systems, suggests that they are vicariant local endemics which may have evolved *in situ*. Their relationships with other species of the *L. nitidus* subgroup are, however, still not fully resolved, no clear conclusions can be drawn until more is known about their systematics and distribution.

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