



New species of *Klinckowstroemia* Baker & Wharton, 1952 (Acari: *Klinckowstroemiidae*), associated with passalid beetles from Mexico and Panama

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Abstract

Four new species of the genus *Klinckowstroemia* are described, all obtained from passalid beetles collected in Mexico and Panama. The species are: *Klinckowstroemia pennula*, **sp. nov.**, *K. melissae* **sp. nov.**, *K. stilla* **sp. nov.**, and *K. oconnori* **sp. nov.** We found two instances where different mite species inhabited the same host, *K. pennula*, and *K. melissae* on *Pseudacanthus* sp., and *K. pennula* and *K. candidoi* on *Oileus bifidus*. This is the first record of the genus *Klinckowstroemia* from Panama. An updated key for the 24 species of *Klinckowstroemia* is presented.

Key words: mites, Passalidae, Central America, synhospitality, phoresy

Introduction

Mites of the genus *Klinckowstroemia* are distributed principally in Mesoamerica, where they occur exclusively on beetles of the family Passalidae (bessbugs) (Hunter & Butler 1966; Chernoff & Pope 1970; Rosario & Hunter 1987; Villegas-Guzman *et al.* 2009). Eighteen of the 24 species in the genus are found in Mexico (Table 1). These are associated with 32 species of passalid beetles belonging to 14 different genera. Four species of *Klinckowstroemia* have been found on beetles (bessbugs) from Central America. Following the taxonomic revision of the genus *Klinckowstroemia* (Villegas-Guzman *et al.* 2009), we found more material of four new species associated with bessbugs, and they are described below.

Material and methods

Bessbugs were collected in and under decaying logs and put individually in vials with 80% ethanol. The specimens were taken to the Colección Nacional de Ácaros (CNAC) and mites removed with fine-tipped forceps under a stereomicroscope. The *Klinckowstroemiid* mites were separated into vials with 80% ethanol and some of them cleared with lacto-phenol solution and mounted in Hoyer's fluid. Passalid beetles are deposited at the Colección Entomológica, Instituto de Ecología, Xalapa (IEXA), and that collection was also checked to search for *Klinckowstroemiid* and other mites.

Slide-mounted specimens were examined with a Nikon microscope using differential contrast and phase contrast microscopy. Measurements are given in micrometres and are reported in the text as holotype, followed by the minimum and maximum of paratypes values given in parentheses (only one measurement is given where no variation was observed). Abbreviations used in the descriptions are L = length, W = width. Leg chaetotaxy follows See-man (2007). Nomenclature for structures like setae and shields follows Rosario & Hunter (1987). The drawings were made using a drawing tube, and scanning electron micrographs of gold coated specimens were made using a Hitachi S-2460M microscope. The photographs were edited using software Adobe Photoshop version 10.0. Abbreviations used in illustrations: *hyp*1–4 = hypostomal setae 1–4; *st*1–4 = sternal setae; *av*1 = first anteroventral seta of