

A NEW SPECIES OF *JANULUS* (GASTROPODA: PULMONATA: GASTRODONTIDAE) FROM LA PALMA ISLAND (CANARY ARCHIPELAGO)

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Abstract A new, small (<6 mm), endemic land snail species discovered recently on La Palma (Canary Islands) is described and named as *Janulus traviesus*. The generic placement of this new species is based on the close similarity of its shell shape and size to those of the other Macaronesian *Janulus* species.

Key words Canary Islands, land snails, endemic, taxonomy

INTRODUCTION

The oceanic Canary Islands contain a rich terrestrial malacofauna with over 315 species known to date, of which over 85% are endemic. However, new endemic land snail species are still found rather frequently, which reinforces the need for intensive field surveys across these islands.

In February and March 2014, a previously unknown, small (<6 mm maximum shell diameter) land-snail species was discovered by J. M. Castro and Rafael García in the northern part of the island of La Palma (Canary Islands: Fig. 1). Its shell characteristics show close similarities to those of three Macaronesian species of *Janulus* Lowe, 1852 (Gastrodontidae), two of which are known only conchologically. That genus also contains several European fossil species (Esu, 1999; Cameron *et al.*, 2007, 2013; Manganelli *et al.*, 2011; Waldén, 1983, 1984). The Macaronesian *Janulus* species are *J. stephanophorus* (Deshayes 1850) (Fig. 3D), the type species of the genus, and *J. bifrons* (R.T. Lowe 1831) (Fig. 3E) from the Madeira Archipelago, as well as *J. pompylius* (Shuttleworth 1852) (Fig. 3C), from La Palma Island. The shell of the last of these was also drawn in 1853 (Shuttleworth, 1975, Tab. 1: 12); it was considered by Fontaine *et al.* (2007) to be globally extinct, although more fieldwork is needed to check if it still survives. The genital system of this and allied Gastrodontidae is only known from *Janulus bifrons* and one species of the genus *Atlantica* Ancy 1887, *A. calathoides* (R.T. Lowe 1863) (Pilsbry, 1947, Cameron *et al.*, 2013).

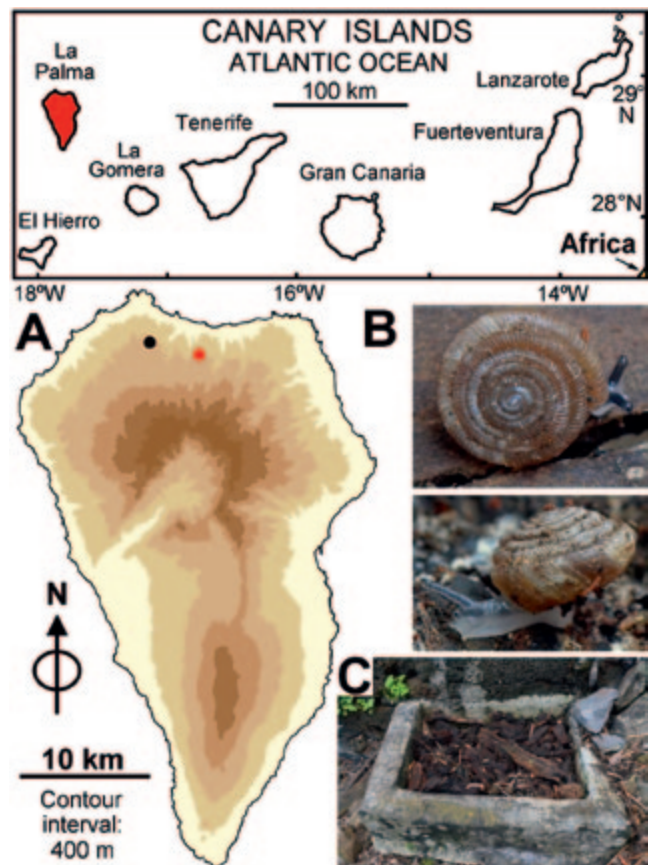


Figure 1 A map of distribution of *Janulus traviesus* sp. nov. (La Palma Island, Canary Islands), the red point corresponds to the ravine Barranco de La Traviesa (the type locality) and the black point to the Barranco de Magdalena. **B** paratype from Barranco de Magdalena, in dorsal and lateral views. **C** open concrete box where the holotype and first paratypes were found.

The shell shape of the new species is similar to that of *J. stephanophorus*, and the shell size is similar to that of *J. pompylius*. Therefore, the

new species described here is tentatively classified in the genus *Janulus*, so that it becomes the second species assigned to this genus from La Palma Island. The holotype (Figs 3A–B) is the only adult or subadult specimen found, but 28 juvenile to subadult paratypes (with 4–6 whorls) were found at two localities of the island.

MATERIALS AND METHODS

The map of geographical distribution (Fig. 1A) was produced using MapViewer software (Golden Software Inc.). The photographic methodology is described in Ibáñez *et al.* (2006). The number of shell whorls was counted using the methodology described by Kerney & Cameron (1979: 13).

ABBREVIATIONS

- AIT** Alonso and Ibáñez collection, Department of Animal Biology, University of La Laguna, Tenerife, Canary Islands, Spain.
- JMC** J. M. Castro private collection, Santa Cruz de La Palma, Spain.
- NMBE** Naturhistorisches Museum Bern, Switzerland.
- RG** R. García private collection, Santa Cruz de La Palma, Spain.
- sh** shell.
- sp** specimens in spirit.
- TFMC** Museo de Ciencias Naturales de Tenerife, Canary Islands, Spain.
- UTM** Universal Transverse Mercator, cartographic projection system.

RESULTS AND SYSTEMATICS

Family Gastrodontidae Tryon 1866

Genus *Janulus* R.T. Lowe 1852

Janulus traviesus sp. nov.
Figs 1B, 3A–B

Holotype 1 sh, TFMC (MT 854); leg. J. M. Castro, 23th February 2014 (Fig. 3A–B).

Paratypes 2 sh and 5 sp (JMC), 17 sh and 1 sp (RG) 1 sp (NMBE, no. 522213) and 2 sp (AIT); collected in February and March 2014 from two localities in the north of La Palma (Fig. 1A).

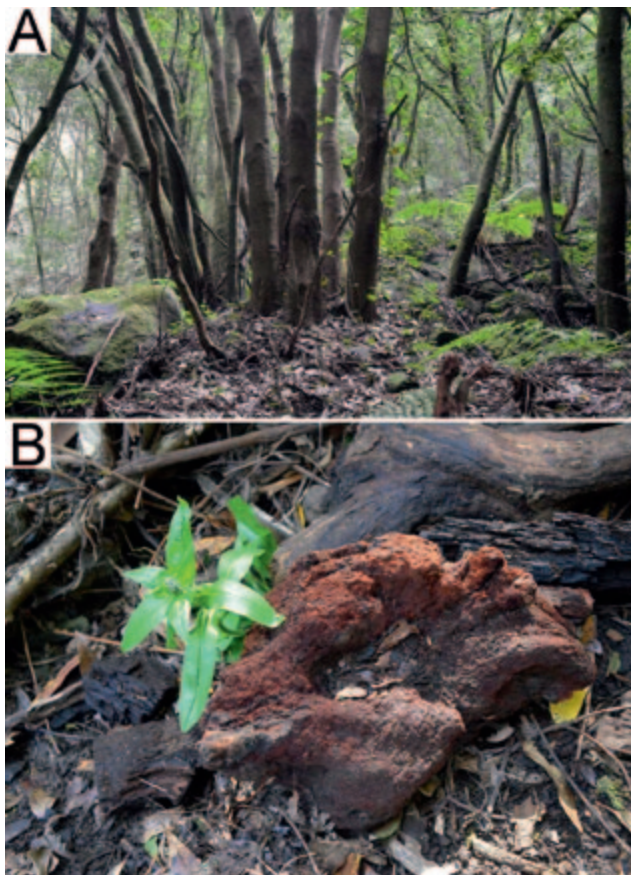


Figure 2 Habitat of *Janulus traviesus* sp. nov. **A** ravine Barranco de Magdalena. **B** detail of the micro-habitat of the type locality, located near the concrete open box of Fig. 1C.

Type locality Ravine Barranco de la Traviesa (La Palma; UTM: 28RBS2090; 700 m altitude) (Figs 1A, 1C, 2B).

Description Exposed parts of the body (Fig. 1B) pale grey on the head and dorsal surface of foreparts; eye-spots black, the blackish ommatophore retractor muscles visible by translucence; whitish to pale grey on upper flanks; tail, foot-fringe and sole of foot white.

Shell (Fig. 3A–B) rounded, depressed-conic (ratio maximum diameter/height=1.85), fragile, with 7 $\frac{1}{3}$ whorls that increase regularly in size. Body whorl shouldered at the periphery. Shell colour pale brown. Protoconch smooth, with around 1 $\frac{3}{4}$ whorls. Dorsal surface of teleoconch whorls with a sculpture of very numerous rounded, small but clear ribs, the ribs continuing on basal surface as a thin radial-oblique striation. Aperture narrowly semilunate, slightly oblique; peristome simple, without lip or inner

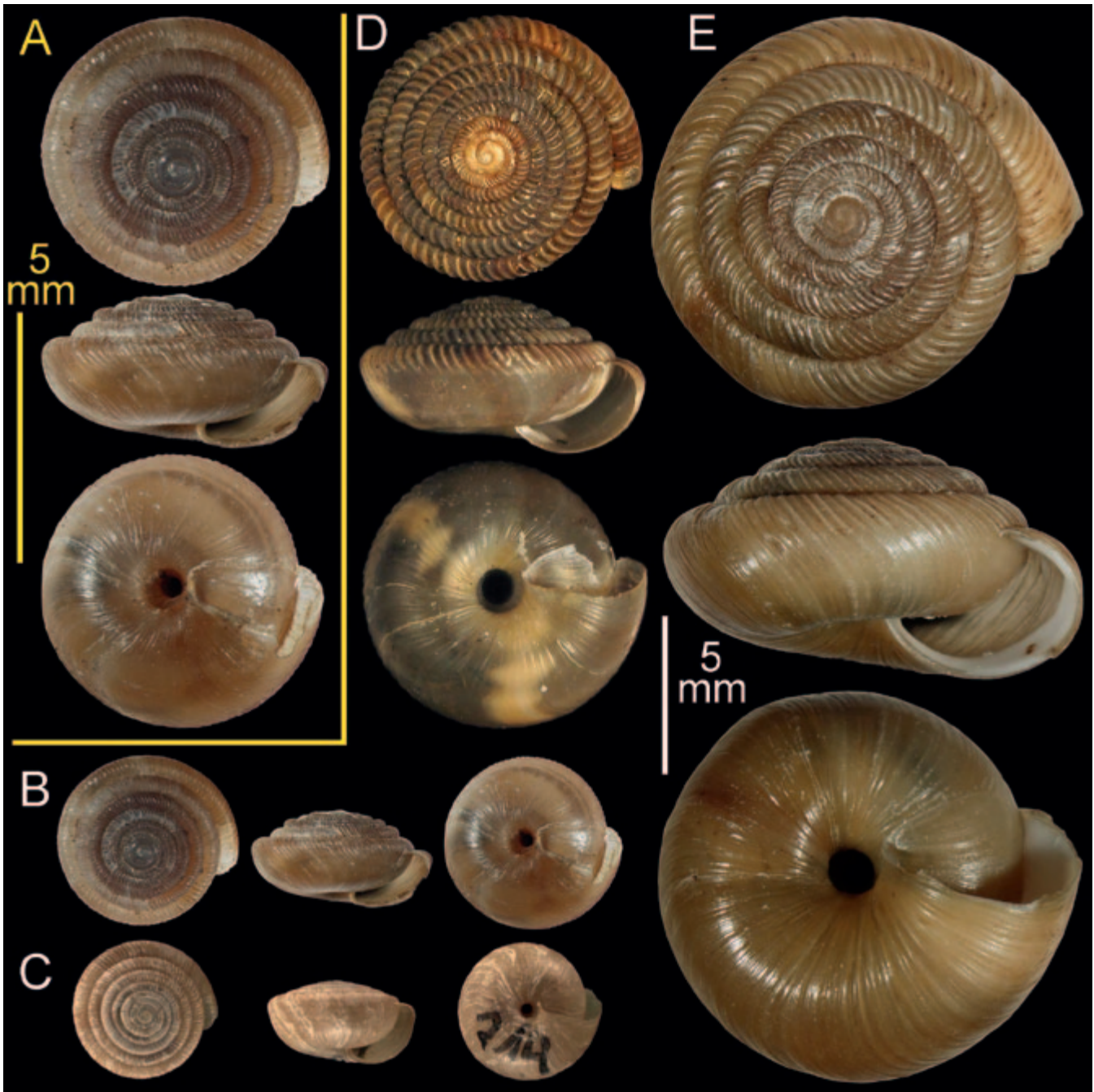


Figure 3 Shell photographs. **A, B** holotype of *Janulus traviesus* sp. nov. **C** holotype of *Janulus pompyilius* (Shuttleworth 1852), photograph by Eike Neubert, © NMBE, no. 18777 (in Neubert & Gosteli, 2003, reproduced with permission). **D** *J. stephanophorus* (Deshayes 1850) from Ilha da Madeira, photograph by Giuseppe Manganelli (in Manganelli *et al.*, 2011, fig. 9 a–c, reproduced with permission). **E** *J. bifrons* (Lowe 1831) from Ilha da Madeira, photograph by Miguel Ibáñez (adapted from Cameron *et al.*, 2013, fig. 1A).

protuberances. Inner palatal teeth/lamellae not detected. Umbilicus small, deep. Holotype height 3.085 mm, diameter 5.72 mm.

Etymology The species epithet *traviesus* is an adjective derived from the name of the type locality.

Distribution and habitat The snails were collected at the type locality (Figs 1A, 1C, 2B) and in a second locality close to it, the ravine Barranco de Magdalena (UTM: 28R BS1691, at 800 m altitude: Figs 1A, 2A), both from a wet area on the windward slope of the northern part of La Palma, in which the humid trade winds

provide high levels of moisture. The vegetation is laurel forest dominated by the trees *Laurus novocanariensis* Rivas-Mart. et al., *Erica arborea* L. and *Morella faya* (Aiton) Wilbur. The first snails found (including the holotype) were under small pieces of fallen logs and rotten wood, where they probably had shelter, access to decayed plant food and sufficient moisture to prevent desiccation. The log containing the snails was found in a rectangular open box (50×80 cm) made of concrete and no longer in use (Fig. 1C), in close vicinity to a pile of decaying tree branches (Fig. 2B). In the same ravine, another species of small (<6 mm) endemic Gastrodontidae, *Vermetum festinans* (Shuttleworth 1852) has recently been found (Holyoak et al., *Journal of Conchology*, in press), suggesting that this area might contain additional as yet undiscovered taxa.

COMPARISONS AND DISCUSSION

The new species described here as *Janulus traviesus* (Fig. 3A–B) differs from *J. bifrons* (Fig. 3E) mainly in its smaller shell diameter (nearly 2.5 times smaller than that of *J. bifrons*) and in having the body whorl shouldered at the periphery rather than rounded. The shell shape of *J. traviesus* sp. nov. is similar to that of *J. stephanophorus* (Fig. 3D), but it is significantly smaller (the maximum shell diameter is nearly two-thirds that of *J. stephanophorus*). Also, the shell of *J. traviesus* sp. nov. has nearly twice as many dorsal ribs on the last whorl as that of *J. stephanophorus*, so each individual rib is much smaller. Furthermore, *J. traviesus* lacks palatal lamellae, whereas *J. stephanophorus* (Manganelli et al., 2011) and several other Gastrodontidae genera (e.g. *Atlantica*: Cameron et al., 2013), have radial, paired, tooth-shaped palatal lamellae on the inner palatal wall of the body whorl (visible through the transparent shell wall: Fig. 3D). Palatal lamellae are also absent in several other *Janulus* species, such as *J. bifrons*. Finally, the shell of *J. pompylius* (Fig. 3C) is only slightly smaller than that of *J. traviesus* sp. nov. (Figs 3A–B), but markedly different in shape and ornamentation. The ornamentation of the shell of *J. pompylius* is low and rounded and the shell is moderately raised on the dorsal side, convex and rounded on the ventral side (“supra depressa, subtus convexa, suborbicularis, arc-tispira ... Diam. maj. 5, min. 4½; Alt. 3 mill.”: Shuttleworth, 1852).

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