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Description of *Paravulvus moroccanus* sp. n. (Nematoda, Dorylaimida, Nygolaimidae) from the High Atlas Mountains, Morocco, with notes on the taxonomy of the genus

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Abstract

Paravulvus moroccanus sp. n., collected in the Moroccan eastern High Atlas, is described and illustrated. The new species is characterized by its 1.06–1.36 mm long body, lip region offset by marked depression and 11–13 µm broad, mural tooth solididentoid and 5.5–6.5 µm long, neck 229–270 µm long, pharyngeal expansion 108–126 µm long or occupying less than one-half (42–48%) of total neck length, uterus 27–47 µm long or 0.7–1.1 times the corresponding body diameter, V = 46–56, paravulvae absent, female tail rounded conoid (21–27 µm, c = 42–64, c' = 1.1–1.5), and male unknown. The taxonomy of *Paravulvus* is updated, with comments on its definition, a discussion of its relationships, and the provision of a list of species along with a key to their identification and a compendium of their morphometrics.

Key words: Compendium, key, morphology, morphometrics, *Paravulvus*, SEM, taxonomy

Introduction

The genus *Paravulvus* Heyns, 1968 is a dorylaimid, nygolaimoid taxon with an interesting combination of characters that constitutes an easily recognizable pattern. It includes 16 valid species (Andrássy, 2009), which are widespread in the Holarctic but much less so in Southern Hemisphere territories, and mainly inhabit natural habitats. Since the original proposal in 1968, the definition of *Paravulvus* has not significantly changed (Ahmad & Jairajpuri, 1982; Jairajpuri & Ahmad, 1992; Lazarova *et al.*, 2002), but the number of described species has notably increased. Lazarova *et al.* (*op. cit.*) provided the last review of the genus, but four new species (Ahmad *et al.*, 2003; Olia *et al.*, 2004) have subsequently been added to its catalogue.

Material of the genus *Paravulvus* was recently collected in a nematological survey conducted in Morocco. Detailed study revealed that this material belonged to an unknown species, whose description is presented in the following paper, along with an updated taxonomy of the genus.

Material and methods

Nematodes were collected in natural habitats of cedar (*Cedrus atlantica* (Endl.) Manetti ex Carrière) forests in the eastern High Atlas Mountains (Morocco) in Summer 2010, extracted from soil samples using the methods of Baermann (1917) and Flegg (1967), relaxed and killed by heat (60ºC), fixed in 4% formaldehyde, and processed to anhydrous glycerine following de Grisse's (1969) protocol. Finally, the specimens were mounted on permanent glass slides to allow handling. Nematodes were observed using a light microscope. Morphometrics included de Man's indices and the usual measurements. Some of the best-preserved specimens were photographed with a Nikon Eclipse 80i microscope and a Nikon DS digital camera. Raw photographs were edited using Adobe® Photoshop® CS. For SEM study, fixed specimens were hydrated in distilled water, dehydrated in a graded ethanol

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P. papillatus: The Korean population described by Choi and Jairajpuri (1998) bears a significantly shorter odontostyle than the type population from India (6–7 *vs* 8–9 µm). Thus, some doubt exists as to the true identity of this material, which might be conspecific with *P. japonicus*.

P. teres: Andrássy (2009: p. 162) considered *P. amphigonicus* a junior synonym of *P. teres*. Nevertheless, this action was not justified and, moreover, Heyns (1968) classified *Nygolaimus amphigonicus* under the subgenus *Nygolaimus*, not under *Paravulvus.*

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