



## A review of the North and Central American *Megachile* subgenus *Argyropile* Mitchell (Hymenoptera: Megachilidae)

VICTOR H. GONZALEZ<sup>1</sup> & TERRY L. GRISWOLD<sup>2</sup>

<sup>1</sup>Department of Ecology and Evolutionary Biology, Haworth Hall, 1200 Sunnyside Avenue, University of Kansas, Lawrence, Kansas 66045-7534, USA. E-mail: vhgonga@ku.edu

<sup>2</sup>USDA-ARS, Bee Biology and Systematics Laboratory, Utah State University, Logan, UT, 84322-5310, USA.

E-mail: tgris@biology.usu.edu

<sup>1</sup>Corresponding author.

### Abstract

We provide a synopsis of *Megachile* subgenus *Argyropile*, describe a new species from Mexico and Guatemala, present descriptions for previously unknown males, and explore the internal phylogeny of the group. We also provide an illustrated key in Spanish and English to all of its species. Seven species, including *Megachile longuissetosa* Gonzalez & Griswold, new species, are recognized herein. Females of *M. longuissetosa* can be separated from other species of *Argyropile* by the combination of the following characters: mid basitarsus with anterodistal margin strongly, acutely projected, mesoscutal-mesoscutellar suture with distinct pubescent fascia, and apical margin of sixth sternum abruptly bent dorsally and males by the sixth tergum with preapical carina and apical margin entire, fifth and sixth sterna with simple, unmodified setae, and apex of gonoforceps with long setae. The males of *Megachile sabinensis* and *M. rossi*, are described and illustrated for the first time. *Megachile asteriae* and *M. tulariana* are considered as new synonyms of *M. parallela*. In a cladistic analysis, two most parsimonious trees were obtained for *Argyropile*, from 13 morphological characters. Two clades were clearly differentiated: one clade includes *M. sabinensis* and *M. subparallela*, while the other one includes the remaining species. The phylogenetic relationship of the new species and the biology of the subgenus are discussed.

**Key Words:** Taxonomy, phylogeny, new species, floral records, bees.

### Introduction

The genus *Megachile* Latreille *sensu* Michener (2000) is a diverse group of bees that includes more than 2000 species and 57 subgenera worldwide, including a fossil taxon from Dominican amber (Michener 2000; Baker & Engel 2006; Raw 2006). The majority of the subgenera have not been revised and the phylogenetic relationship among them remains unclear. One of the North and Central American subgenera, *Argyropile* Mitchell was revised by Mitchell (1937), who later described an additional species and provided a revised key to the females (Mitchell 1943a). Subsequently he described yet another new species (Mitchell 1944). Despite this work, two species remain known in only one sex. We review *Argyropile*, describe a new species and the two previously unknown males, provide a synopsis, present new synonymies, a cladistic analysis, an illustrated key to the species, and summarize what is known of the biology of these bees.

### Material and methods

#### Taxonomic description

The morphological descriptions and illustrations were made using an Olympus SZ microscope. Morphological terminology follows Michener (2000) and terminology for surface sculpturing follows Harris (1979). Setal length is given relative to the diameter of the median ocellus. The abbreviations F, MT, OD, PW, S, and