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Thysanoptera (Insecta) of Barrow Island, Western Australia

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ABSTRACT – Almost 50 species of the insect order Thysanoptera are here listed from Barrow Island, Western Australia, of which several are known only from this island. This cannot be interpreted as indicating that any species is endemic to the island, because almost nothing is known of the Thysanoptera fauna of the nearby mainland.

KEYWORDS: Thysanoptera, thrips, Barrow Island

INTRODUCTION

The Australian fauna of the insect order Thysanoptera is far from exhaustively known. The number of correctly identified species from this continent was less than 20 in 1915, about 225 in 1960, and almost 400 by 1995. However, even the total of 830 species now listed (ABRS 2012) seems likely to represent little more than 50% of the real fauna (Mound et al. 2012). Field studies have been concentrated primarily on parts of New South Wales, eastern Queensland and Central Australia. Only limited field work has been carried out in most of Western Australia, moreover the northern tropics of Australia as well as the forests of Tasmania and Victoria remain little sampled. Thus, although the invertebrate survey of Barrow Island has produced very large numbers of thrips specimens, interpretation of these extensive collections is inhibited by three limitations. Given the absence of information on the thrips fauna of Western Australia, it is not possible to know if any of the species taken on Barrow Island are endemic, or if the thrips fauna on the island is merely a subset of that on the mainland. The second problem with these collections is that no effort has been made to collect from specific plant species, and thus host-plant associations are not available for any of the thrips taxa collected. The third problem is that because of the mass-collecting methods used, many specimens were not in a suitable condition for slide mounting and critical study. Despite these problems, several new species have been described from the Barrow Island collections. Each of these new taxa was considered within the context of revisionary studies on particular groups of Thysanoptera, and Table 1 indicates the range of taxa that have been recognised from the available samples.

Within the order Thysanoptera, two suborders are recognised, both of which are well represented on Barrow Island. The Tubulifera comprises a single family, Phlaeothripidae, whereas the Terebrantia includes five families in Australia (Mound et al. 2012), of which three were found in the Barrow Island samples. Nomenclatural details of Thysanoptera taxa are not given here, but are fully web-available (ThripsWiki 2013; ABRS 2012).

BARROW ISLAND THYSANOPTERA-TEREBRANTIA

A complete account of the Terebrantia of Australia is available on the web (Mound et al. 2012). Considering the three families of Terebrantia found in the samples, *Cranothrips kartus* was the only species of Melanthripidae. This is a flower-living species previously found on *Beaufortia* and *Calothamnus* (Myrtaceae) between Perth and Geraldton. From the Aeolothripidae, three species were found. *Rhipidothrips brunneus* is a southern European species that lives on Poaceae in damp places, but nothing is known of its biology. The other two species are probably facultative predators on the larvae of other thrips species living in flowers. One of these, *Andrewarthaia kellyana*, is found widely across Australia in the flowers of *Eucalyptus* species, but usually in low numbers. *Desmothrips barrowi* is known only from the Barrow island samples, but is closely similar in structure to *D. propinquus* that is widespread across southern Australia.

The major Terebrantia family, the Thripidae, comprises four sub-families, but only two of these

TABLE 1 Thysanoptera taxa recorded from Barrow Island.

Family	Genus	Species
Idolothripinae	*Allothrips*	*stannardi*
Idolothripinae	*Carientothrips*	sp.n.
Idolothripinae	*Ethirothrips*	*?australiensis*
Idolothripinae	*Neosmerintothrips*	sp.
Idolothripinae	*Nesothrips*	sp.
Idolothripinae	*Priesneriella*	*citricauda*
Phlaeothripinae	*?Adurothrips*	sp.
Phlaeothripinae	*Akainothrips*	sp.
Phlaeothripinae	*Akainothrips*	*asketus*
Phlaeothripinae	*Akainothrips*	*exourus*
Phlaeothripinae	*Akainothrips*	*?ireneae*
Phlaeothripinae	*Akainothrips*	*?dubitalis*
Phlaeothripinae	*Biconothrips*	*reedi*
Phlaeothripinae	*Brakothrips*	*?stenos*
Phlaeothripinae	*Corroboreethrips*	sp.
Phlaeothripinae	*Dactylothrips*	n.sp.
Phlaeothripinae	*Gynaikothrips*	n.sp
Phlaeothripinae	*Haplothrips*	sp.
Phlaeothripinae	*Heligmothrips*	sp.
Phlaeothripinae	*Holothrips*	sp.
Phlaeothripinae	*Jacotia*	*rhodorcha*
Phlaeothripinae	*Katothrips*	sp.
Phlaeothripinae	*Kellyia*	sp.
Phlaeothripinae	*Majerthrips*	*barrowi*
Phlaeothripinae	*Ostlingothrips*	*corini*
Phlaeothripinae	*Podothrips*	*anomalus*
Phlaeothripinae	*Podothrips*	*barrowi*
Phlaeothripinae	*Rhopalothripoides*	*luteus*
Phlaeothripinae	*Sennithrips*	*psomus*
Aeolothripidae	*Andrewarthaia*	*kellyana*
Aeolothripidae	*Desmothrips*	*barrowi*
Aeolothripidae	*Rhipidothrips*	*brunneus*
Melanthripidae	*Cranothrips*	*kartus*
Thripidae	*Anaphothrips*	*atriplicis*
Thripidae	*Anaphothrips*	*barrowi*
Thripidae	*Anaphothrips*	*callani*
Thripidae	*Anaphothrips*	*?exocarpi*
Thripidae	*Caprithrips*	sp.
Thripidae	*Frankliniella*	*schultzei*
Thripidae	*Rhamphothrips*	sp.
Thripidae	*Scirtothrips*	sp.
Thripidae	*Thrips*	*?knoxi*
Thripidae	*Thrips*	*safrus*
Thripidae	*Neohydatothrips*	*barrowi*

were found in the Barrow Island samples. Of the two sub-families not recorded, the Dendrothripinae are small, pale leaf-feeding insects, with scarcely 12 species known from Australia, and these thrips are quite difficult to collect. In contrast, the absence of any Panchaetothripinae from the Barrow samples was surprising, as almost 30 species of these dark and often large leaf-feeding thrips are found across Australia, particularly in the north. The third sub-family, the Sericothripinae, is represented in Australia by at least 16 species, of which *Neohydatothrips barrowi* is known only from four females. The mouth cone of this species is longer than that of any of the 140 species worldwide in this subfamily, but although it is presumably phytophagous, a host-plant association cannot be suggested.

The largest subfamily, the Thripinae, was represented in the Barrow Island samples by at least 12 species but with some unrecognizable even to genus. Amongst these, the genus *Anaphothrips* was particularly well represented. Species of this genus are found widely across Australia, and in the arid and semi-arid areas they have been found on various species of the families Chenopodiaceae and Myoporaceae. *Anaphothrips barrowi* was described from a series of both sexes with no host association, but a few females were also taken on the mainland at Cue from a species of *Eremophila*. Similarly, *A. callani* was described from Barrow Island without any host association, although a few specimens were collected from *Grevillea* and *Geleznowia* on the mainland. A few specimens of *A. atriplicis* were taken on Barrow Island, a species described from leaves of Chenopodiaceae in South Australia and New South Wales. Moreover, a few specimens of what appeared to be *A. exocarpi* were also taken, and this thrips is widespread on tree and shrub species of the genus *Exocarpus*. Specimens representing some other genera, including *Caprithrips*, *Rhamphothrips* and *Scirtothrips* could not be identified to species level.

Two common species of Thripinae were represented in the Barrow Island samples. *Thrips safrus* is the northern equivalent of the highly polyphagous Plague Thrips, *T. imaginis*, that is widespread across southern Australia. *Frankliniella schultzei* is a polyphagous pest species that occurs throughout the tropics, and is widespread in Australia. A few specimens were also seen of what might be *Thrips knoxi*, a species that lives on various *Lomandra* species.

BARROW ISLAND THYSANOPTERA-TUBULIFERA

The single family in the Tubulifera comprises two sub-families, and both of these were well represented in the Barrow Island samples (Table 1). Species of Idolothripinae all have relatively broad maxillary stylets, and are presumed to feed by imbibing whole fungal spores (ABRS 2012). One leaf-litter species, *Allothrips stannardi*, is usually wingless, and is sometimes abundant in leaf-litter across much of Australia (Mound 1972a). *Priesneriella citricauda* is a very small species that lives on dead twigs. It is particularly interesting because until recently it was known only from a single sample from California. However, the species has now been taken several times in Western Australia, in the region of Broome, and it is probably native to this area (Hoddle et al. 2012). *Ethirothrips* is a genus of rather large species, with 11 named species listed from Australia (ABRS 2012). However, recognition of species within the genus remains unsatisfactory. The genus *Neosmerinthothrips* constitutes a similar problem, indeed it is not yet formally recorded from Australia. However, specimens of several un-named species are present in the Australian National Insect Collection, Canberra. These were taken from various localities in the tropical north of this continent. The species of this genus from Barrow Island, also the species of of *Nesothrips* and *Carientothrips*, require further taxonomic study.

The subfamily Phlaeothripinae is particularly well represented in the Barrow island samples, but most of them cannot be identified to species. Members of the genera *Akainothrips*, *Brakothrips*, *Corroboreethrips*, *Dactylothrips*, *Katothrips*, *Kellyia*, *Ostlingothirps* and *Rhopalothripoides* are all presumably associated with the various *Acacia* species on the island (Crespi et al. 2004). One species of *Heligmothrips* was found, and this presumably lives on a species of *Casuarina* or *Allocasuarina*, as do the other members of that genus (Mound 1970). The single species of *Gynaikothrips* that was found probably represents an undescribed member of that genus that is known to be widespread across northern Australia, inducing leaf-roll galls on *Ficus rubiginosa*. Of the two genera of Haplothripini in the samples, *Podothrips* species appear to be predators of coccoid Homoptera living on Poaceae, and *P. barrowi* is known only from the original sample of a few apterous females. The species of *Haplothrips* are abundant across northern Australia, in the flowers of Poaceae and Amaranthaceae (Mound and Minaei 2007). The remaining Phlaeothripinae in the Barrow Island samples were all considered to be fungus feeding. *Adurothrips* and *Biconothrips* species live in leaf-litter (Mound 1995; 1972b), whereas species of *Jacotia* are commonly found living at the base of tussocks of grasses or *Lomandra* (Mound 1995). In contrast, species of *Holothrips*, *Majerthrips* and *Senithrips* presumably all live on dead twigs and branches, although there have been no studies on their biology (Mound and Minaei, 2006).

SUMMARY

The thrips fauna of Barrow Island would thus appear to be much as might have been predicted from the list of recorded plant species. The presence of Chenopodiaceae such as *Rhagodia* species would be expected to involve the presence of species of *Anaphothrips*. Similarly, the several species of phyllodinous *Acacia* would be expected to support a series of Phlaeothripinae genera. Although there remains a possibility of endemism at species level, it is probable that the thrips fauna is primarily a subset of the nearby mainland fauna.

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