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A new Australian genus and five new species of Rogadinae (Hymenoptera: Braconidae), one reared as a gregarious endoparasitoid of an unidentified limacodid (Lepidoptera)

DONALD L. J. QUICKE^{1,5}, MARK R. SHAW², CORNELIS VAN ACHTERBERG³,
KEITH P. BLAND², BUNTIKA A. BUTCHER¹, RICHARD LYSZKOWSKI² & Y. MILES ZHANG⁴

¹Department of Biology, Faculty of Science, Chulalongkorn University, BKK 10330, Thailand. E-mail: d.quicke@email.com

²Department of Natural Sciences, National Museums of Scotland, Edinburgh EH1 1JF, UK

³Afdeling Terrestrische Zoologie, Naturalis Biodiversity Center, Postbus 9517, 2300 RA Leiden, The Netherlands

⁴Department of Entomology, 213C Animal Science Building, University of Manitoba, Winnipeg, Manitoba R3T 2N2, Canada

⁵Corresponding author. E-mail: d.quicke@email.com

Abstract

Teresirogas Quicke & Shaw **gen. nov.** (type species *T. australicolorus* Quicke & Shaw **sp. nov.**) is described and illustrated, based on a series recently reared gregariously from a cocooned mummy of an unidentified species of Limacodidae collected under loose *Eucalyptus* bark in New South Wales, Australia. Older reared and unreared congeneric specimens represent four additional species, *T. billbrysoni* Quicke & van Achterberg **sp. nov.**, *T. nolandi* Quicke & Butcher **sp. nov.**, *T. prestonae* Quicke & van Achterberg **sp. nov.**, and *T. williamsi* Quicke & van Achterberg **sp. nov.**, which are also described and illustrated. Three of these additional species have also been reared from Limacodidae cocoons on *Eucalyptus*, with one, perhaps erroneous, record suggesting a saturniid host. Molecular analysis confirms the placement of the new type species of *Teresirogas* in the tribe Rogadini, as inferred initially from the claws with pointed basal lobe and host relationships of some of the species, but one species has the claw character poorly developed which had made its affinities uncertain before the more recently reared and sequenceable material became available.

Key words: Hymenoptera, Braconidae, new genus, new species

Introduction

The first and third authors (DQ & CvA) have been aware for some time of an undescribed Australian genus probably belonging to the Rogadinae mostly from old specimens in the Natural History Museum, London, the Australian Museum, Sydney and the Australian National Insect Collection, Canberra. However, its relationships were not easily discerned. Its lack of a prepectal carina, the entirely smooth and undifferentiated mid-basal area on the 2nd metasomal tergite, and the greatly reduced occipital carina (broadly absent dorsally and ventrally) would allow it to key to the Opiinae in several identification works (e.g. van Achterberg 1993, Wharton *et al.* 1997). If it was a member of the Rogadinae, as its general Gestalt suggested, variation in an important morphological character, the presence/absence of a pointed basal lobe on the claws, and also of the sometimes greatly swollen male maxillary palp segments, again made assessment of its affinities difficult. Fortunately, the fourth author (KPB) recently collected a mummified limacodid prepupa in its cocoon under loose *Eucalyptus* bark which, in addition to revealing the host group, both unequivocally showed that the new genus (or at least its type species) was gregarious and provided fresh material for molecular analysis. Mummification of lepidopteran host caterpillars or prepupae is a characteristic of the Rogadinae, some of which are known to be gregarious, whereas opiines are exclusively parasitoids of Diptera and—as far as is known—invariably solitary. Preliminary BLAST searches with the DNA sequence data (28S rDNA and the barcoding region of cytochrome oxidase 1) obtained from *T. australicolorus* **sp. nov.**, confirm that it is indeed a member of the Rogadinae, and molecular analyses presented here show that it belongs to the tribe Rogadini with 100% Bayesian support.

species is typically tricoloured: head and more or less mesosoma orange or brownish yellow, basal half of metasoma ivory or white and its apical half black. The colour of the mesosoma is variable, even within species (e.g. *T. billbrysoni* **sp. nov.**).

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APPENDIX 1. Material included in molecular analyses. Genbank accession numbers starting with KM are newly generated for this study.

Subfamily/tribe	Species	Provenance	Genbank accession number	
			28S	COI
Betylobraconinae	<i>Mesocentrus</i> sp.	Australia	KM067175	JF963534
Doryctinae	<i>Dendrosoter protuberans</i>		EF645736	EF645775
	<i>Doryctes erythromelas</i>	USA	GQ374709	GQ374627
	<i>Megaloproctus</i> sp.	Colombia	AY935466	AY935393
Hormiinae	<i>Hormius</i> sp.	Madagascar	AY935455	AY935385
	<i>Parahormius</i> sp.	Cameroon	AY935456	AY935386
Lysiterminae	<i>Acanthormius</i> sp. 1	Madagascar	AJ302883	AY935381
	<i>Acanthormius</i> sp. 2	Thailand	-	KM067236
	<i>Katytermus</i> sp.	Japan	EU854406	EU979624
	<i>Lysitermus</i> sp. 1	Uganda	EU854405	KM067238
	<i>Lysitermus</i> sp. 2	Nigeria	KM067177	JF963503
	<i>Pentatermus</i> sp. 1	Madagascar	KM067178	FN662435
	<i>Pentatermus</i> sp. 2	Madagascar	KM078032	JF963713
	<i>Pentatermus</i> sp. 3	Thailand	KM067179	KM067254
	<i>Pentatermus</i> sp. 4	Nigeria	KM067212	JF963501
	<i>Pentatermus</i> sp. 5	Benin	AY935453	AY935383
	<i>Platyrmus maichau</i>		EU854407	-
	<i>Tetratermus</i> sp. 1	Uganda	AY935452	AY935382
	<i>Tetratermus</i> sp. 2	Nigeria	KM067180	? JF963501
Pambolinae	<i>Notiopambolus depressicauda</i>	Australia	AY935459	AY935389
	<i>Pambolus rastafari</i>		-	JQ268750
Rhysipolinae	<i>Pseudorhysipolis</i> sp.	Costa Rica	AY935450	AY935377
	<i>Rhysipolis temporalis</i>	Russia	AY935449	AY935376
	<i>Rhysipolis</i> sp. 1	-	GQ374708	GQ374626
	<i>Rhysipolis</i> sp. 2	Thailand	-	KM067237
	? <i>Rhysipolis</i>	Chile	KM078031	KM078033
Rhyssalinae	<i>Oncophanes</i> sp.	UK	AY935481	AY935407

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