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Two new species of *Pyemotes* closely related to *P. tritici* (Acari: Pyemotidae)[1]

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Abstract

Two new species of *Pyemotes* are described: *Pyemotes zhonghuajia* sp. nov. parasitic on a variety of Coleoptera, Lepidoptera and Hymenoptera in China and *Pyemotes turkeyensis* sp. nov. parasitic on moths in Turkey. *Pyemotes tritici* (LaGreze-Fossat & Montagne, 1851) in its revised concept is redescribed based on specimens from USA and Mexico. Keys to separate both adult males and females of these species are provided. Grandjean's notation for idiosomal and leg chaetotaxy is applied to the Pyemotidae.

Key words: Mites, ectoparasites, insects, biological control agent, China, USA, Mexico, Turkey

Introduction

Mites of the family Pyemotidae are parasitoids of insects. The *Pyemotes ventricosus* group, at least, are of increasing interest and concern in systematic and applied acarology due to their roles in biological control of pest insects and their medical importance—being the "straw itch mites". Since Cross (1965), the classification of this family has changed considerably (mainly through discoveries of new species and new characters), and this family in its restricted sense in the most recent mite classification (Walter *et al.* 2009) consists of a single genus, *Pyemotes* Amerling, 1861.

Historic review of the genus

The early taxonomy of the genus *Pyemotes* was rather confusing due to the lack of detailed descriptions of the common species. Krczal (1959a) provided a comprehensive review of the genus; he described four species new to science, redescribed two common species [type species *P. scolyti* Oudemans, 1936 and *P. herfsi* (Oudemans, 1936)], and provided a literature review of 14 other species with uncertain identity, including the common species *P. tritici* (LaGreze-Fossat & Montagne, 1851) and *P. ventricosus* (Newport, 1850), which were not re-described and not included in his key to species. He suggested that the common straw itch mite was *P. tritici*, rather than *P. ventricosus*, which might be restricted to Hymenoptera. This view was later endorsed by Moser (1975) through cross-mating experiments of various populations of straw itch mites from different localities.

Krczal (1959b, 1963) described two new species, *P. boylei* and *P. zwoelferi*, respectively. However, *P. boylei* was later considered a synonym of *P. tritici* by Cross and Moser (1975), and *P. zwoelferi* was synonymized with *P. herfsi* by Cross *et al.* (1981).

Cross and Moser (1971) described *P. parviscolyti* from Louisiana, USA. Later, Cross and Moser (1975) described *P. dimorphus* from New Hampshire, USA and divided the 13 species known to them into two groups: 1) the *scolyti* group (*P. scolyti*, *P. parviscolyti* and *P. dimorphus*), being primarily associates of bark beetles, often non-

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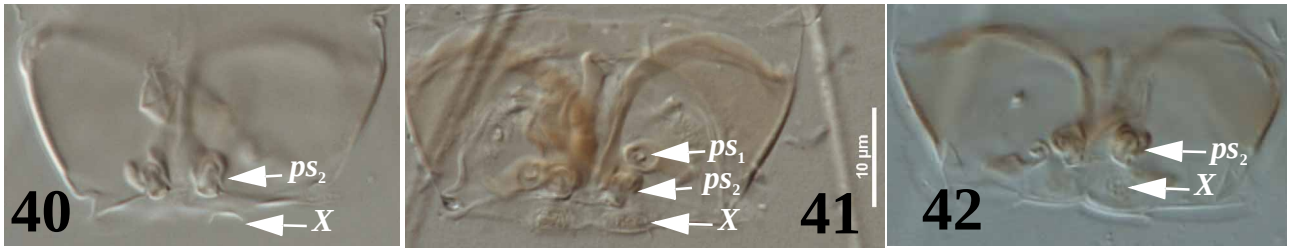
We also observed a pair of un-named structure (named X in Figs 40–42) flanking the aedeagus. They are slightly lateral to setae ps_2. When the capsule is positioned towards the rear end, this pair looks like a pair of suckers, with a pair of bulb-like structure extending from it (Fig. 42). In most specimens this pair is difficult to see. In the undescribed species of *Pyemotes* from New Zealand, it is club-shaped. Future studies using SEM will be needed to reveal this structure.



FIGURES 40–42. Photomicrographs of genital area in males, with a focus on setae ps_2. 40, *Pyemotes zhonghuajia* sp. nov.; 41, *Pyemotes tritici*; 42, *Pyemotes turkeyensis* sp. nov.; all three figures of the same scale (scale bar 10 micrometers).

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