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Revision of the Fedrizziidae (Acari: Mesostigmata: Fedrizzioidea)

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Table of contents

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Abstract

The Fedrizziidae are the most diverse group of mites associated with passalid beetles in Australia. Herein, I re-diagnose the family, genera and species, and describe ten new species from Australia, Indonesia and Thailand: *Fedrizzia abradoalves* **sp. nov.**, *F. gilloglyi* **sp. nov.**, *F. parvipilus* **sp. nov.**, *Neofedrizzia bunyas* **sp. nov.**, *N. gordoni* **sp. nov.**, *N. helenae* **sp. nov.**, *N. imparmentum* **sp. nov.**, *N. janae* **sp. nov.**, *N. lepas* **sp. nov.** and *N. sulawesi* **sp. nov.** *Fedrizzia strandi* (Oudemans), *Neofedrizzia leonilae* Rosario & Hunter, *Neofedrizzia tani* Pope & Chernoff and *Neofedrizzia vitzthumi* (Oudemans) are re-described. *Neofedrizzia bicornis* Karg is a junior synonym of *Neofedrizzia scutata* Womersley, which is also transferred to *Fedrizzia*. *Fedrizzia unospina* Karg is a junior synonym of *Fedrizzia carabi* Womersley. *Fedrizzia gloriosa* Berlese is transferred to *Neofedrizzia*. The specimens described by Womersley as *Fedrizzia* sp. cf. *grossipes* represent specimens of *Fedrizzia sellnicki* Womersley. *Parafedrizzia buloloensis* Womersley is recorded from Australia for the first time. A key to adult male and female Fedrizziidae and a summary of host records is provided.

Key words: Passalidae, *Fedrizzia*, *Neofedrizzia*, *Parafedrizzia*, new species, taxonomy, identification key, host records

Introduction

The Fedrizziidae is a poorly known family of strongly sclerotised, convex mites associated with adult passalid beetles. The spectacular, filamentous excrescences on the movable digit of their chelicerae (Fig. 1) suggested that adult mites fed on the glandular secretions of their host (Womersley 1959; Hughes 1959; Krantz 1978). However, feeding from glandular secretions has never been observed, and my studies of fedrizziid mites, especially *Fedrizzia sellnicki* Womersley and *Neofedrizzia camini* Womersley, indicate the adult mites are nematophages and scavengers. The adult mites use their cheliceral excrescences to "mop-up" the internal juices of dead arthropods (Seeman 2000). The immature stages are free-living in rotting logs inhabited by passalid beetles, where they probably feed on nematodes (Seeman 2000).

More species of Fedrizziidae are known from Australian passalid beetles than any other family of mites. Therefore, if one is to understand the diversity of mites associated with Australian passalid beetles, the Fedrizziidae are an unavoidable component of this fauna. The first members of the Fedrizziidae, *Fedrizzia grossipes* Canestrini and *Neofedrizzia laevis* (Canestrini), were described from a beetle "allied to the European *Geotrupes*" and "a collection of insects", respectively, in Queensland (Canestrini 1884). Berlese (1910) described the family's third species, *Fedrizzia gloriosa* Berlese, from a passalid beetle collected in New South Wales, and later Oudemans (1927, 1928) was apparently unaware of Canestrini's description, as he erected the Toxopeusiidae to accommodate *Fedrizzia* (*Toxopeusia*) *strandi* (Oudemans) and *Neofedrizzia* (*Toxopeusia*) *vitzthumi* (Oudemans) from passalid beetles collected in Buru. The most significant contribution to the systematics of the Fedrizziidae is Womersley (1959), who described 15 species, moved the two species of *Toxopeusia* into the family (also see Trägårdh 1937), and erected the genera *Neofedrizzia* and *Parafedrizzia*. Since Womersley, four more species have been described: *Neofedrizzia tani* Pope and Chernoff 1978, *Neofedrizzia leonilae* Rosario and Hunter 1984, *Neofedrizzia bicornis* Karg 1999 and *Fedrizzia unospina* Karg 1999. Prior to the present review, *Fedrizzia*, *Neofedrizzia* and *Parafedrizzia* contained nine, thirteen and one species, respectively.