



The gasteruptiid wasp fauna of New Caledonia, with description of three new species of *Gasteruption* (Hymenoptera: Evanioidea: Gasteruptiidae)

JOHN T. JENNINGS^{1,4}, HERVÉ JOURDAN², LARS KROGMANN³ & BEN A. PARSLow¹

¹Australian Centre for Evolutionary Biology and Biodiversity, and School of Biological Sciences, The University of Adelaide, SA 5005, Australia. E-mail: john.jennings@adelaide.edu.au

²Institut Méditerranéen de Biodiversité et d'Écologie marine et continentale (IMBE), Aix-Marseille Université, UMR CNRS IRD Avignon Université, UMR 237 IRD, Centre IRD Nouméa, BP A5, 98848 Nouméa cedex, New Caledonia. E-mail: herve.jourdan@ird.fr

³State Museum of Natural History Stuttgart, Entomology, Germany. E-mail: lars.krogmann@smns-bw.de

⁴Corresponding author

Abstract

The rarely collected gasteruptiid wasp fauna (Evanioidea: Gasteruptiidae) of New Caledonia is reviewed. Previously only two species of *Pseudofoenus* (Hyptiogastrinae) were known. Here, we record the subfamily Gasteruptiinae from New Caledonia for the first time and describe three new species of *Gasteruption*: *G. lacoulee* Jennings, Krogmann & Parslow, **sp. nov.**, *G. maquis* Jennings, Krogmann & Parslow, **sp. nov.**, and *G. sarramea* Jennings, Krogmann & Parslow, **sp. nov.** An identification key to the Gasteruptiidae of New Caledonia is provided.

Key words: Gasteruptiinae, Hyptiogastrinae, *Gasteruption*, new species, taxonomy, predator-inquiline

Introduction

For decades the New Caledonian biota has been viewed as a Gondwanan ‘museum’ with many relictual taxa, but Grandcolas *et al.* (2008) suggested that the biota are not that of a continental island which has retained many relict groups, but is that of an oceanic island with a rich local biota dominated by recent radiations following many dispersal events. Recent reviews and studies, including those by Grandcolas *et al.* (2008), Murienne (2009), Espeland & Murienne (2011) and Cruaud *et al.* (2012), have revealed complex scenarios which might explain the origin of the New Caledonian biota, including the ‘museum model’ or ‘Noah’s Ark model’ which implies that the origin and diversification of New Caledonian lineages predates any submersion event(s), or diversification after submersion(s) of New Caledonia, either with or without a series of mountain and/or island refugia and long-distance dispersal. Murienne (2009) concluded that all three models could exhibit identical phylogenetic patterns. Molecular dating, such as with *Angustonicus* cockroaches (Murienne *et al.* 2005), could at least discern between the first and last models.

The Hymenoptera fauna of New Caledonia has been reviewed recently and illustrates such disharmonic patterns regarding the composition of the fauna (Jennings *et al.* 2013). The fauna appears to have strong Australasian affinities as well as links with the rest of the south-west Pacific, including Vanuatu and Fiji. Symphytans and several apocritan superfamilies are under-represented in the New Caledonian fauna, but Jennings *et al.* (2013) suggest that species numbers in groups such as Apoidea, Chalcidoidea, Evanioidea, Platygastroidea, and Vespoidea are probably low as a result of under-collecting.

Evanioidea are represented in New Caledonia by Aulacidae, Evaniidae and Gasteruptidae, with each family known only from a few species (Balhoff *et al.* 2013; Jennings & Austin 2013).

The Gasteruptiidae (Evanioidea) is a distinctive family of wasps easily recognised by a slender, subclavate metasoma, elongate, neck-like propleura, and clavate hind tibia (Jennings & Austin 2002). Gasteruptiids are predator-inquilines of solitary bees (*Apidae s.l.*) and possibly aculeate wasps (*Sphecidae* and *Vespidae*) (Crosskey 1951; Jennings & Austin 1997, 2002, 2004; Jennings & Deans 2006). Gasteruptiidae is represented by perhaps

tarsal claw 0.62 x length ts5; fore wing with first discal cell subtrapezoidal formed by veins 1-Rs+M, 1-Cu, 2-Cu and 1m-cu; fore wing vein 2-M tubular in basal third, not ending with small node, remaining two-thirds nebulous (Fig. 4); hind wing with only vein R+Rs, three equidistant hamuli.

Metasoma. 2.64 x length of mesosoma; T1 punctate-rugulose; T2 with imbricate microsculpture with a few small punctures dorso-posteriorly, remaining tergites with imbricate microsculpture, scattered punctures dorsally, pubescence short; subgenital sternite with Y-shaped notch; exerted part of ovipositor 1.57 mm.

Male. Unknown.

Etymology. This species is named after the type locality, Sarramea, Grand Terre, New Caledonia.

Comments. *Gasteruption sarramea* **sp. nov.** has a distinctive elongate head (Figs 10, 16–17), making it readily distinguishable from both *G. lacoulee* **sp. nov.** (Figs 12–13) and *G. maquis* **sp. nov.** (Figs 14–15), both of which have a more-or-less quadrate head when viewed dorsally. Also, the propleuron of *G. sarramea* (Figs 10, 16) is much longer than the propleuron in either *G. lacoulee* (Figs 6, 12) or *G. maquis*.

Discussion

Jennings *et al.* (2013) cataloged the hymenopteran fauna of New Caledonia and compared it with that of Australia and New Zealand. They listed a total of 188 described species of Gasteruptionidae from Australia (113 Gasteruptioninae [now 114 species—Jennings & Parslow 2014], 75 Hyptiogastrinae), five from New Zealand (three Gasteruptioninae and two Hyptiogastrinae), and two Hyptiogastrinae (*Pseudofoenus*) from New Caledonia. *Pseudofoenus caledonicus* is endemic to New Caledonia, whereas *P. ritae* is also found on Vanuatu (Jennings & Austin 2002, 2005). Jennings & Austin (2002) found a close relationship between these two *Pseudofoenus* species, as well as others from Fiji and New Guinea, although they formed a trichotomy with strictly Australian taxa. Jennings and Austin (2002) suggested that the fauna from New Caledonia has resulted from dispersal events from mainland Australia and/or New Guinea.

With the addition of three new *Gasteruption* species, the gasteruptionid wasp fauna of New Caledonia is now the same size as that of New Zealand. However, we expect that additional collecting will lead to the discovery of further species.

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