



Laelapidae (Acari: Mesostigmata) on megachiropteran bats: new records and a new species of *Neolaelaps* Hirst

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Abstract

The little-known monotypic genus *Notolaelaps* is newly recorded from Australia. Males of *Notolaelaps novaguinea* Womersley are fully described for the first time, protonymphs are newly described, and females redescribed. A fourth species of *Neolaelaps*, *Ne. windsori* sp. nov., previously regarded as a form of *Neolaelaps vitzthumi* Domrow, is described as new. Male *Neolaelaps vitzthumi* are described for the first time from a heavily-infested specimen of *Pteropus alecto*. Both genera are re-diagnosed. Relationships between *Notolaelaps*, *Neolaelaps* and the Macronyssidae are discussed.

Key words: key, Papua New Guinea, Australia, Pteropodidae, phoresy, *Notolaelaps*, *Neolaelaps*

Introduction

The emergence of important viral diseases associated with bats of the genus *Pteropus* (Chiroptera: Pteropodidae) has highlighted gaps in our knowledge on the arthropod associates of these hosts. There seem to be gaps in sampling of their acarine parasites, with species known from megachiropteran bat hosts in Papua New Guinea, but which are not yet reported from these same host species in Australia (Womersley, 1957; Strandtmann & Garrett, 1967; Klompen *et al.* 1995). There are also gaps in our phylogenetic knowledge of these taxa, with the laelapid genera on megachiropteran bats, *Neolaelaps* and *Notolaelaps*, of particular interest. These have been stated to be intermediate morphologically, and are perhaps interpolated phylogenetically, between the Laelapinae and the economically-important family Macronyssidae (Radovsky, 1967, 1985, 1994).

Radovsky (1967) proposed that *Notolaelaps* and *Neolaelaps* are “nearest” to an ancestral laelapine which gave rise to the speciose Macronyssidae (Radovsky, 1967, 1969, 1985, 1994, 2010). *Notolaelaps* and *Neolaelaps* both infest megachiropteran bats, whereas the Macronyssidae infest either microchiropteran bats or, in some derived taxa, non-bat hosts. Radovsky (1994) argued for this phylogenetic scheme based on an interpretation of intermediate forms and on host relationships, which posited a phylogenetic and morphological sequence where, for instance, the chelicerae of *Notolaelaps* are stated to be intermediate between those of the Laelapinae and the Macronyssidae.

The relationship of Macronyssidae to the Laelapidae has recently been analysed with data from the highly variable D1–3 domains of the 28S ribosomal gene (Dowling & OConnor, 2010). One recovered clade, supported by bootstrap and/or posterior probability values of 70% or more, contained *Neolaelaps*, the neotropical genera *Hymenolaelaps* and *Steptolaelaps*, and the Macronyssidae and Rhinonyssidae, but also included four rather disparate taxa (*Dinogamasus* spp., *Pseudoparasitus* sp., *Gaeolaelaps* spp., and *Euandrolaelaps* sp.). While *Neolaelaps* and Macronyssidae were inferred to be somewhat related, they could not corroborate nor falsify Radovsky's (1967) proposition that *Neolaelaps* (together with *Notolaelaps*) is the most closely related taxon to the Macronyssidae, and suggested more data were required.

Laelapidae from megachiropteran bats consist of the monotypic genus *Notolaelaps* Womersley, and three species of *Neolaelaps* Hirst. *Notolaelaps* is only known from *Syconycteris* Matschie (Pteropodidae: Macroglossinae), whereas the morphologically and behaviourally specialised genus *Neolaelaps* is known from three fruit bat genera (Pteropodidae: Pteropodinae) and *Syconycteris* (Pteropodidae: Macroglossinae). Female *Notolaelaps* were described from *Syconycteris* sp. (Pteropodidae: Macroglossinae) in Papua New Guinea (Womersley, 1957).