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Australian spore-feeding thrips of the genus *Phaulothrips* (Thysanoptera, Idolothripinae)

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Abstract

Breeding by several of the spore-feeding species in the genus *Phaulothrips* is shown to be associated with abandoned tunnels of bees and scolytid beetles, as well as with the dead seed capsules of *Eucalyptus* species. The breeding sites for other species in the genus remain unknown, but 16 species are here recognised from Australia, of which the following six are newly described: *P. daguilaris, P. flindersi, P. kingae, P. kranzae, P. oakeyi, P. whyallae.*

Key words: Spore-feeding, new species, Idolothripinae, Phlaeothripidae, *Phaulothrips*

Introduction

Information on aspects of the biology of fungus-feeding Thysanoptera is rarely available, particularly on factors that might have promoted the observed species richness, such as host and habitat specificity or lack of dispersive behavior. The genus *Phaulothrips* that is considered here, with a considerable number of apparently closely related species, is typical of this situation. The number of generic synonyms, indicated below, presumably reflects the fact that these large dark thrips are frequently encountered in general insect collecting—but almost always as single individuals. Acquisition of longer series, together with information on structural variation and habitat specificity, requires discovery of the breeding sites of each species. From the gut contents of adults and larvae it is evident that they feed by imbibing whole fungal spores. However, for none of these thrips has the species of fungus represented by spores in the body been identified, in contrast to the situation in *Mecynothrips hardyi*, another species of Idolothripinae (Tree *et al*. 2010). Considering habitat specificity, intensive field studies in recent years have revealed that some *Phaulothrips* species breed in specific situations, including the following: abandoned nesting tunnels of bees; abandoned beetle tunnels of the family Scolytidae; cavities within *Eucalyptus* dry seed capsules. Despite this, many of the species remain known only from few specimens collected by beating dead branches, with no information concerning biotic relationships.

In adult *Phaulothrips*, the anterior margin of the head is remarkable in being almost vertical. Moreover, it bears one or more pairs of prominent pre-ocellar setae that in some species arise from small, or even very large, tubercles (Figs 16–19). This head shape is presumably related in some way to colony protection within the small cavities within which these thrips breed. Moreover, the maxillary stylets are very long and deeply retracted into the head, and in the larger species the head is strongly elevated in the mid-line to accommodate the greater length of these stylets. Nothing is known of the mating behaviour of these thrips, but in contrast to many of the larger Idolothripinae, there is limited intra-specific variation in body size. Large males have the fore legs more-or-less expanded in contrast to small males and females, but sexual dimorphism is less evident than in many spore-feeding thrips in which it is associated with male/male competition (Eow *et al*. 2011).

An identification key was provided by Mound (1974) to the nine species of *Phaulothrips* then recognized, all from Australia. Six further species are here described from this continent, and the available samples suggest that more undescribed species exist. In addition, four species of *Phaulothrips* have been described from Asia or the

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