



A revision of the southern South American genus *Bolborhinum* Boucomont (Coleoptera: Geotrupidae: Bolboceratinae)

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Abstract

The genus *Bolborhinum* Boucomont (Coleoptera: Geotrupidae: Bolboceratinae: Bolboceratini) is revised and now contains eight species: *B. geotrupoides* (Laporte), *B. laesicolle* (Fairmaire), *B. nasutum* (Fairmaire and Germain), *B. seai* (Martínez), *B. shajovskoyi* (Martínez), *B. tricornis* (Solier), *B. trilobulicorne* **new species**, and *B. tubericeps* (Fairmaire). The genus *Bolborhinum* is redescribed and a key to species in English and Spanish, a checklist, distributional and temporal data, and designation of lectotypes and neotypes are given. All species in the genus are diagnosed and illustrated, and distributional records with maps for all species are included. Additionally, some observations on the natural history of *Bolborhinum* species are presented.

One new synonym is proposed: *Bolboceras binasutum* Fairmaire and Germain is synonymized under *Bolborhinum geotrupoides*. Lectotypes are designated for the following species-group names: *Bolboceras binasutum* Fairmaire and Germain (a junior synonym of *Bolborhinum geotrupoides*), *Bolboceras distinguendum* Fairmaire and Germain (a junior synonym of *Bolborhinum geotrupoides*), *Bolboceras laesicolle* Fairmaire (now *Bolborhinum laesicolle*), *Bolboceras nasutum* Fairmaire and Germain (now *Bolborhinum nasutum*), *Bolboceras tetraodon* Redtenbacher (a junior synonym of *Bolborhinum tubericeps*), *Bolboceras tricornis* Solier (now *Bolborhinum tricornis*), and *Bolboceras tubericeps* Fairmaire (now *Bolborhinum tubericeps*). Neotypes are designated for the following species-group names: *Bolboceras andicola*

Philippi (a junior synonym of *Bolborhinum nasutum*), *Bolboceras bicornis* Philippi (a junior synonym of *Bolborhinum tubericeps*), *Bolboceras excavatum* Philippi (a junior synonym of *Bolborhinum laesicolle*), and *Bolboceras geotrupoides* Laporte (now *Bolborhinum geotrupoides*).

Additionally, we here elevate the subgenera *Pereirabolbus* Martínez and *Zefevazia* Martínez to the generic level based on morphological comparisons with the genus *Bolborhinum*. As a result, the following combinations reflect this change in status: *Pereirabolbus castaneus* (Klug), *Pereirabolbus tucumanensis* (Boucomont), *Zefevazia cantisanii* (Martínez), *Zefevazia peruana* (Boucomont), *Zefevazia quinqueidentata* (Felsche), and *Zefevazia rosascostai* Martínez. These changes are congruent with the generic concepts of Bolboceratinae from other parts of the world, and with the modern classification of the group.

Resumen

El género *Bolborhinum* Boucomont (Coleoptera: Geotrupidae: Bolboceratinae: Bolboceratini) es revisado y ahora contiene ocho especies: *B. geotrupoides* (Laporte), *B. laesicolle* (Fairmaire), *B. nasutum* (Fairmaire y Germain), *B. seai* (Martínez), *B. shajovskoyi* (Martínez), *B. tricornis* (Solier), *B. trilobulicorne* **nueva especie**, y *B. tubericeps* (Fairmaire). El género *Bolborhinum* es redescrito, se presentan claves en inglés y español para la identificación de todas las especies, se proveen caracteres diagnósticos, descripciones e ilustraciones. Además se incluye un listado taxonómico, registros de distribución con mapas y se designan lectotipos y neotipos cuando corresponda. Adicionalmente algunas observaciones biológicas del género *Bolborhinum* son presentadas.

Una nueva sinonimia es propuesta: *Bolboceras binasutum* Fairmaire y Germain es sinonimizado bajo *Bolborhinum geotrupoides*. Lectotipos son designados para los siguientes nombres: *Bolboceras binasutum* Fairmaire y Germain (sinónimo menor de *Bolborhinum geotrupoides*), *Bolboceras distinguendum* Fairmaire y Germain (sinónimo menor de *Bolborhinum geotrupoides*), *Bolboceras laesicolle* Fairmaire (ahora *Bolborhinum laesicolle*), *Bolboceras nasutum* Fairmaire y Germain (ahora *Bolborhinum nasutum*), *Bolboceras tetraodon* Redtenbacher (sinónimo menor de *Bolborhinum tubericeps*), *Bolboceras tricornis* Solier (ahora *Bolborhinum tricornis*), y *Bolboceras tubericeps* Fairmaire (ahora *Bolborhinum tubericeps*). Neotipos son designados para los siguientes nombres: *Bolboceras andicola* Philippi (sinónimo menor de *Bolborhinum nasutum*), *Bolboceras bicornis* Philippi (sinónimo menor *Bolborhinum tubericeps*), *Bolboceras excavatum* Philippi (sinónimo menor de *Bolborhinum laesicolle*), y *Bolboceras geotrupoides* Laporte (ahora *Bolborhinum geotrupoides*).

Adicionalmente, nosotros elevamos los subgéneros *Pereirabolbus* Martínez y *Zefevazia* Martínez a nivel genérico basado en la comparación morfológica con el género *Bolborhinum*. Como resultado, los siguientes combinaciones reflejan este cambio de estatus: *Pereirabolbus castaneus* (Klug), *Pereirabolbus tucumanensis* (Boucomont), *Zefevazia cantisanii* (Martínez), *Zefevazia peruana* (Boucomont), *Zefevazia quinqueidentata* (Felsche), y *Zefevazia rosascostai* Martínez. Estos cambios son congruentes con los conceptos genéricos de Bolboceratinae de otras partes del mundo, y con la clasificación moderna del grupo.

Key words: Geotrupidae, Bolboceratinae, *Bolborhinum*, *Pereirabolbus*, *Zefevazia*, new species, southern South America, Argentina, Chile.

Introduction

Bolborhinum Boucomont is a small genus of bolboceratines endemic to southern South America that contains eight species distributed in Argentina and Chile. Of these species, four are endemic to Chile, three species are known from both countries, and one species is endemic to Argentina.

Species in the genus have been treated by few authors in the last 160 years, both in catalogs (Harold 1869, Reed 1876, Philippi 1887, Germain 1911, Boucomont 1912, Blackwelder 1944) and in scattered taxonomic works (Laporte 1840, Solier 1851, Fairmaire 1856, Fairmaire & Germain 1861, Philippi 1859, Philippi 1873, Redtenbacher 1868, Reed 1872, Kolbe 1907, Boucomont 1902, Boucomont 1911, Felsche 1909, Gutiérrez 1949, Gutiérrez 1950, Martínez 1951, Martínez 1952, Martínez 1976).

Martínez (1976) recognized three subgenera in the genus *Bolborhinum*: *Bolborhinum*, *Pereirabolbus* Martínez, and *Zefevazia* Martínez with a total of 14 species distributed from Brazil to Chile (Martínez 1976). *Bolborhinum* is characterized by the spherical body form and distinct male cephalic ornamentation. Most of