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Synopsis of the hymenopteran fauna of Lord Howe Island with a preliminary checklist of species

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Abstract

Lord Howe Island is an eroded remnant of a shield volcano approximately 600 km northeast of Sydney, New South Wales, Australia. It has fascinated biologists for more than a century because of its unique and iconic fauna and flora, and was declared a World Heritage Site in 1982. Although the terrestrial invertebrate fauna is reasonably well known for many groups, most Hymenoptera, apart from ants, have received scant attention. Here we use material collected from a recent intensive invertebrate survey, in conjunction with the published literature, to provide an overview of the Hymenoptera known from the island that can act as a basis for future taxonomic and biodiversity research. In doing so, we record 318 species from 31 hymenopteran families from the Island, and assess the proportion that are flightless and likely to be endemic to the island.

Key words: oceanic island, endemic species, apterous, brachypterous

Introduction

Lord Howe Island, a World Heritage Site of global significance since 1982, is located approximately 600 km northeast of Sydney, New South Wales (Fig. 1) and 1,350 km northwest of New Zealand on the submerged Lord Howe Rise (31°33'20"S, 159°05'20"E). The island is an eroded remnant of a 6.9 million-year-old shield volcano (McDougall *et al.* 1981), is about 10 km long and between 0.3 and 2.0 km wide, and has an area of 14.6 km². Lord Howe Is. is part of the Lord Howe Island Group comprising a further 27 uninhabited islands, islets and rocks.

As Lord Howe Is. is an oceanic island of volcanic origin, all of its flora and fauna have colonised the island from adjacent land masses, either by aerial dispersal or rafting, or having been introduced by humans. Almost half of the island's native plants are endemic, and forest types found on the island include evergreen rainforest, palm forest, *Pandanus* forest, and moss forest on the two summits, Mt Gower and Mt Lidgbird, that are 875 m and 777 m in altitude (Pickard 1983). Of the plants, perhaps the most iconic are the endemic *Howea* palms, *H. belmoreana* (thatch palm) and *H. forsteriana* (Kentia palm) (Pickard 1983). Some arthropod groups such as Araneae (Gray 1974) and Coleoptera (Paramanov 1963) also have high endemism, however most groups are poorly documented and their systematics and levels of endemism have not been examined. Without doubt the 'flagship' terrestrial invertebrate for the island is the Lord Howe Island stick insect (*Dryococelus australis* (Montrouzier); Priddel *et al.* 2003), which was thought to be extinct but was rediscovered in 2001 on Ball's Pyramid, a 551 m eroded volcano about 23 km southeast of Lord Howe Island.

Although the Hymenoptera of Lord Howe is not well known, early work by Dodd (1924), more recent studies on the parasitoid subfamily Scelioninae (Platygastridae) (Galloway 1982; Austin 1984, 1986), and broad-scale surveys undertaken within the last decade (e.g. Cassis *et al.* 2003), indicate that most common families present in Australia are present on the island, and also hint at relatively high levels of species endemism. Here we provide an overview of the hymenopteran fauna of Lord Howe Is. based primarily on material in the Australian Museum, together with a checklist of species, as a precursor to future detailed taxonomic and biodiversity research on the island's fauna. We also undertake a preliminary analysis of the proportion of species for each family that are flightless and likely to be endemic to the island.

TABLE 1. (Continued)

Taxon	References/comments
<i>Strumigenys xenos</i> Brown	AM; Antwiki (2014); Australia and New Zealand
<i>Tapinoma</i> sp.	Cassis <i>et al.</i> (2003); AM
<i>Technomyrmex albipes</i> (Smith)	AM; Antwiki (2014); introduced to Australia and Lord Howe Is.
<i>Tetramorium bicarinatum</i> (Nylander)	AM; Antwiki (2014); introduced to Australia and Lord Howe Is.
<i>Tetramorium pacificum</i> Mayr	AM; Antwiki (2014); Oriental and Indo-Australian
<i>Tetramorium simillimum</i> (Smith)	AM; Antwiki (2014); introduced to Australia and Lord Howe Is.
Pompilidae	
<i>Sphictostethus insularis</i> Krogmann & Austin 2011*	Krogmann & Austin (2011)
4 unidentified species	AM
Tiphiidae	
<i>Diamma bicolor</i> Westwood	AM; AFD; widespread in southeastern Australia including Tasmania and Lord Howe Is.
<i>Zaspilothynnus campanularis</i> (Smith)	AM; AFD; eastern Australia and Lord Howe Is.
Vespidae	
1 unidentified species	AM
Apoidea	
Apidae s.l.	
<i>Apis mellifera</i> L.	AM; cosmopolitan
<i>Chalicodoma (Hackeriapis) mackayensis</i> (Cockerell)	Cockerell (1910); AM; widespread in eastern Australia; possibly introduced to Lord Howe Is. (Michener 1965)
<i>Homalictus urbanus</i> (Smith)	AM; AFD; widespread – Australia, New Guinea, New Caledonia, Vanuatu, Lord Howe Is.
<i>Hyleoides zonalis</i> Smith	AM; AFD; widespread eastern and southeastern Australia, and Lord Howe Is.
<i>Lasioglossum (Chilalictus) subplebeium</i> (Cockerell)	Cockerell (1930); widespread in eastern Australia
<i>Leioproctus philonesus</i> (Cockerell)*	Cockerell (1929); AM
<i>Lithurge atratiformis</i> (Cockerell)	Cockerell (1905); AM; north coast of Australia
Halictinae —1 unidentified species	AM
Crabronidae	
<i>Tachysphex fanuiensis howeanus</i> Pulawski*	Pulawski (1977); AM; <i>T. fanuiensis corallinus</i> Pulawski widespread in northern and eastern Australia, New Guinea and Solomon Islands. <i>Tachysphex fanuiensis howeanus</i> restricted to Lord Howe Is.
7 unidentified species	AM

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