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First description of the female of *Argelodes magnificus* Ruta, 2021 (Coleoptera: Scirtidae), a rarely collected species, and first record of the genus in Chile

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Abstract

The monotypic genus *Argelodes* Ruta, which includes the species *A. magnificus* Ruta (Coleoptera, Scirtidae), was originally described based on a single male from Argentina. Prior to this study, this male represented the only known individual of the species. Here, we report the genus *Argelodes* from Chile for the first time and provide the first formal description of the female, along with habitus and genitalia illustrations. The female of *A. magnificus* is similar to the male in body coloration and general shape, but exhibits sexual dimorphism, with less protuberant eyes, a more convex pronotum, and a more robust body. This study also includes a comparison with other large-sized Scirtidae genera occurring in Chile.

Key words: Female description, Neotropical fauna, taxonomy, Scirtoidea

Introduction

The family Scirtidae Fleming, 1821 (Coleoptera: Scirtoidea), commonly known as marsh beetles, includes approximately 1900 described species and 96 genera (Bradford *et al*. 2022). They are distributed worldwide, being most frequently observed in temperate ecosystems of the northern and southern hemispheres (Lawrence 2016). In the Neotropical Region, two subfamilies (Scirtinae and Stenocyphoninae) are listed, including over 200 species and 16 genera. The genera recorded in the Neotropical Region are: *Anticyphon* Ruta, 2016; *Argelodes* Ruta, 2021; *Calvariopsis* Ruta, 2019; *Chilarboreus* Ruta, 2011; *Contacyphon* Gozis, 1886; *Exagontus* Waterhouse, 1900; *Mucronotus* Ruta, 2021; *Neocyphon* Ruta, Libonatti, Epler & Klausnitzer, 2026; *Ora* Clark, 1865; *Prionocyphon* Redtenbacher, 1858; *Prionoscirtes* Champion, 1897; *Pseudomicrocara* Armstrong, 1953; *Scirtes* Illiger, 1807; *Solierodes* Ruta, 2021, *Spumacinctus* Jorge, Libonatti, Benetti & Hamada, 2026, and *Stenocyphon* Lawrence, 2001 (Ruta 2011, 2018, 2019, 2021, 2023; Zwick *et al.* 2013; Libonatti & Ruta 2018; Ruta *et al.* 2026; Jorge *et al.* 2026).

In southern South America, knowledge of this group has increased over the past decades due to the revision of several genera and the description of new taxa. In Chile, 38 species and six subspecies are currently known, assigned to seven genera: *Chilarboreus*, *Contacyphon*, *Mucronotus*, *Prionocyphon*, *Pseudomicrocara*, *Solierodes*, and *Stenocyphon* (Pic 1918; Blackwelder 1944; Elgueta 2000; Ruta, 2011, 2021, 2023; Ruta *et al.* 2018; Zwick *et al*. 2013; Solervicens 2014; Tello-Arriagada & Tello 2024). However, some genera require comprehensive revision

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(*e.g., Contacyphon* and *Pseudomicrocara*) due to the fact that multiple species seem to be morphologically different from the existing genus diagnoses.

Collecting efforts and museum records remain limited for southern South America. For instance, the monotypic genus *Argelodes* Ruta, with the species *A. magnificus* Ruta, is only known from Puerto Blest, Río Negro province, Argentina (Ruta 2021). The original descriptions of the genus and the species were proposed based on a single male specimen; therefore, the female remained unknown to science until now. Here, we examine museum material from southern Chile and provide the first records of *Argelodes* for Chile and the first description of the female of *A. magnificus*.

Materials and methods

This study is based on Scirtidae specimens housed in the Ernesto Krahmer Collection (CEEK) at the Universidad Austral de Chile, Valdivia, Chile. Taxonomic delimitation follows the original description of Ruta (2021), and morphological terminology follows Lawrence *et al.* (2011) and Libonatti & Ruta (2013).

To study the museum specimens the removed abdomens were first treated with a 10% aquatic solution of potassium hydroxide (KOH) at room temperature for 4–12 hours to soften and clean their structures. Once dissected, female genitalia were stained with Chlorazol Black to enhance the contrast of membranous structures. Images of body parts were obtained using a FLEXACAM C3 camera mounted on a Leica S9D stereomicroscope in the Universidad de Atacama. Image compositions were made using Adobe Photoshop CC 2025.

Measurements were taken with the Leica Application Suite X (LASX) v. 5.1.0 software and were abbreviated in the text, as follows: TL—total body length (measured from the anterior margin of the labrum, with the head in natural flexion, to the apex of the elytra), PL and PW—pronotal length and width, respectively, and EL and EW—elytral length and width, respectively. All measurements were taken at their maximum length and width, respectively. Dissected structures were mounted on cards and associated with their respective specimens, with appropriate relabeling undertaken.

Results

Taxonomy

Coleoptera Linnaeus, 1758

Scirtidae Fleming, 1821

Subfamily Scirtinae Fleming, 1821

Argelodes Ruta, 2021

Figures 1A–F; 2A-F; 3A–F

Argelodes magnificus Ruta, 2021: 454 (original description).

Material examined. 1 ♂, Chile, Los Ríos region, Valdivia province, Santo Domingo, 1971, Coll. E. Krahmer [CEEK]; 1 ♂, same locality and collector, 05.VIII.1987; 1 ♀, same locality and collector, 20.VII.1990.

Notes on the male. The male specimen analyzed in this study (Figs. 1A) is fully consistent with the holotype designated by Ruta (2021), in coloration, overall body morphology, and male genitalia: chestnut brown body, large and elongate body, with large non saltatorial legs (Fig. 1A), pronotum distinctly narrower than base of elytra; elytra subglabrous, covered with very short and sparse setae (Fig. 1B); subantennal grooves moderately deep, subgenal ridge without buttonhole configuration, eyes strongly protuberant; parameroids of penis bifid at apices (Fig. 1D), parameres of tegmen wide in basal portion, narrowed and hooked in apical half (Fig. 1 E).

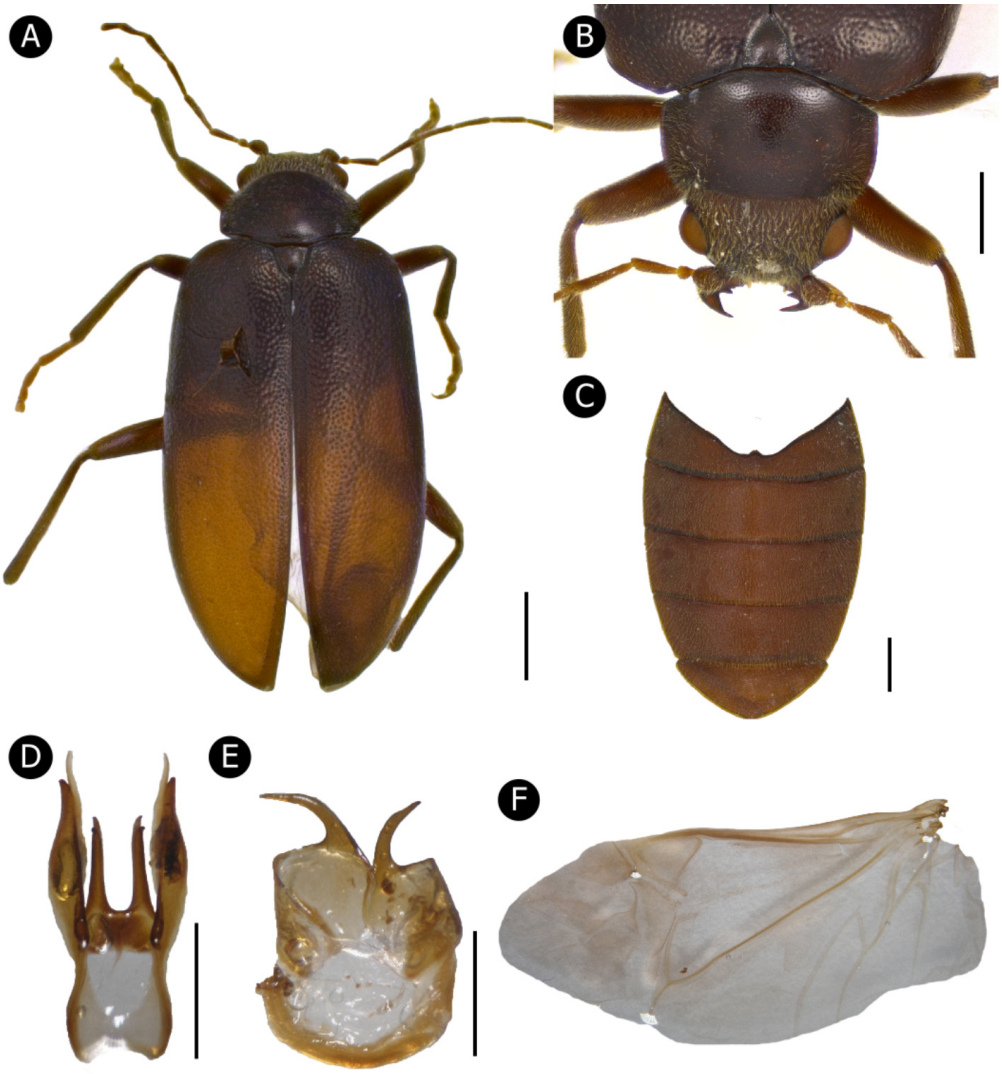

FIGURE 1. Male of *Argelodes magnificus* Ruta, 2021. A) Habitus; B) Pronotum; C) Abdomen; D) Penis; E) Tegmen and F) Wing. Scale bars = 1.0 mm.

Description of female. Measurements (n = 1): TL = 10.55 mm; PL = 1.84 mm; PW = 3.37 mm; EL = 8.16 mm; EW = 4.96 mm. Body elongated and moderately convex in dorsal view, light chestnut brown to reddish in color. Integument punctation small, homogeneously distributed on body surface, and with few, small setae (Fig. 2A).

Head (Fig. 2B) ca. 1.3× wider than long, ca. 1.4× wider than interocular space, transverse, moderately convex, inserted into prothorax up to posterior extent of eyes; yellow setae uniformly distributed; clypeus with straight anterior margin; frons with small punctures, separated by ca. 1× diameter of a puncture. Subgenal ridge well marked, without buttonhole configuration. **Eyes** large, light brown in color, rounded, moderately protruding; interfacetal setae absent; ommatidia small. **Antennae** (Fig. 2D) filiform, antennomeres 9–11 missing in the examined specimen, light brown with numerous setae uniformly distributed; antennomere 1 subcylindrical, ca. 2.7× longer than wide and longer than antennomere 2; antennomere 2 notably smaller than all other antennomeres; antennomere 3 ca. 5.1× longer than antennomere 2 and slightly wider, antennomeres 4–8 ca. 1.5× longer than antennomere 3, elongate, cylindrical. **Mandibles** (Fig. 2B) symmetrical, inner margin with three denticles: one large subtriangular denticle and two smaller ones; unidentate incisor tooth, apex blunt. **Maxillary palpomeres** with palpomere 1 shortest; palpomere 2 longest; palpomere 3 shorter than 2, palpomere 4 fusiform and shorter than 3 and ca. ½ the length of 2. Labial palpomeres with palpomere 1 sparsely covered with setae, elongated and narrow; palpomere 2 with numerous setae, subconical and wider at the apex; palpomere 3 smaller than 1, covered with moderately long setae and with acute apex.

Prothorax. Pronotum transverse, subrectangular in shape, ca. 1.8× times wider than long, punctures abundant and uniformly distributed on disc; anterior angles subtriangular, projected forward; posterior angles rounded; disc convex with lateral areas nearly flattened; lateral carina rounded, smooth. Hypomeral area smooth, with numerous yellow setae. Prosternal process as described for the genus (see Fig. 2A in original description).

Pterothorax. **Scutellar shield** (Fig. 2A) triangular, transverse, with acute apex, lateral edges slightly curved, lacking punctures. **Elytra** (Fig. 2A) elongated, ca. 4.4× longer than pronotum, ca. 1.5× wider at base than the pronotum, with dense and uniformly distributed punctation, punctures separated by ca. 1.5× diameter of a puncture; humeri marked; epipleura wide at base, slightly narrower than the metanepisternum; apex moderately rounded; mesoventral process and fossa deep, as described for the genus (see Fig. 2A in original description). **Metaventrite** relatively short and transverse, convex; discrimen complete; metaventral process short, subtriangular; metanepisternum large, extending obliquely to the epipleura.

Hind wings. Similar to those of the male (Fig. 2E), most likely fully functional.

Legs light brown in coloration, elongated and extending beyond the elytral margin; trochanter (Fig. 2A) longer than wide; pro-, meso-, and metafemora narrow, less widened at the sides; pro-, meso-, and metatibiae narrow, with two longitudinal carinae; pro-, meso-, and metatibial spurs small, ca. 0.9× the tibial width; tarsomere 1 elongated, as long as tarsomeres 2–3 combined; tarsomere 4, similar in size to tarsomere 3, but bilobed; tarsomere 5 elongated, as long as tarsomere 1, but curved; claws simple.

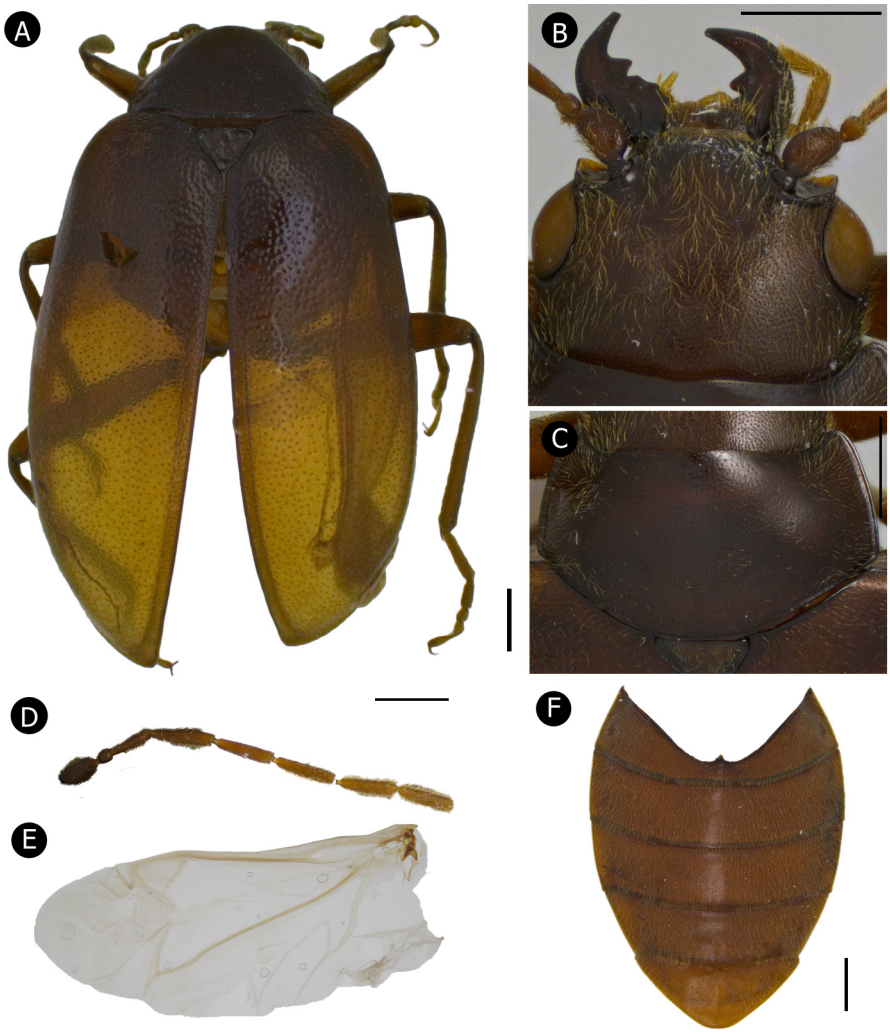

FIGURE 2. Female of *Argelodes magnificus* Ruta, 2021. A) Dorsal habitus; B) Head; C) Pronotum; D) Antennae; E) Wing and F) Abdomen. Scale bars = 1.0 mm.

Abdomen (Fig. 2F) elongated, ca. 1.1× longer than its width and moderately convex; tergite VII with a pair of subparallel sclerotized apodemes, posterior margins rounded with setae (Fig. 3C). Abdominal ventrites with regular setation, except for a distinct glabrous area located at the center of the posterior margin of ventrites 3 and 4 (Fig. 2F). **Female terminalia**. Tergite VIII with a pair of long and V-shaped sclerotized apodemes, with small setae (Fig. 3F). Sternite VIII long with apodemes ending in bifid anterior apex and posterior plate bearing small setae (Fig. 3D). **Female genitalia**. Coxites long with numerous short setae (Fig. 3A); styli almost as wide as long with a single patch of sensillae (Fig. 3B); bursal sclerite long with a narrow anterior part, widening posteriorly into a pear-shape (Fig. 3E).

Sexual dimorphism. Females differ from males by having less protuberant eyes, a clearly more convex pronotum, and a more robust body.

Distribution. Argentina: Puerto Blest (Río Negro province) and **Chile**: Santo Domingo, Valdivia (Los Ríos region) **[new record]**.

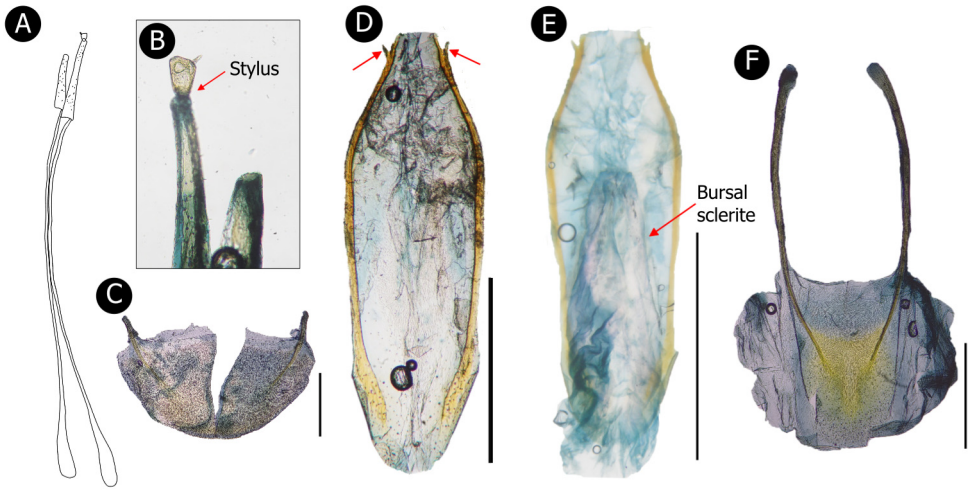

FIGURE 3. Female terminalia and genitalia of *Argelodes magnificus* Ruta, 2021. A) Ovipositor; B) Coxites and styli (one stylus missing in the examined specimen); C) Tergite 7; D) Sternite 8; E) Bursal sclerite and F) Tergite 8. Scale bars = 1.0 mm.

Discussion

Females of *Argelodes magnificus* can be readily distinguished from males by external morphological differences, including a more robust body and a more convex pronotum in lateral view. These characters complement the male morphology described by Ruta (2021) and support the association of both sexes.

The female morphology of *Argelodes* presents a combination of characters, especially in the sclerotized structures of the genital tract, the ovipositor styli, and the abdominal ventrites, that clearly distinguishes it from other large-sized Scirtidae genera occurring in Chile, particularly *Mucronotus* and *Solierodes*. The bursal sclerite observed in *Argelodes*, which is elongate, with a narrow anterior portion gradually widening posteriorly into a pear-shaped structure, is similar to that of *Solierodes*, which is subconical, widened in posterior portion and rounded in anterior portion (Ruta 2021). However, *Argelodes* differs from *Solierodes* in having apical rather than subapical ovipositor styli (Ruta 2021). Additionally, females of *Solierodes* exhibit a dense transverse patch of setae on ventrite 4 and a characteristic concavity on the posterior margin of ventrite 5 (Ruta 2021), whereas females of *Argelodes* lack patches of setae and instead possess a glabrous area at the center of the posterior margin of ventrites 3 and 4, devoid of the long setae present on the remaining surface; furthermore, the posterior margin of ventrite 5 is convex. Regarding females of *Mucronotus*, the ovipositor styli are inserted apically (Ruta 2021), as in *Argelodes*. The bursal sclerite of *Mucronotus* is elongate and bears a distinctly developed anterior sclerotization (Ruta 2021), contrasting with that of *Argelodes*. Another difference between females of *Argelodes* and *Mucronotus* is that the abdomen ventrites of the latter present regular setation.

The new records presented here were collected in Valdivian temperate forests, the same forest type in which *A. magnificus* was originally recorded (Ruta 2021). This concordance in habitat suggests that the species may be closely associated with the temperate rainforest belt that stretches along the Andean foothills. Although the

biogeography of *A. magnificus* remains poorly known, the new Chilean record extends its distribution westward across the Andes and provides evidence that the species likely ranges throughout Andean temperate forests on both sides of the mountain range. Such a trans-Andean pattern is consistent with several other Scirtidae and forest-associated beetle lineages, in which dispersal or historical connectivity between Argentine and Chilean forests has shaped present-day distributions (*e.g.,* Ruta 2021; Tello-Arriagada & Tello 2024). Further collecting efforts and examination of additional museum material will be essential for defining the true extent of the species distribution and for understanding whether its occurrence reflects relictual persistence, continuous forest corridors, or more recent dispersal events across the Andes.

With this new record, the known fauna of Scirtidae in Chile increases to 39 species, 6 subspecies, and 8 genera, belonging to the subfamilies Scirtinae and Stenocyphoninae (Lawrence 2001; Libonatti & Ruta 2013, 2018; Tello-Arriagada & Tello 2024).

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