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# ZOOTAXA

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## **A taxonomic revision of South American species of the seed-harvester ant genus *Pogonomyrmex* (Hymenoptera: Formicidae). Part I**

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## Table of contents

ABSTRACT	3
RESUMEN	4
INTRODUCTION	4
METHODS	7
RESULTS	8
SPECIES ACCOUNTS	18
<i>Pogonomyrmex coarctatus</i> -group	18
<i>Pogonomyrmex coarctatus</i>	18
<i>Pogonomyrmex lobatus</i>	27
<i>Pogonomyrmex marculi</i>	33
<i>Pogonomyrmex micans</i>	37
<i>Pogonomyrmex cunicularius</i> -group	43
<i>Pogonomyrmex cunicularius</i>	44
<i>Pogonomyrmex pencosensis</i> NEW STATUS	50
<i>Pogonomyrmex serpens</i> NEW STATUS	56
<i>Pogonomyrmex bispinosus</i> -group	61
<i>Pogonomyrmex bispinosus</i>	61
<i>Pogonomyrmex inermis</i>	68
<i>Pogonomyrmex uruguayensis</i>	74
<i>Pogonomyrmex laticeps</i> -group	79
<i>Pogonomyrmex laticeps</i>	80
<i>Pogonomyrmex mendozanus</i>	87
<i>Pogonomyrmex tinogasta</i> Johnson, NEW SPECIES	94
<i>Pogonomyrmex mayri</i> -group	98
<i>Pogonomyrmex mayri</i>	98
<i>Pogonomyrmex naegelii</i> -group	103
<i>Pogonomyrmex abdominalis</i>	104
<i>Pogonomyrmex naegelii</i>	111
<i>Pogonomyrmex tenuipubens</i>	119
<i>Pogonomyrmex sylvestris</i> -group	122
<i>Pogonomyrmex stefani</i>	122
<i>Pogonomyrmex striatinodis</i>	127
<i>Pogonomyrmex sylvestris</i>	129
Unplaced species	132
<i>Pogonomyrmex theresiae</i>	132
LIFE HISTORY AND PHENOTYPIC DIVERSITY	134
Acknowledgments	137
References Cited	137

## ABSTRACT

South American species in the seed-harvester ant genus *Pogonomyrmex* (subfamily Myrmicinae) are interesting biologically because of their numerous queen phenotypes and life histories. This paper provides a taxonomic revision and reviews the natural history for 21 South American species of *Pogonomyrmex* so that we can better study their rich and interesting ecology, life history, and evolution. Species treated herein comprise all South American species-groups except for the *brevibarbis* and *rastratus*-groups. The following taxa are raised to species: *pencosensis* Forel 1914 and *serpens* Santschi 1922. The following new synonymies are proposed: *bruchii* Forel 1913 is synonymized under *coarctatus* Mayr 1868 and *cunicularius carnivora* Santschi 1925 under *serpens* Santschi 1922. The following new species is described: *tinogasta*. This paper redescribes workers of all species, and I describe queens and diagnose males for the following species: *bispinosus* (ergatoid queen, male), *inermis* (queen, male), *laticeps* (male), *lobatus* (queen, male), *micans* (queen), *naegelii* (ergatoid queen), *pencosensis* (ergatoid queen), *serpens* (ergatoid queen), *tinogasta* (brachypterous queen), and *uruguayensis* (queen, male). A neotype was designated for the untraceable or possibly lost type of *P. bispinosus*, and a holotype or lectotype was designated from syntypes for all other previously described taxa in order to provide a single name-bearing specimen and to facilitate future taxonomic studies. Of the 21 species treated herein, five species have ergatoid (wingless) queens (*bispinosus*, *cunicularius*, *pencosensis*, *serpens*, *mayri*), two have brachypterous (short-winged) queens (*mendozanus*, *tinogasta*), and two have dimorphic queens (winged and ergatoid in *naegelii*, brachypterous and ergatoid in *laticeps*). I also provide keys for workers and queens (in English and Spanish), photographs of all castes, distribution maps, and a summary of known biology.

**Key words:** *Pogonomyrmex*, South America, seed-harvester ants, key to species, queen phenotypes, taxonomic revision

## RESUMEN

Las hormigas del género *Pogonomyrmex* (subfamilia Myrmicinae) de Sudamérica son biológicamente interesantes por los variados fenotipos que poseen sus reinas y diversas historias de vida. Este documento ofrece una revisión taxonómica y revisa la historia natural de 21 especies de Sudamérica de *Pogonomyrmex* para que podamos estudiar mejor su rica e interesante ecología, historia de vida, y la evolución. Las especies incluidas en este trabajo comprenden todos los grupos de Sudamérica excepto las pertenecientes a los grupos *brevibarbis* y *rastratus*. Los siguientes taxa fueron elevados a especies: *pencosensis* Forel 1914 y *serpens* Santschi 1922. Se proponen las siguientes sinonimias: *bruchi* Forel 1913 es sinonimizado bajo *coarctatus* Mayr 1868 y *cunicularius carnivora* Santschi 1925 bajo *serpens* Santschi 1922. Se describe una nueva especie: *tinogasta*. En este trabajo se redesciben las obreras de todas las especies, y se describen las reinas y se brinda la diagnosis de los machos de las siguientes especies: *bispinosus* (reina ergatoide, macho), *inermis* (reina, macho), *laticeps* (macho), *lobatus* (reina, macho), *micans* (reina), *naegelii* (reina ergatoide), *pencosensis* (reina ergatoide), *serpens* (reina ergatoide), *tinogasta* (reina brachíptera), y *uruguayensis* (reina, macho). Se proporcionó un neotipo para el tipo de *P. bispinosus* que fue posible localizar o posiblemente esté perdido. Un holotipo o lectotipo fue designado a partir de los sintipos, para el resto de los taxones descritos previamente, con el fin de proporcionar un único individuo portador de nombre para facilitar futuros estudios taxonómicos. De las 21 aquí tratadas, cinco poseen reinas ergatoideas (*bispinosus*, *cunicularius*, *pencosensis*, *serpens*, *mayri*), dos tienen reinas braquípteras (*mendozanus*, *tinogasta*) y en dos especies existen reinas dimórficas (aladas y ergatoideas en *naegelii*, braquípteras y ergatoideas en *laticeps*). También se provee de las claves para las obreras y reinas (en inglés y en español), fotografías de todas las castas, mapas de distribución, y un resumen de la biología conocida.

**Palabras Claves:** *Pogonomyrmex*, Sudamérica, hormigas colectoras de semillas, claves a especies, fenotipos de reinas, revisión taxonomía

## INTRODUCTION

The seed-harvester ant genus *Pogonomyrmex* (subfamily Myrmicinae) consists of 69 described species that occur as three biogeographic faunas, one in North America (32 species) (Bolton, 2014), one on the Caribbean island of Hispaniola (3 species) (Johnson & Cover, 2015), and one in South America (34 species) (Bolton, 2014; [http://www.antwiki.org/wiki/Pogonomyrmex\\_species\\_by\\_Country](http://www.antwiki.org/wiki/Pogonomyrmex_species_by_Country); [http://www.antwiki.org/wiki/Checklist\\_of\\_Pogonomyrmex\\_species](http://www.antwiki.org/wiki/Checklist_of_Pogonomyrmex_species)). No species are common to any two areas. The genus has a long history in both North and South America, but taxonomic progress on South American species has lagged because of the paucity of native taxonomists and ecologists. The last revision of South American species was by Kusnezov (1951), but it included only the *Pogonomyrmex* of Argentina. The only additions since that revision were descriptions of five new species by various authors (Cuezzo & Claver, 2009; Fernández & Palacio, 1998; Lattke, 1991, 2006), and a review of the entire genus by Taber (1998) which provided a key and distribution maps but did not address taxonomy for any species.

The revision presented here is the first of an anticipated series that attempts to stabilize taxonomy for South American species of *Pogonomyrmex* to facilitate research on their rich and interesting ecology, life history, and evolution. This is especially necessary given that researchers in Argentina (e.g., Aranda-Rickert & Fracchia, 2012; Nobua Behrmann, Milesi, Lopez de Casenave, Pol, & Pavan, 2010; Pirk & Lopez de Casenave, 2006, 2011; Pol, Lopez de Casenave, Feldhaar, Milesi, & Gadau, 2008; Pol, Lopez de Casenave, & Milesi, 2015) and Chile (Torres-Contreras, Olivares-Donoso, & Niemeyer, 2007, 2009) have begun to study this genus. Most South American species can be placed in nine species groups. This paper treats all South American species except those in two of those groups: the *P. brevibarbis*-group and the *P. rastratus*-group. To date, South American species have been described in six languages, often with brief descriptions that sometimes consisted of only one sentence. Consequently, I redescibe workers of all species so as to provide a homogenous treatment in one language.

### Historical resume

The history of *Pogonomyrmex* began with descriptions of two species that were initially placed in other genera, *Formica badia* (Latreille, 1802) from Carolina, United States, and *Atta bispinosus* from Chile (Spinola, 1851). It was not until 1868 that Gustav Mayr (1868) erected the genus *Pogonomyrmex* wherein he described three new species from Argentina (*P. coarctatus*, *P. rastratus*, *P. carbonarius*); the latter two species would pose taxonomic