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Helophorus bivari sp.n. from the Azores (Coleoptera: Helophoridae)

A.G. SHATROVSKIY & R.B. ANGUS

Abstract

Helophorus bivari sp.n. (Coleoptera: Helophoridae) from the Azores is described, illustrated, and compared with the most similar species of the subgenus *Rhopalohelophorus* KUWERT, 1886: *H. asturiensis* KUWERT, 1885 and *H. rinki* ANGUS, 1985.

Key words: Coleoptera, Helophoridae, *Helophorus*, *Rhopalohelophorus*, new species, Azores, taxonomy.

Introduction

The genus *Helophorus* FABRICIUS, 1775 currently includes about 200 described species and subspecies, most of which are distributed in the Palearctic Region (164). Sixteen species are known from continental Portugal (PRZEWOŹNY 2022), but no *Helophorus* has been recorded from the Azores so far (BORGES et al. 2010, LAMELAS-LÓPEZ et al. 2017).

In the collections of the National Museum of Natural History and Science (Lisbon, Portugal), the senior author found one male of *Helophorus* (subgenus *Rhopalohelophorus* KUWERT, 1886), which was collected in the Azores in 1978. It represents a new species, which is described below.

Material and methods

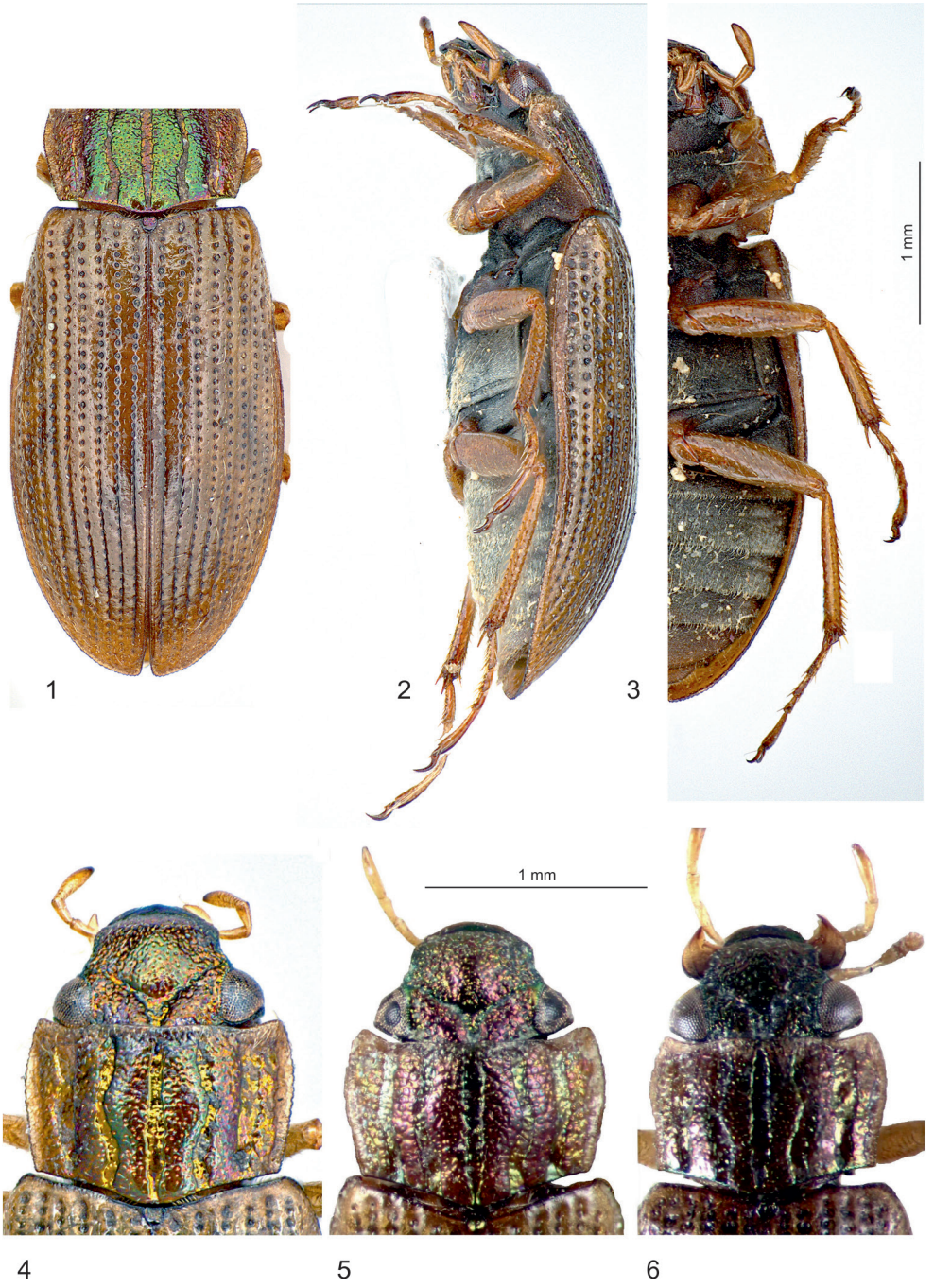
The single specimen stored in the Museu Nacional de História Natural e da Ciência (National Museum of Natural History and Science), Lisboa, Portugal (MNHNC), was originally labelled "3/20", which refers to material collected by António Bivar de Sousa. According to this label we were able to trace the exact locality in Bivar de Sousa's workbook.

For observation of the type specimen, a Bresser Advance ICD 10–160× trinocular microscope was used. For microphotography and measurements, a Leica Z6 APO macroscope was used. The images were stacked using Microscope Software Platform Leica Application Suite X 5.20.26130. The aedeagus was dissected and mounted in DMHF on a plate of transparent film. The aedeagi of the new species and *H. asturiensis* were imaged with a Leitz Dialux 20 Fluorescence Microscope with further stacking of preliminary images using the program Helicon Focus Pro v6.0.18 Final & Helicon Remote v3.2.7. The head, pronotum and aedeagus of *H. rinki* ANGUS, 1985 were photographed in the Sackler Imaging Laboratory of the Natural History Museum, London, U.K., using a Leica MZ125 stereomicroscope (head and pronotum) and a Zeiss Axioskop bright field compound microscope (aedeagus), both equipped with Cannon DSLR cameras. The images were stacked using Helicon Focus 8. The measurements of the aedeagus were carried out according to the method described by ANGUS (1992).

Helophorus (*Rhopalohelophorus*) *bivari* sp.n.

(Figs. 1–4, 7)

TYPE LOCALITY: Furnas Lake, Vila da Povoação, São Miguel Island, Azores Archipelago, Portugal.



Figs. 1−3: *Helophorus bivari*, holotype, 1) elytra, dorsal view, 2) elytra, lateral view, 3) elytral flanks, ventral view. Scale = 1 mm.

Figs. 4–6: Head and pronotum of 4) *H. bivari*, holotype, 5) *H. rinki*, Italy, Pisa, 6) *H. asturiensis*, Spain, Cádiz. Scale = 1 mm.

TYPE MATERIAL: **Holotype** ♂ (MNHNC, "MNHNCENT0045633"): "PORTUGAL, Açores, São Miguel, Vila da Povoação, Lagoa das Furnas, 37.7505083N 25.3306528W, 288 m a.n.m. [a.s.l.], 19.XI.1978, leg. A. Bivar de Sousa", "Margem da lagoa, no final do caminho que passa pela capela gótica [On the shore of the lake, at the end of the path that passes by the Gothic chapel]", "20/3" [written with red ink], "Holotype ♂ *Helophorus bivari* Shatrovskiy et Angus" [written on red label].

DESCRIPTION: Holotype ♂: length 4.1 mm, width of the elytra 1.7 mm.

Head (Fig. 4). Strongly granulate. Each granule has a central pore with a seta. Green, golden shining. Y-groove shallow, with copper-red golden shining bottom, close to parallel-sided, its lateral furrows narrow, straight on the main length, curved outwards before the anterior edge of the eyes. Frons slightly elevated longitudinally. Clypeus weakly curved anteriorly. Labrum of obtuse form. Antennae 9-segmented, yellowish brown. Palpi yellow, moderately elongate, with the apical segment longest, clearly asymmetrical.

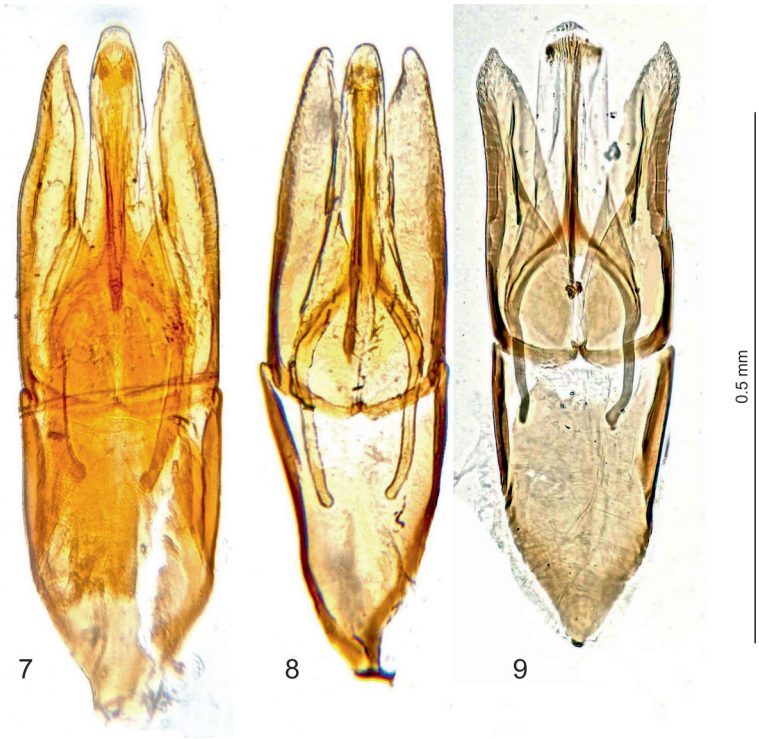
Pronotum (Fig. 4). Width 1.3 mm, length 0.9 mm, broadest in front of the middle, moderately arched in frontal and dorsal views. Anterior margin sinuate, posterior margin obtuse. Sides rounded. Their margins bear setae and are slightly serrate in dorsal view. Internal and middle intervals moderately granulate, externals more sparsely so. Internal and middle intervals green (as on head); external intervals copper-red; all intervals shining golden. Grooves with few small granules on their floors. Median groove narrowed anteriorly and posteriorly, open at both ends. The other grooves are open to the posterior margin but end before the anterior margin, at the level of the anterior pale yellowish band. Submedian grooves relatively narrow, sinuate. Submarginal grooves straight, broad. Marginal grooves curved parallel to the side of the pronotum, of uniform width. Internal and middle interval of the same colour as the head, external ones coloured as the bottom of the Y-groove. Median, submedian and submarginal groove copper-red with strong golden reflections. Marginal grooves yellow, as anterior border, this border occupying 1/5 of the pronotal length in the middle and 1/10 at the sides.

Elytra (Figs. 1–3). Length 2.8 mm, width 1.7 mm. Shape oval, bluntly rounded at the apex. In profile the elytra are directed to the top at an angle of about 40°; they are somewhat flattened at the top (Fig. 2). Rows of punctures slightly deepened in furrows, intervals flat, each with row of punctures with trichobothria. Colour yellowish-brown. Flanks not visible from below (Fig. 3).

Legs. Yellowish-brown. Natatorial setae present, but not distinctly visible.

Aedeagus (Fig. 7). The shape is very distinctive, so this species may be described on the single specimen. Length 0.66 mm, width 0.20 mm. The sides are parallel along the main length. Basal piece 0.32 mm long. Parameres about the same length (0.34 mm), sinuate along the outer and inner edges, so that the pointed tops are directed inward. Penis longer than parameres: 0.42 mm. Tube longer than struts: tube length 0.24 mm, struts length 0.18 mm. Width of struts 0.15 mm, width of tube 0.04 mm. Tube parallel-sided, narrowed to the apex from the gonopore, rounded at the top.

DIFFERENTIAL DIAGNOSIS: In the key to *Rhopalohelophorus* provided by ANGUS (1992), the 9-segmented antennae and the moderately arched pronotum would take *Helophorus bivari* to couplet 22, and the elytral flanks, which are not visible from below, would then take it to couplet 32. The pronotal shape does not match either *H. kirgisicus* KNIŽ, 1914 or *H. similis* KUWERT, 1887, and the steeper apical elytral declivity (Fig. 2) does not match the typical form of *H. lapponicus* THOMSON, 1853, which differs also significantly in the aedeagus. The pale pronotum and yellowish elytra take it to couplet 36, and the size and moderate arching of the pronotum take it to couplet 37 where the fairly wide, moderately arched and laterally arched pronotum would identify it as *H. rinki* ANGUS, 1985 (Fig. 5). However, the aedeagus of *H. rinki* (Fig. 8) is completely different, and the aedeagus of *H. bivari* is much more like that of *H. asturiensis* KUWERT, 1885 (Fig. 9), a species with a very differently shaped pronotum (Fig. 6).



Figs. 7–9: Aedeagi of 7) *H. bivari*, holotype, 8) *H. rinki*, Italy, Pisa, 9) *H. asturiensis*, Portugal, Santarém, Cartaxo. Scale = 0.5 mm.

ETYMOLOGY: The new species is named after António Bivar de Sousa, specialist of Lepidoptera, and founder (and president) of the Portuguese Entomological Society (Sociedade Portuguesa de Entomologia).

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Dr. Alexander G. SHATROVSKIY
Departamento de Zoologia e Antropologia, Museu Nacional de História Natural e da Ciência, Rua da Escola Politécnica 56/58, 1250-102 Lisboa, Portugal (ashatrovskiy@ukr.net)

Dr. Robert B. ANGUS
Division of Life Sciences (Insects), Natural History Museum, Cromwell Road, London SW7 5BD, United Kingdom (r.angus@rhul.ac.uk)