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## Revision of *Aphelagathis* (Hymenoptera, Braconidae, Agathidinae, Agathidini)

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### Abstract

One previously described (*Aphelagathis verticalis*) and ten new species (*A. bonnieirwinae*, *A. ceciliapinedae*, *A. ericgriselli*, *A. genehalli*, *A. mcclintocki*, *A. mikeirwini*, *A. rociofernandezae*, *A. schlingeri*, *A. stangei*, and *A. wendymooreae*) are included. *Aphelagathis* is limited to the Nearctic and the northern part of the Neotropics. *A. rociofernandezae* parasitizes the caterpillars of grass-feeding HesperIIDae (Lepidoptera) as does *A. verticalis*.

**Key words:** Insecta, identification key, taxonomy, systematics, HesperIIDae

### Introduction

*Aphelagathis* was recently proposed by Sharkey and Chapman (2015) based on the enigmatic type-species *Aphelagathis verticalis* (Cresson), which was originally placed in *Microdus* and transferred to *Bassus* by Muesebeck (1927). Here we describe ten new species all of which are restricted to the New World.

### Methods

Morphological terms are from Sharkey and Wharton (1997) and are matched to the Hymenoptera Anatomy Ontology (HAO; Yoder *et al.* 2010). All measurements are in millimeters. Identifiers (URIs) in the format [http://purl.obolibrary.org/obo/HAO\\_XXXXXXX](http://purl.obolibrary.org/obo/HAO_XXXXXXX) represent anatomical concepts in HAO version <http://purl.obolibrary.org/obo/ha0/2011-05-18/ha0.owl>. They are provided to enable readers to confirm their understanding of the anatomical structures being referenced. To find out more about a given structure, including images, references and other metadata, use the identifier as a web-link, or use the HAO:XXXXXXX (note colon replaces underscore) as a search term at <http://glossary.hyma0.org>. In this paper, terms are linked to the ontology in the results section, each couplet of the key, and in the first description of a taxon (genus *Aphelagathis*). From this point forward, only terms that do not appear in these areas are hyperlinked.

Museum acronyms found in the ‘Specimens Examined’ sections of this paper are taken from ‘Abbreviations for Insect and Spider Collections of the World’ (Evenhuis 2014). All species are treated with a diagnosis and distributional data. They are illustrated with color photos using a JVC digital camera mounted on a Leica MZ16 microscope and Automontage® stacking software. Species descriptions are of the holotype and variation is given in parentheses.

DNA was extracted from individual legs with the QIAGEN DNeasy Blood and Tissue Kit using the animal tissue protocol (QIAGEN Inc., Chatsworth, California, USA). The mitochondrial cytochrome *c* oxidase subunit I gene (COI) was amplified with the primer pairs LepF1 and LepR1 (Hebert *et al.* 2004). Two of the *Aphelagathis* specimens would not amplify for the full length (~658 bp) barcode region, so in order to obtain at least some DNA data from these specimens, a short region of COI (included to maximize COI sequence variation) was amplified by