

NEW ANT HOMOPTERAN INTERACTIONS FROM TROPICAL AUSTRALIA

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Abstract

Twelve previously unrecorded associations between ants and Homoptera are reported from the Kimberley region of tropical north-western Australia. The Homoptera include Eurymelidae (4 species), Psyllidae (1), Cicadellidae (3), Eriococcidae (1), Pseudococcidae (2) and Margarodidae (1). All were associated with *Iridomyrmex* Mayr species (4 in total) except for two of the cicadellids which were tended by a *Crematogaster* Lund. Nine of the Homoptera were tended and two attacked.

Introduction

The interactions between plants, sap-sucking bugs and ants are significant both to evolutionary theory and to practical pest management; and ants have been recorded attending or attacking many different families of Homoptera (Buckley 1987a,b). Here (Table 1) we report 11 previously unrecorded associations, observed in May 1988 in the Napier and King Leopold Ranges, Kimberley region, tropical north-western Australia.

Field observations and collections were made by RCB; ants identified by RWT; coccoids by PJG; and cicadelloids by MJF. The letters A and B are used in Table 1 to distinguish species where formal epithets are not available: these letters are meaningful only within the context of this paper. Ants and coccoids are held at the Australian National Insect Collection (ANIC); cicadelloids at the Biological and Chemical Research Institute (BCRI), NSW Department of Agriculture.

At least one of these associations is of potential economic significance: *Ipoides melaleucae* Evans is under consideration as a possible biological control agent for *Melaleuca quinquenervia* (Cav.) S.T. Blake in Florida (J. Balciunas, pers. comm. 1988).

Interactions

Five of the Homoptera were recorded in joint aggregations. The 2 eurymelids *Ipoides melaleucae* and *Ipoella* sp., and the psyllid *Phyllolyma* sp., occurred together on *Melaleuca viridiflora* Sol. Gaertn., tended by an *Iridomyrmex* species; and two tartessines were found together on *Eucalyptus ptychocarpa* F. Muell., tended by a

Table 1. New associations between ants and Homoptera in tropical north-western Australia

HOMOPTERAN	ANT & NATURE OF ASSOCIATION	HOST PLANT
<i>Ipoides melaleucae</i> Evans (Eurymelidae) RB88K2a	<i>Iridomyrmex</i> sp. B (Dolichoderinae) RB88K1: tending	<i>Melaleuca viridiflora</i> Sol. ex Gaertn. Fruct.
<i>Ipoella</i> sp. A (Eurymelidae) RB88K2b	<i>Iridomyrmex</i> sp. B (Dolichoderinae) RB88K1: tending	<i>Melaleuca viridiflora</i> Sol. ex Gaertn. Fruct.
<i>Phyllolyma</i> sp. aff. <i>P. rufa</i> (Psyllidae) RB88K2c	<i>Iridomyrmex</i> sp. B (Dolichoderinae) RB88K1: tending? (joint aggregation with RB88K2a, 2b)	<i>Melaleuca viridiflora</i> Sol. ex Gaertn. Fruct.
<i>Ipoella</i> sp. A (Eurymelidae) RB88K61	<i>Iridomyrmex</i> sp. A (Dolichoderinae) RB88K60: tending	<i>Melaleuca viridiflora</i> Sol. ex Gaertn. Fruct.
Ipoini (?), sp. indet. (Eurymelidae) RB88K4	<i>Iridomyrmex</i> <i>sanguineus</i> Forel (Dolichoderinae) RB88K3: tending	<i>Eucalyptus camaldulenis</i> Dehn.
Tartessinae, sp. indet. (Cicadellidae) RB88K7	<i>Crematogaster</i> sp. A, (Myrmicinae) RB88K5: tending	<i>Eucalyptus ptychocarpa</i> F.Muell.
<i>Brunotartessus</i> sp. aff. <i>B. aroensis</i> (Cicadellidae) RB88K8	<i>Crematogaster</i> sp. A, (Myrmicinae) RB88K5: tending (joint aggregation with RB88K7)	<i>Eucalyptus ptychocarpa</i> F.Muell.
<i>Balclutha</i> <i>incisa</i> (Matsumura) (Cicadellidae) RB88K57	<i>Iridomyrmex</i> sp. B (Dolichoderinae) RB88K56: interaction uncertain	Poaceae, sterile

Table 1 (cont.). New associations between ants and Homoptera in tropical north-western Australia

HOMOPTERAN	ANT & NATURE OF ASSOCIATION	HOST PLANT
<i>Eriococcus</i> sp. (Eriococcidae) RB88K53	<i>Iridomyrmex</i> sp. B (Dolichoderinae) RB88K56: tending	<i>Acacia orthocarpa</i> F.Muell.
<i>Dysmicoccus</i> sp., (Pseudococcidae) RB88K69	<i>Iridomyrmex</i> sp. B (Dolichoderinae) RB88K66: tending	<i>Atalaya hemiglauca</i> (F.Muell.) Benth.
Monophlebulini gen. nov., sp. nov.*, (Margarodidae) RB88K9	<i>Iridomyrmex</i> sp., <i>I. purpureus</i> (Smith) group. RB88K6: attacking	<i>Eucalyptus ptychocarpa</i> F.Muell.
<i>Erium globosum</i> (Maskell) sens.lat. + (Pseudococcidae) RB88K68	<i>Iridomyrmex</i> sp. B (Dolichoderinae) RB88K65: attacking	<i>Acacia orthocarpa</i> F.Muell.

* Bhatti (1989); + Williams (1985, p.154)

Crematogaster species.

In two of the associations recorded the ants were attacking the Homoptera. An undescribed species of monophlebuline margarodid was attacked successfully by the common predatory meat ant, *Iridomyrmex purpureus* (Smith), despite a dense woolly wax covering. A smaller *Iridomyrmex*, designated species B in Table 1, was observed attacking a mealybug, *Erium globosum* (Maskell), though the same ant species also tends several species of eurymelid and cicadellid (Table 1). Such ant behaviour is not unusual (Buckley 1987a).

In all the remaining associations, the ants were tending the Homoptera. Typically (Buckley 1987a,b) this involves removal of honeydew and protection against predators and parasitoids. Ant-tended coccids, pseudococcids and psyllids have all been reported previously (Buckley 1987a).

There is apparently only one detailed study of ant-tended eurymelids (Rozario 1989), though casual observations (RCB, PJG) indicate that

most eurymelids in temperate southern Australia are ant-tended. An experimental study (Buckley 1990) showed that ant attendance does reduce mortality of the *Ipoidea melaleuca* aggregations referred to in Table 1. We found parasitoid cocoons (collection number RB88K58) with an untended population of *Erium globosum* (RB88K59), but these have not been identified or studied experimentally.

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