



## First Australian record of *Aleiodes* (*Hemigyron*) (Hymenoptera: Braconidae: Rogadinae) with the description of a new species from Tasmania



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### ABSTRACT

A new species of *Aleiodes* (*Hemigyron*) from Tasmania is described and illustrated. This is the first species of the subgenus known from Australia. The type and only known specimen was reared from a mummified caterpillar collected on Coastal Wattle, *Acacia longifolia* subsp. *sophorae* (Labill.) Court, and appears to belong to the Geometridae in agreement with most previous host records for the subgenus. The new species, *A. (H.) ellingsenae*, has a color pattern that is typical of many larger Australian braconids, with the head and anterior mesosoma orange red, the rest of the body black except for a bright white tergites 2 + 3.

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### Introduction

Parasitic Hymenoptera are an enormously diverse but under-studied group, with some 125,000 species described worldwide. The family Braconidae alone has some 17,000 described species (Quicke, 2015), but it is estimated that between 5 and 20 times as many await description (Dolphin and Quicke, 2001; Jones et al., 2009; Smith et al., 2012; Rodriguez et al., 2013), primarily outside of the Holarctic. The Australian fauna is perhaps somewhat depauperate but is nevertheless poorly known for many groups, many of which have received little taxonomic attention since early in the 20th century. The situation regarding the subfamily Rogadinae (excluding Betylobraconini) is particularly anomalous. As of 2013, only 21 species have been recorded from Australia (Australian faunal directory, 2016), 11 in the distinctive genus *Yelicones*, five in *Teresiogas* Quicke & Shaw, two in *Spinaria* Brullé, one in *Batotheca* Enderlein, and two in *Aleiodes* Wesmael. The last of these is an extraordinarily low number since this cosmopolitan genus is one of the largest in the World, and a recent study on the fauna of Thailand revealed 184 species of which only five had been previously described, and based on the sampling, it was estimated that the true fauna would be in excess of 400 (Butcher et al., 2012) species. It is certain

that the Australian *Aleiodes* fauna is far larger than the two described species, and it is simply the case that no taxonomic revision has been attempted.

*Aleiodes* species, and other rogadines, are koinobiont endoparasitoids exclusively of Lepidoptera caterpillars, and mummify their hosts prior to pupation. This makes them an especially useful group for the study of host ranges and their evolution, since if specimens can be reared from field-collected mummies, an absolutely definite association can be made between the parasitoid and its host, which can usually be identified at least to family. This is important since a very large proportion of parasitic wasp/host associations are erroneous (Shaw, 1994, 2003; Noyes, 1994). The species described here is of interest because it is reared and its host indicates a high level of taxonomic conservation, and also extends the known range of the subgenus *Hemigyron* Baker by approximately 4000 km.

*Aleiodes* (*Hemigyron*) comprises species with highly modified fore wing venation, the distal part of the subbasal cell being expanded and glabrous. *Hemigyron* species are relatively large, with body lengths between 5.3 and 10.0 mm (Butcher and Quicke, 2011), and based on molecular studies (Zaldívar-Riverón et al., 2009, Quicke et al., in prep.) are derived rather basally within *Aleiodes*. The males of all but one of the species for which males are known, possess glands that open at a sub-posterior pores on the 5th–7th metasomal tergites. The prior known distribution of the subgenus ranged from South Africa and Madagascar through Arabia, China, South-East Asia through Indo-Australia to Papua New Guinea (Butcher and Quicke, 2011, 2015).

The new species of *Aleiodes* (*Hemigyron*) from Tasmania represents the first record of the group from Australia. It differs considerably

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from other species both in its coloration and morphology. In common with several medium-sized to large Australian braconids it belongs to a homeochromatic complex characterized by an orange head and anterior mesosoma, a black body with a conspicuous white median zone. Also in common with many Australian species, the body is largely smooth and shiny, whereas nearly all other species of the subgenus it is largely coriaceous or granular.

## Materials and methods

### Photography

The specimen was imaged using an Olympus SXZ16 microscope with automated multiple image capture at preset focal levels using an Olympus DP72 camera, and image combination using the Cell^D image processing system.

### Terminology

Terminology follows van Achterberg (1988) except for wing venation nomenclature which follows Sharkey and Wharton (1997); see also Fig. 2.2 in Quicke (2015) for comparison of wing venation naming systems.

## Systematics

The holotype is deposited in the Tasmanian Museum and Art Gallery (TMAG), Hobart Australia.

Genus *Aleiodes* Wesmael, 1838

Subgenus *Hemigyron neuron* Baker, 1917

*Aleiodes (Hemigyron neuron) ellingsenae* sp. nov.

(Figs. 1–2)

Holotype female: AUSTRALIA (TASMANIA), Denison Beach, 41°49'21"S, 148°15'57"E, mummified host collected from plant of Coastal Wattle, *Acacia longifolia* subsp. *sophorae* (Labill.) Court, on 12.iii.2016, wasp emerged 16.iii.2016, Coll. Kristy Ellingsen. (TMAG; registration no. F19515).

Length of body (corrected for bent metasoma) 8.0 mm, of fore wing 6.8 mm, of antennae 9.4 mm.

Antenna with 64 flagellomeres; terminal flagellomere acuminate; median flagellomeres quadrate; 1st to 3rd flagellomeres approximately equally long. Eyes large, sharply and deeply emarginated opposite antennal sockets; width of head:width of face:height of eye = 1.0:0.67:0.8. Face smooth and shiny with moderately dense setiferous punctures. Frons smooth and shiny, moderately depressed, with a fine ridge running sub parallel to the eyes. Ocelli large; shortest distance between posterior ocelli:transverse diameter of posterior ocellus:shortest distance between posterior ocellus and eye = 1.0:3.0:1.7. Occiput smooth and shiny. Occipital carina completely absent dorsally from

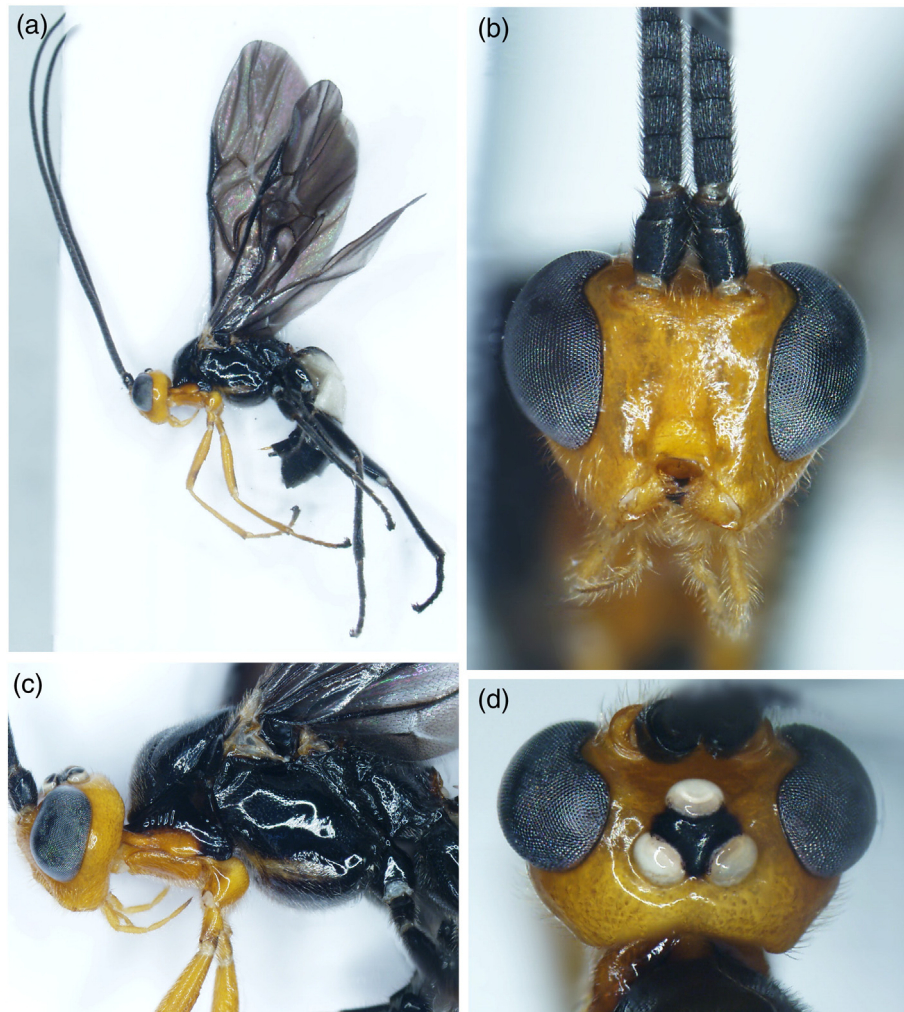


Fig. 1. *Aleiodes (Hemigyron neuron) ellingsenae* sp. n. holotype female. (a) Habitus, lateral view, (b) head frontal view, (c) mesosoma and head lateral view, (d) head, dorsal view.

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