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Species of *Lissothrips* and *Williamsiella* from mosses and lichens in Australia and New Zealand (Thysanoptera, Phlaeothripinae)

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Abstract

Species of *Lissothrips* and *Williamsiella* live in association with mosses and lichens. Their gut contents are commonly blue-green, suggesting that they possibly feed on blue-green algae. Three species of *Lissothrips* are known from New Zealand, of which two are here recorded from Australia together with six new species. *Williamsiella* is recorded from Australia for the first time, with one new species.

Key words: new species, *Lissothrips*, *Williamsiella*, mosses, lichens

Introduction

Species of the Phlaeothripinae genera *Lissothrips* and *Williamsiella* are typically found, in many of the warmer parts of the world, in association with mosses and lichens. Only one species, *Lissothrips gersoni*, is reported as having been reared on a moss (Mound & Walker 1986), and the precise tissues ingested by these thrips remain difficult to determine. The gut of adults in these two genera commonly contains a distinctive blue-green pigment, whereas the gut of typical leaf-feeding Phlaeothripinae never contains any green colour. Moreover, when specimens of these two genera are prepared for taxonomic study, that is macerated in weak hydroxide solution, dehydrated through an alcohol series, and prepared onto slides in Canada balsam, the blue-green colour is often retained. The colour diffuses throughout the body cavity as the body tissues are broken down, but it seems to be remarkably unaffected by the chemical treatment to which it is exposed. It thus differs in its reactions from any chlorophyll pigments of higher plants, in that these are quickly digested when ingested by typical leaf-feeding Phlaeothripinae. One possibility might be that the moss- and lichen-associated thrips considered here are not feeding on the tissues of these plants, but on some other organism such as blue-green algae living at the base of mosses.

The genera *Lissothrips* and *Williamsiella* have been referred to a particular supra-generic taxon, the Williamsiellina (Mound 1989), although this taxon is of doubtful phylogenetic significance. Species of these two genera share the following character states: antennal segment III usually smaller than segment IV, often particularly small and lacking sense cones (Figs 1–7, 30); antennal segment VIII often elongate, although the terminal segments are sometimes fused; pronotum often with notopleural sutures incomplete; tergite IX major setae longer than the tube (Mound 1989). Species of *Lissothrips* have the maxillary stylets long and deeply retracted into the head capsule (Figs 8–13). In contrast, *Williamsiella* species have these stylets exceptionally short, restricted to the mouth cone and not retracted anterior to the posterior margin of the head (Fig 29), comparable to the position of stylets in species of *Sophiothrips*, an unrelated genus of fungus-feeding species (Mound & Tree 2014). The objective here is to provide an identification system to the species known from Australia, including six new species of *Lissothrips*, and the genus *Williamsiella* newly recorded from this continent with one new species. Nomenclatural information on all Thysanoptera is available at ThripsWiki (2015).

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