

**Distribution of the Australian Myrmeleontidae
(Insecta, Neuroptera)**

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ABSTRACT

Gross distribution patterns of the large Australian myrmeleontid fauna are outlined and discussed. Most species are largely restricted to the dryer areas of the continent, and only two are considered truly Bassian. The need for additional collecting, both within Australia to determine geographical ranges and elsewhere, to confirm or deny the very high level of endemism at present indicated, is emphasised.

1. INTRODUCTION

The antlion fauna of Australia is large - perhaps not surprisingly so in view of the very extensive arid and semiarid regions of this island continent - and in a recent revision (NEW 1985a-c), 201 species (excluding the subfamily Stilbopteryginae) are recognised. Including the latter, 210 species are now known from Australia, and their taxonomic affinities are indicated in Table 1, together with the relative abundance of the various higher groupings present. Many taxa are known from very few specimens or localities, and detailed appraisal of their geographic ranges is premature. This note is a preliminary summary of some distributional information on the Australian Myrmeleontidae based on the records summarised in my revision.

A striking feature of the fauna is the complete lack of Palparinae, a group so prominent in Africa, and one sometimes considered to be the most primitive element of the family.

	Genera	Total spp.	Endemic spp.
Stilbopteryginae	2	9	9
Myrmeleontinae			
Myrmeleontini	3	23	21
Protoplectrini	6	15	14
Dendroleontini	17	83	83
Distoleontini	8	64	63
Acanthaclisinae	4	16	16
Total	42	210	206

Table 1: Taxonomic summary of the Australian Myrmeleontidae.

2. THE AUSTRALIAN MYRMELEONTIDAE AND THEIR DISTRIBUTION

Endemicity of the Australian antlions appears to be very high, and only four species are at present known to occur outside Australia. This may well reflect less intensive specialist investigation elsewhere, especially in the various island groups to the north and west of Australia, but several major radiations of Australian myrmeleontids appear to be truly limited to the country. The non-endemics are all known from parts of the western Pacific region, and several represent widely distributed genera (Table 2). The most widely distributed species *Distoleon bistrigatus* (Rambur), occurs widely over the Pacific and throughout mainland Australia. For other species included in Table 2, there is some possibility of confusion between sibling forms. *Myrmeleon acer* Walker, for example, has been recorded from various parts of Indonesia and New Guinea and a number of putative subspecies (see VAN DER WEELE 1909) have been raised. Their status merits more intensive biological investigation. The distinction between *Pseudoformicaleo nubecula* (Gerstaecker) from Australia and *P. jacobsoni* van der Weele (Micronesia, Indonesia, Malaysia) is also confused. The single species of *Hagenomyia* Banks known from northern Queensland is very similar to species recorded from New Guinea, and may perhaps prove to be conspecific with one or more of the taxa known from there.

Species	Extra-Australian distribution
<i>Myrmeleon acer</i>	North and west to oriental region
<i>Myrmeleon pictifrons</i>	New Guinea, ? Indonesia, some other islands
<i>Pseudoformicaleo nubecula</i>	Malaysia, New Guinea, ? Indonesia
<i>Distoleon bistrigatus</i>	Much of Pacific

Table 2: The non-endemic Myrmeleontidae of Australia.

Genus	Number of species known from							
	Q	NT	WA	SA	NSW	V	T	Total
<i>Austrogymnocrnemina</i>	9	7	14	8	5	3	-	18
<i>Glenoleon</i>	13	12	19	11	8	5	1	32
<i>Bandidus</i>	13	11	12	7	6	5	1	36

Table 3: Distribution by State of the most diverse genera of Myrmeleontidae in Australia (abbreviations as in Fig. 2).

However, many of the Australian species are not known to have any close relatives in nearby countries, or elsewhere.

Major zoogeographical and political divisions of Australia are shown in Figs 1,2, the latter also including a summary of the numbers of genera/species of Myrmeleontidae recorded from each. Antlions constitute a substantial faunal element in and around the Eyrean region, defined as the area within the 500mm isohyet, and they are much less diverse in forested areas, especially in the Bassian region. Fig.2 well exemplifies the trend, individually apparent in most tribes (Figs 3 -8) of decreased generic and specific diversity towards the south east of the continent; although not shown, a similar trend occurs towards the western Bassian province. Probably only two species can be regarded as truly Bassian. *Bandidus vafer* (Walker) is known from SA, NSW, V and T, and *Escura australis* (Esben-Petersen) from NSW, V and T. *Dendroleon longipennis* Esben-Petersen is also likely to be Bassian, being recorded from SA, NSW, V

and (once) from southern Q. None of these is therefore known from the western Bassian province. The additional four species recorded from T are all widely distributed on mainland Australia.

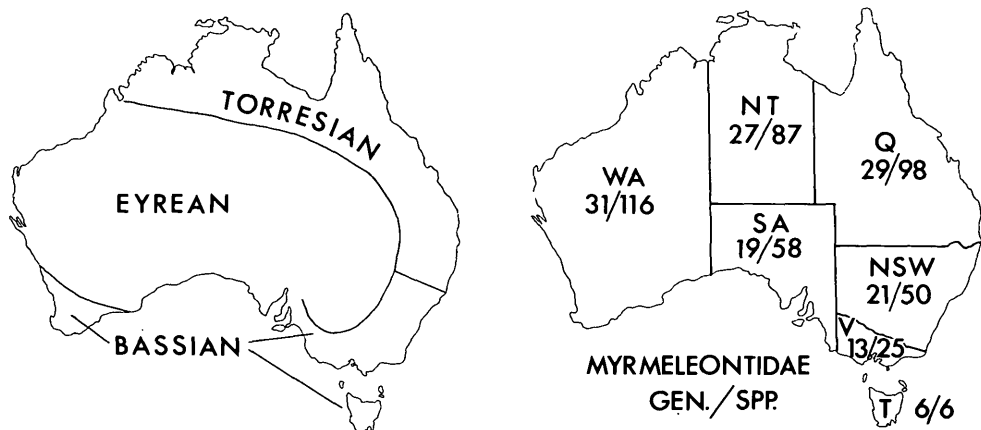


Fig. 1: Zoogeographical regions of Australia.

Fig. 2: Political divisions of Australia, with numbers of genera/species of Myrmeleontidae recorded from each (WA Western Australia, NT Northern Territory, Q Queensland, SA South Australia, NSW New South Wales, V Victoria, T Tasmania).

Considering separately the groups listed in Table 1:

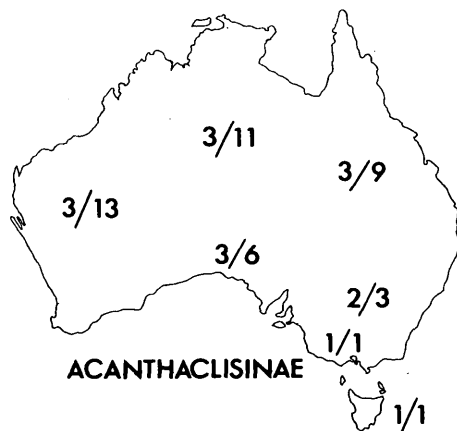
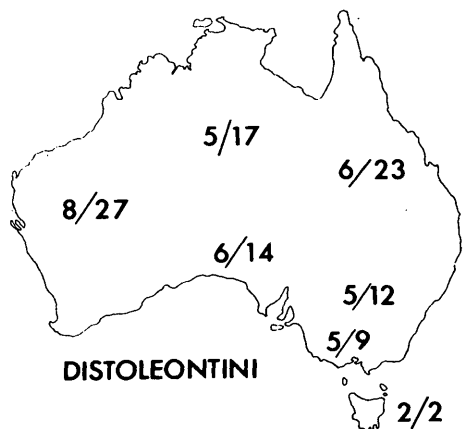
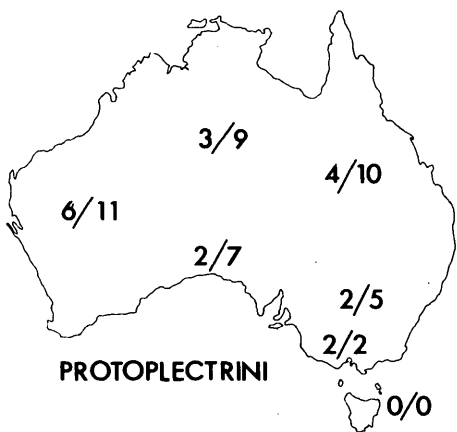
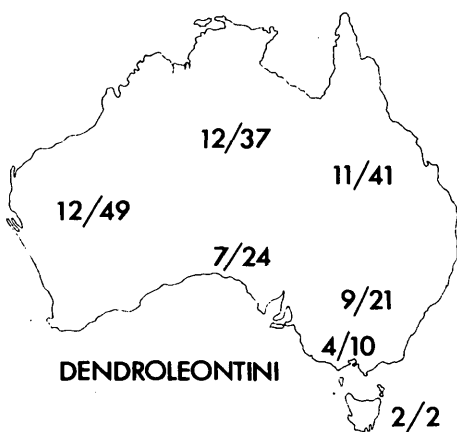
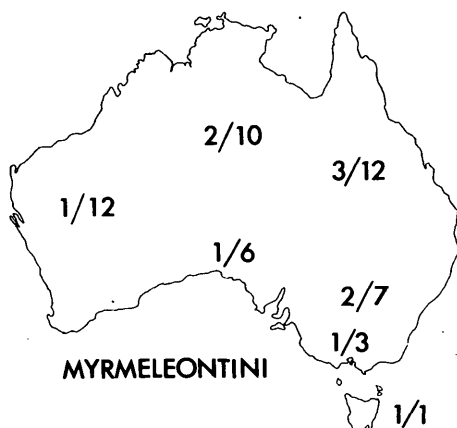
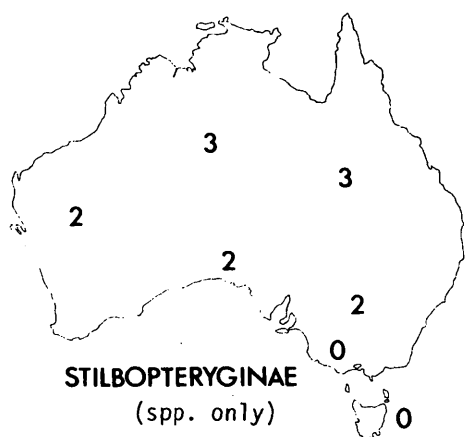
2.1. Stilbopteryginae are a small endemic group (NEW 1982). All the species are rare and limited to inland parts of Australia. They are entirely absent from the Bassian region and from the northeast (Fig.3).

2.2. Myrmeleontini are represented by three genera. **Hagenomyia** is a tropical element, limited to northern Q. **Callistoleon** Banks occurs in the north and north east, and is predominantly a Torresian genus. **Myrmeleon** L. is widespread, with some species being virtually cosmopolitan in Australia (Fig.4).

2.3. Dendroleontini (Fig.5) are the most diverse group present, with generic diversity greatest in the north and west. Two genera are particularly diverse, and constitute notable radiations. **Austrogymnocrnemis** Esben-Petersen (18 spp.) and **Glenoleon** Banks (32 spp.) are both most diverse in WA (Table 3). Species of **Austrogymnocrnemis** from NSW and V are wholly from inland dryer areas, and do not extend to the coast. The range of **Glenoleon** is broader, with one species found in T, and a group of large banded-wing species predominantly occurring in the east.

2.4. Protoplectrini show considerably less generic diversity, and several of the genera are very closely related. Two (**Protoplectron** Gerstaecker, **Distoplectron** Banks) occur Australia-wide, excepting T, and it seems that the tribe is absent from that State (Fig. 6).

2.5. Distoleontini show relatively even generic diversity over the mainland, and many of the genera contain rather few species. The most diverse antlion genus in Australia, **Bandidus** Navás (36 spp., Table 3), occurs in all



Figs 3-8: Distribution by State in Australia of various taxonomic groups of Myrmeleontidae given as number of genera/species; 3, Stilbopteryginae; 4, Myrmeleontini; 5, Dendroleontini; 6, Protoplectrini; 7, Distoleontini; 8, Acanthaclisinae. Figure sequence from top left across page to bottom right.

States, but is more 'evenly' distributed in the larger States than either *Austrogymnocyrtus* or *Glenoleon*. See Fig.7.

2.6. *Acanthaclisinae* (Fig.8) are most diverse in the north and west, and only one cosmopolitan species extends to the south east, including T.

3. COMMENTS

It is important to try to assess whether or not the above notes reflect any form of biological reality, or merely the distribution of collecting effort. There is no doubt that much of Australia has not been surveyed by specialists in Neuroptera, and most of the material in collections has been accumulated during general collecting trips and usually by entomologists primarily seeking other groups of insects. One, admittedly very naive, approach to assessing the effectiveness of collecting is to indicate known species diversity as a function of geographical area. The line fitted by eye in Fig.9 reveals that most of the States fall within a reasonable approximation to collecting 'evenness'. The most reliable data are likely to be those from the smaller south eastern States (T, V, NSW, SA), which have been the most intensively surveyed and support the greatest concentrations of entomologists! I strongly suspect that many species remain to be discovered in Q, NT and WA, but only the latter appears to be grossly undercollected in Fig.9, and I believe that this is a realistic inference from the diagram. Several species groups are largely limited to the north and west of Australia, and many parts have been visited only infrequently - if at all. I would not be surprised to see the known Australian myrmeleontid fauna approach 300 species by the turn of the century, but an equally pressing need in order to be able to assess the distribution and peculiarities of our fauna is more extensive collecting in nearby countries and the Oriental Region. At present it seems clear that the more arid regions of Australia have served to generate a substantial number of endemic genera and species.

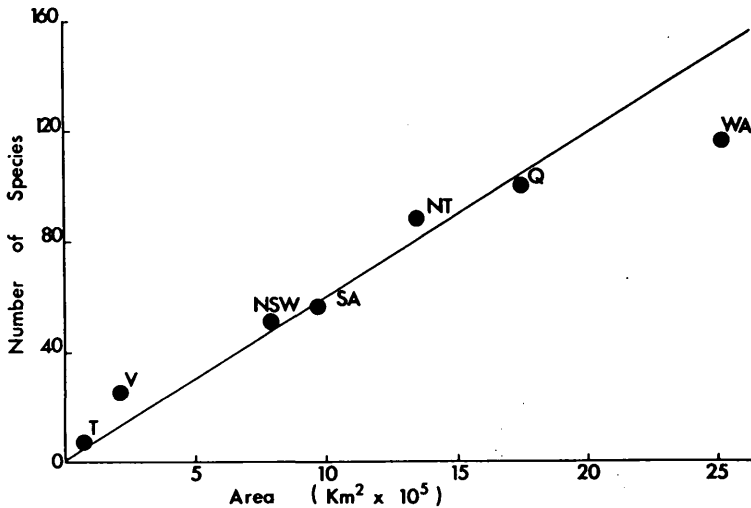


Fig. 9: Numbers of species of Myrmeleontidae recorded from parts of Australia as a function of geographical area (Abbreviations as in Fig. 2).

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