



Ascid mites (Acari: Mesostigmata: Ascidae) from Costa Rican hummingbirds (Aves: Trochilidae), with description of three new species and a key to the *Proctolaelaps belemensis* species group

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Abstract

Eleven species of hummingbird flower mites of the genera *Proctolaelaps* Berlese, 1923, *Tropicoseius* Baker & Yunker, 1964 and *Rhinoseius* Baker & Yunker, 1964 were recorded from hummingbirds in Costa Rica. Three new species of the genus *Proctolaelaps* are described and figured, i.e. *P. threnetes* Dusbabek & Literak, **sp. nov.**, *P. naskreckii* Dusbabek & Havlicek, **sp. nov.** and *P. chalybura* Dusbabek & Capek, **sp. nov.** A key for identification of females and males of the *P. belemensis* species group is included. Five species of the genus *Tropicoseius* and three species of the genus *Rhinoseius* are recorded, three of these species are recorded from Costa Rica for the first time.

Key words: Hummingbird flower mites, Ascidae, *Proctolaelaps*, *Rhinoseius*, *Tropicoseius*, Trochilidae, Costa Rica.

Introduction

The family Ascidae comprises more than 22 genera, with several hundred predatory and microphytophagous species distributed around the world (Lindquist & Evans, 1965; Evans, 1992). The genera *Lasioseius* Berlese, 1916, *Proctolaelaps* Berlese, 1923, *Rhinoseius* Baker & Yunker, 1964 and *Tropicoseius* Baker & Yunker, 1964 share a tendency to phoresy, some of them with an obligate affiliation with the flowers of hummingbird-pollinated plants. They feed on nectar and pollen, and are transported as phoronts between inflorescences in the nasal cavities of hummingbirds (Naskrecki & Colwell, 1998). These mites are commonly known as hummingbird flower mites (Colwell, 1973). However, some related species are distributed also by Central and South American bats (Tschapka & Cunningham, 2004) or by African honey guides (Indicatoridae) and sunbirds (Nectariniidae) (Ryke, 1964; Fain & Mariaux, 1991). Several species of *Proctolaelaps* are commonly transported by Coleoptera, Lepidoptera and Hymenoptera (Treat & Niederman, 1985; Karg, 1985).

Altogether, 15 species of hummingbird flower mites have been reported from Costa Rica: *Lasioseius aquilarum* Dusbabek & Literak, 2006, *Proctolaelaps kirmsei* Fain *et al.*, 1977, *Rhinoseius richardsoni* Hunter, 1972, *R. tiptoni* Baker & Yunker, 1964, *Tropicoseius chiriquensis*, Baker & Yunker, 1964, *T. erro* Baker & Yunker, 1964, *T. heliconiae* Baker & Yunker, 1964, *T. venezuelensis* Baker & Yunker, 1964, *T. colwelli* (Hunter, 1972), *T. colombiensis* (Fain & Hyland, 1980), *T. analis* (Fain & Hyland, 1980), *T. klepticos* (O'Connor *et al.*, 1996), *T. chazdonae* Naskrecki & Colwell, 1998, and *T. ochoai* Naskrecki & Colwell, 1998 (Baker