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AEGOPSIS BOLBOCERIDUS (COLEOPTERA: MELOLONTHIDAE): AN IMPORTANT PEST ON VEGETABLES AND CORN IN CENTRAL BRAZIL

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Beetles belonging to the family Melolonthidae (*sensu* Endrödi 1966; Morón 1997, 2001, 2004b; Morón et al. 1997) are primary consumers or decomposers. The adults feed on leaves, stems, roots, exudates, flowers, fruits and tubercles of angiosperms, as well as on leaves and roots of gymnosperms. Some adults are predators of other insect species. Usually the larvae develop in the soil, consuming roots or humus, as well as rotting tree trunks. Larvae of a few species are associated with ants and termites, feeding on detritus or on immatures of those insects. Some larvae occur in rodent nests, or develop in cavities of live tree trunks and branches, beneath the bark, or among the roots and in the axillary cavities of epiphyte plants (Morón 1997, 2001). Edaphic species occur in all types of soil, included flooded soils, but not in those that remain frozen for long periods (Morón 2001).

The great diversity of food sources and wide geographic distribution of Melolonthidae species, together with other representatives of Scarabaeoidea, suggest that these insects play an important role in primary and disturbed ecosystems (Morón 2004a; Morón & Aragón 2003). Despite the ecological importance of the Melolonthidae, there are several groups at diverse levels (tribe, sub-tribe and genus) that need extensive taxonomic revisions, especially for South America. Some described species are rare or of limited abundance and their habits are unknown (Morón 1997, 2004a).

Many species of Melolonthidae are known to cause damage to crops by feeding on the plant roots, mainly during the larval phase. In South America, there are reports of 79 species as agricultural pests (Morón & Aragón 2003; Morón 2004a). The scarabaeoid larvae or white grubs are known in Brazil by the name of "corós" and are important pests of several crops with high economic value, mainly in the South of Brazil including such species as *Diloboderus abderus* (Sturm) (Gassen 1989; Silva 1995; Silva et al. 1996), *Phyllophaga triticophaga* Morón & Salvadori (Salvadori 2000; Salvadori & Oliveira 2001) and *P. cuyabana* (Moser) (Oliveira et al. 1997), which attack corn (*Zea mays* L.), wheat [*Triticum aestivum* (L.) Thell] and soybean [*Glycine max* (L.) Merrill]. There are reports of damaging attacks by white grubs in the "Cerrado" (savannah) region of Central Brazil. Nevertheless, there is little informa-

tion about correct taxonomic identification and bioecology of these species.

Recently, severe damage caused by white grubs has been observed in vegetables growing areas of the Federal District and corn fields of the Goiás state, Brazil. In Oct 2005, adults of these insects reared in the laboratory and collected in the field were sent to the Departamento de Biología de Suelos, Instituto de Ecología, A.C., Xalapa, Veracruz, Mexico, for specific taxonomic identification.

Specimens were identified as *Aegopsis bolboцерidus* (Thomson) (Coleoptera: Melolonthidae: Dynastinae: Agaocephalini) (Figs. 1 and 2) and will be referred to by the common name of "coró-das-hortaliças". Thomson (1860) described the species as a member of the genus *Agaocephala* Serville from 2 male specimens collected in "Brésil intérieur" and until 1988 it was considered a rare species. Dechambre & Grossi (1991) redescribed the species from 26 males and 38 females collected near Brasília/DF-Brazil, and after comparison with the type specimen, transferred it to the genus *Aegopsis* Burmeister. Little is known about the habits of the adult or immature stages of this species, or even about the other members of the tribe Agaocephalini. Bioecological studies on *A. bolboцерidus* are in progress by Embrapa Cerrados (Planaltina/DF-Brazil) in laboratory and field conditions.

Larvae of *A. bolboцерidus* are polyphagous and damage caused by it on vegetables and corn has been verified in the rainy period, mainly between Dec and Mar, both under field conditions and in protected (greenhouse) crops. Larvae destroy the root system, killing the plants, and killed plants occur in patches of variable size in a non-uniform pattern within agricultural fields, a problem reported by farmers since the late 1990s. In the vegetables area in the municipality of Planaltina (Núcleo Rural Taquara-Chácara 70), in Federal District, there was total loss of crops of bell peppers (*Capsicum annum* L.), eggplants (*Solanum melongena* L.), chili peppers (*Capsicum chinense* Jacq.), cabbage (*Brassica oleracea* var. *capitata* L.), cucumbers (*Cucumis sativus* L.), cauliflower (*Brassica oleracea* L. var. *botrytis*), beans (*Phaseolus vulgaris* L.), green beans (*P. vulgaris* L. var. *Macarrão Brasília*) and kale (*Brassica oleracea* L. var. *acephala*), during 2004, 2005, and 2006. In

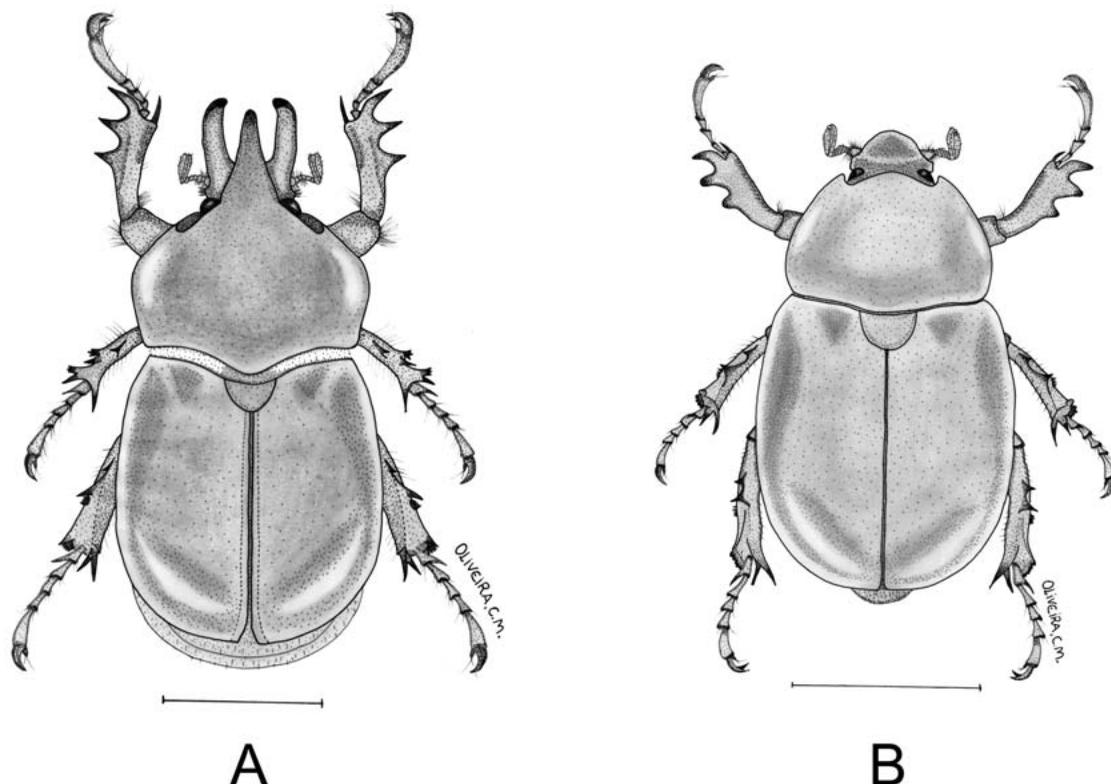


Fig. 1. *Aegopsis bolboцерidus*. (A) male adult, dorsal view; (B) female adult, dorsal view (line = 1 cm).

harvests in 2005/2006 and 2006/2007, *A. bolboцерidus* was found on corn, causing serious losses to this crop in various farms in the municipality of Água Fria de Goiás, in Goiás State. Larvae have been observed feeding on sugarcane (*Saccharum officinarum* L.), ornamental plants, Tanner grass (*Brachiaria* sp.), several weeds that grow in the vegetable fields, and in native vegetation. In greenhouse crops of bell peppers, damage caused by *A. bolboцерidus* also has been observed.

The “coró-das-hortaliças” is native to the Brazilian “Cerrado”, a fact that has been confirmed by capturing these insects with light traps in areas of native vegetation that are distant from the cultivated fields. Our guess is that the advance of farming and ranching activities by clearing the native vegetation in the “Cerrado” areas is one of the factors that has allowed this species to adapt to the agricultural environment and become an important pest in some regions.

Third instars of *A. bolboцерidus* (Fig. 2C) may be separated from other “coró” frequently collected in cultivated fields of the Brazilian “Cerrado” by the following combination of characters: approximate dorsal body length 48-56 mm; maximum width of head capsule 8-9 mm; surface of cranium dark reddish brown; frons with 1 exterior frontal seta and 1 posterior frontal seta on

each side; anterior frontal setae absent; clypeus with 3 external setae on each side; left lateral margin of labrum widely rounded, not angulate posteriorly; left mandible with 4th scissorial tooth entire; last segment of antenna with 6-10 dorsal sensory spots; each tarsal claw with 2 setae; bullae of all abdominal spiracles with oval, convex central area; anal slit transverse, slightly curved; raster without palidia and septula, with 28-32 short spine-like setae on lower anal lip.

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SUMMARY

Several species of insects in the family Melolonthidae are known in the world as important soil pests because their larvae feed on roots of cultivated plants. Recently, in the “Cerrado” (savannah) region of Federal District and Goiás State, Brazil, severe damage was verified on veg-

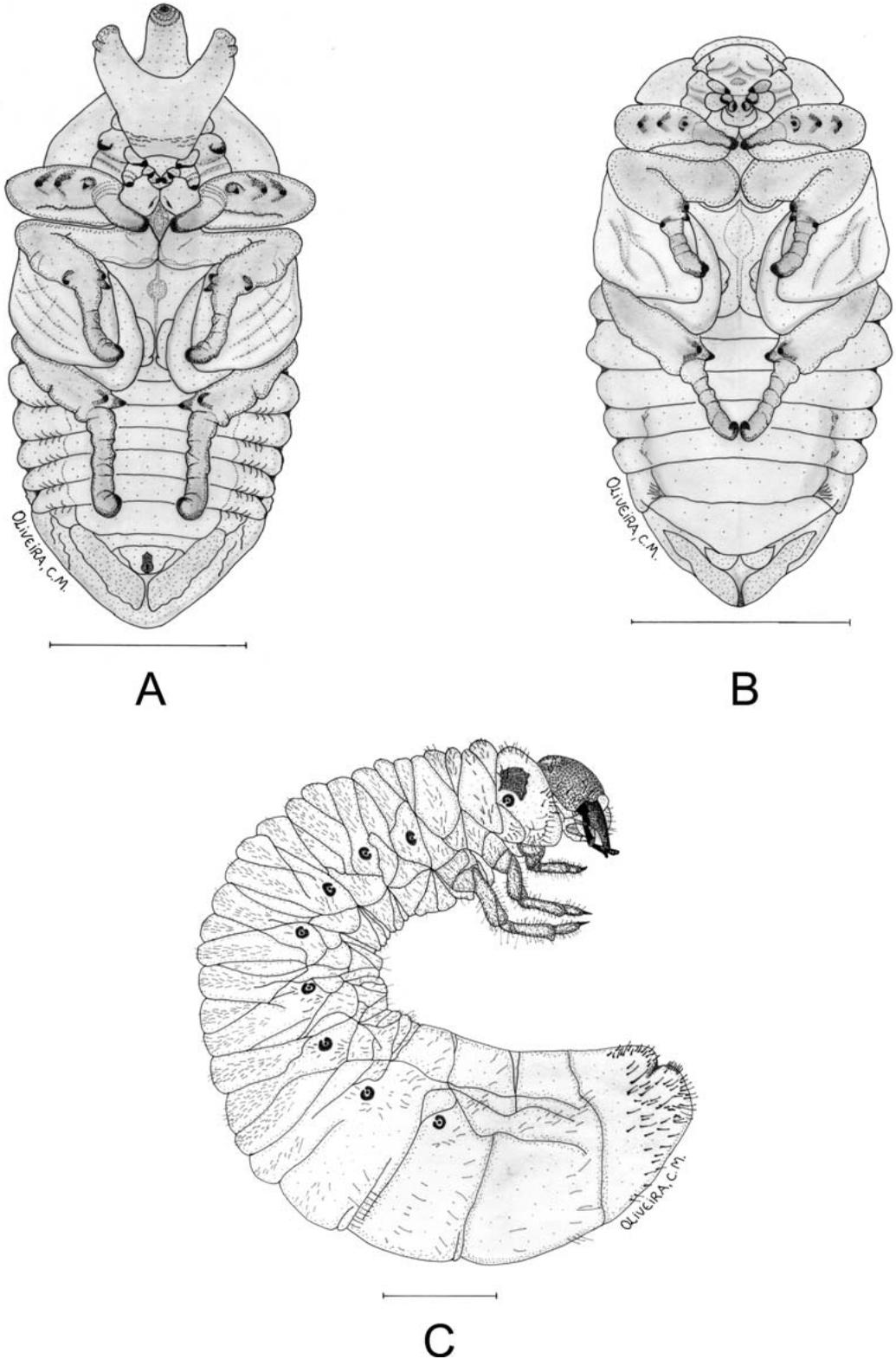


Fig. 2. *Aegopsis bolboceridus*. (A) male pupae, ventral view; (B) female pupae, ventral view; (C) third instar, lateral view (line = 1 cm).

etables and corn caused by larvae of beetles of this family. The beetle species was identified as *Aegopsis bolboцерidus* (Thomson).

REFERENCES CITED

- DECHAMBRE, R. P., AND E. J. GROSSI. 1991. *Agaocephala bolboцерida* Thomson: Nouvelles captures et mise au point systématique (Col. Dynastidae). Bull. Soc. Entomol. Fr. 95: 237-240.
- ENDRÓDI, S. 1966. Monographie der Dynastinae (Coleoptera: Lamellicornia) I. Teil. Entomol. Abh. Mus. Tierk. 33: 1-457.
- GASSEN, D. N. 1989. Insetos subterrâneos prejudiciais às culturas no sul do Brasil. Embrapa/CNPT, Passo Fundo, Brazil. 49 pp.
- MORÓN, M. A. 1997. Inventarios faunísticos de los Coleoptera Melolonthidae Neotropicales con potencial como bioindicadores. G. Ital. Entomol. 8: 265-274.
- MORÓN, M. A. 2001. Larvas de escarabajos del suelo en México (Coleoptera: Melolonthidae). Acta Zool. Mex. (nueva serie) 1: 111-130.
- MORÓN, M. A. 2004a. Insetos de solo, pp. 41-68 In J. R. Salvadori, C. J. Ávila, and M. T. Silva [eds.], Pragas de Solo no Brasil. Embrapa Trigo, Passo Fundo, Brazil. 541 pp.
- MORÓN, M. A. 2004b. Melolontídeos edafícolas, pp. 133-166 In J. R. Salvadori, C. J. Ávila, and M. T. Silva [eds.], Pragas de Solo no Brasil. Embrapa Trigo, Passo Fundo, Brazil. 541 pp.
- MORÓN, M. A., AND A. ARAGÓN. 2003. Importancia ecológica de las especies americanas de Coleoptera Scarabaeoidea. Dugesiana 10: 13-29.
- MORÓN, M. A., B. C. RATCLIFFE, AND C. DELOYA. 1997. Atlas de los Escarabajos de México. Coleoptera Lamellicornia. Volume 1. Familia Melolonthidae. Comisión Nacional para el conocimiento y uso de la Biodiversidad y Sociedad Mexicana de Entomología, México. 280 pp.
- OLIVEIRA, L. J., M. A. GARCIA, C. B. HOFFMAN-CAMPO, D. R. SOSA-GOMEZ, J. R. B. FARIAS, AND I. C. CORSO. 1997. Coró-da-soja *Phyllophaga cuyabana*. Embrapa-CNPSo, Londrina, Brazil. 30 pp.
- SALVADORI, J. R. 2000. Coró-do-trigo. Embrapa/CNPT, Passo Fundo, Brazil. 56 pp.
- SALVADORI, J. R., AND L. J. OLIVEIRA. 2001. Manejo de Corós em Lavouras sob Plantio Direto. Embrapa/CNPT, Passo Fundo, Brazil. 88 pp.
- SILVA, M. T. B. 1995. Aspectos Biológicos, Danos e Controle de *Diloboderus abderus* Sturm, 1826 (Coleoptera: Melolonthidae) em Plantio Direto. M.S. Thesis, Universidade Federal de Santa Maria, Santa Maria, Brazil. 76 pp.
- SILVA, M. T. B., D. LINK, E. C. COSTA, AND M. F. S. TARAGÓ. 1996. Efeito da época de semeadura de milho sobre os danos causados pelas larvas de *Diloboderus abderus* (Sturm) (Coleoptera: Melolonthidae) em plantio direto. Ann. Soc. Entomol. Brasil 25: 89-94.
- THOMSON, M. J. 1860. Agaocephalitarum synopsis. Mus. Scient. 14-19.