



<http://dx.doi.org/10.11646/zootaxa.3884.1.7>

<http://zoobank.org/urn:lsid:zoobank.org:pub:A5FECE4B-2979-437F-BBE6-FB24CF1F07AB>

Taxonomic revision of the Nippostrongylinae (Nematoda, Heligmonellidae) parasitic in Oriental Muridae. The genus *Paraheligionelloides* Fukumoto, Kamiya & Suzuki, 1980

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Abstract

The genus *Paraheligionelloides* Fukumoto, Kamiya and Suzuki, 1980 (Nippostrongylinae) is revised and split into four genera, mainly based on characters of the synlophes not previously considered at the supraspecific level. These characters mainly include the homology of the left ridge with ridge 1', the relative size of the right ridge to the left ridge and to ridge 1' and the distribution of the largest ridges. *Paraheligionelloides sensu stricto*, characterized by the homology of the left ridge with ridge 1', contains only the type species, *Paraheligionelloides kenyensis* Fukumoto, Kamiya and Suzuki, 1980, parasitic in a lagomorph from Kenya. *Krishnasamyos* n. gen., characterized by ridge 1' forming a comarete, two minute left ventral ridges and ridge 1 larger than other dorsal ridges, only includes the species *Krishnasamyos triangulus* n. comb., parasitic in Malaysian murids. *Hughjonestrongylus* n. gen., characterized by numerous ridges markedly unequal in size, with the largest ridges grouped in relation to the lateral fields, includes *Hughjonestrongylus ennisae* n. comb., *Hughjonestrongylus amplicaudae* n. comb., *Hughjonestrongylus mirzai* n. comb., and *Hughjonestrongylus singauwaensis* n. comb., all parasitic in murids from Papua Indonesia and Papua New Guinea. *Syafruddinema* n. gen., characterized by ridge 1 as long as other dorsal ridges and a gap associated with the left lateral field, between ridges 2' and 3', includes *Syafruddinema paruromyos* n. comb., *Syafruddinema amandalei* n. comb., and *Syafruddinema eropeplios* n. comb., parasitic in murids from Malaysia and Indonesia. A key to the proposed genera is provided.

Key words: Trichostrongylinae; synlophes, *Paraheligionelloides* s. str., *Krishnasamyos* n. gen., *Hughjonestrongylus* n. gen., *Syafruddinema* n. gen., Kenya; Indonesia, Malaysia, Papua Indonesia, Papua New Guinea.

Introduction

The taxonomy of the Trichostrongylinae and particularly of the Heligmonellidae is defined essentially by the synlophes (Durette-Desset 1971, 1985; Durette-Desset *et al.* 1994), a complex cuticular structure in which numerous characters are involved. Moreover, the continuous discovery of new species within this group is constantly providing new elements which are incorporated into the descriptions, but some of them also providing useful characters to be considered in the taxonomy at the supraspecific level. In reviewing the definition and specific composition of certain genera of Nippostrongylinae (Digiani & Durette-Desset 2013), it was found that some generic definitions are too general and not accurate enough in defining the characters provided by the synlophes, a fact which is not consistent with the complexity of this structure. This means that, in certain genera, the inclusion of species with very different synlophes is sometimes allowed by ambiguous generic definitions.

The genus *Paraheligionelloides* Fukumoto, Kamiya & Suzuki, 1980 (Heligmonellidae, Nippostrongylinae) was erected to classify a species parasitic in a leporid from Kenya, although the species subsequently described in the genus are parasitic in Muridae from South East Asia and the Australasian Region. Fukumoto *et al.* (1980) defined *Paraheligionelloides* as follows: "Synlophes (sic) consist of 15 aretes, 2 lateral ones comparatively larger,

Key to the proposed genera

- 1 Ridge 1 larger than adjacent dorsal ridges 2
- Ridge 1 of same size as adjacent dorsal ridges. 3
- 2 Ridge 1^o situated in front of left lateral field. No minute ridges on left ventral quadrant. Parasites of Leporidae from Kenya. . .
..... *Paraheligionelloides*
- Ridge 1^o situated on left dorsal quadrant. Two minute ridges in front of left lateral field. Parasites of Muridae from Malaysia. .
..... *Krishnasamyos* n. gen.
- 3 Ridges 20–30, markedly unequal in size (very large to minute). Largest ridges grouped in relation to the lateral fields. Parasites
of Muridae from Indonesia and Papua New Guinea *Hughjonestrongylus* n. gen.
- Ridges 14–17, unequal in size but not markedly (small to minute). Left ventral and right dorsal ridges symmetrical in relation
to axis of orientation (similar size and number). Parasites of Muridae from Indonesia. *Syafruddinema* n. gen.

Acknowledgments

To Lesley R. Smales (South Australian Museum) for providing information on deposited material of *Paraheligionelloides*. To Didier Geffard-Kuriyama (Muséum national d'Histoire naturelle, Paris, France) for the drawings and Ms. Deborah-Lynn Kay for the English revision.

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