



Revision of the *Orasema festiva* species group (Hymenoptera: Chalcidoidea: Eucharitidae)

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Abstract

The Neotropical *Orasema festiva* species group is revised, retaining *O. festiva* (Fabricius) and *O. delicatula* (Walker) as valid species, and describing four new species: *O. alvarengai* n. sp., *O. caesariata* n. sp., *O. erwini* n. sp., and *O. reburra* n. sp. The *festiva*-group is characterized by features that are unusual or unique in *Orasema*, including the presence of 8–11 labral digits, a smooth face, and a lateral petiolar carina. The egg of *O. caesariata* and the first-instar larva of *O. delicatula* are newly described and found to be similar to other species of *Orasema*.

Key words: parasitoid, Neotropical, Formicidae

Introduction

Orasema Cameron (Eucharitidae) are a diverse group of parasitoids that likely all attack the brood of myrmicine ants. Adults insert their eggs into plant tissue, and the active first-instar larvae (planidia) gain access to the ant nest by some form of phoretic transfer by using foraging ant workers (Heraty 2000; Carey *et al.* 2012). The planidium initially attacks the ant larva, with the first and later instars completing development on the ant pupa (Wheeler 1907; Clausen 1940; Heraty *et al.* 1993). Confirmed ant hosts in the New World include *Pheidole* Westwood, *Solenopsis* Westwood, *Temnothorax* Mayr, *Tetramorium* Mayr and *Wasmannia* Forel (Myrmicinae) (Heraty 2002; Lachaud & Perez-Lachaud 2012). More than 200 species of *Orasema* are estimated worldwide, but only 57 species have been described, and the majority of these have been poorly characterized (Heraty 1994, 2002).

The *Orasema festiva*-group was initially defined (Heraty 2000) based on two species, *Orasema delicatula* (Walker) and *Orasema festiva* (Fabricius). The *festiva*-group is known from South America and Panama (Fig. 1), but possesses characters that initially placed it in a monophyletic group with similar species known from Madagascar (*communis*-group) and southeastern Asia (*uichancoi*-group) (Heraty 2000). The *festiva*-group is readily defined by the presence of a pronounced lateral petiolar carina, distinctly flattened and smooth face, labrum with 8–11 marginal digits, densely setose wings, and postmarginal vein reaching the apex of the fore wing. The lateral petiolar carina is the only character that is unique within *Orasema*.

A grouping of the *festiva*-group with the *communis* and *uichancoi*-groups based on morphological analyses (Heraty 2000) suggested that most of the defining features of the *festiva*-group are symplesiomorphies, and remnants of a hypothetical primitive morphology that is either lost or highly modified in most other *Orasema*. Recent molecular investigations (Mottern & Heraty in prep.) instead indicate that these groups are unrelated and that the *festiva*-group is part of a monophyletic New World group. These new results further suggest that the defining features of the *festiva*-group are instead apomorphic within the New World group, signifying an increase or expansion in several features (more labral digits, longer and more setose wings, longer antenna with more