THREE NEW SPECIES OF AULACIDAE (HYMENOPTERA) FROM BRAZIL

DAVID R. SMITH AND DAVI VILELA DE CARVALHO

(DRS) Systematic Entomology Laboratory, PSI, Agricultural Research Service, U.S. Department of Agriculture, c/o National Museum of Natural History, Smithsonian Institution, P.O. Box 37012, MRC 168, Washington, DC 20013-7012 U.S.A. (e-mail: dave.smith@ars.usda.gov); (DV) Departamento de Zoologia, Universidade Federal de Minas Gerais, Caixa Postal 486, 31.270-901 Belo Horizonte, Minas Gerais, Brazil (e-mail: davibiofis@yahoo.com.br)

Abstract.—Three new species of Aulacidae, Aulacus gerais Smith and A. unicus Smith, from Minas Gerais, Brazil, and Pristaulacus petiense Smith, from Minas Gerais, Esperito Santo, Mato Grosso do Sul, and Santa Catarina, Brazil, are described. The species are illustrated and separated from described species of their respective genera.

Key Words: Aulacus, Pristaulacus, neotropics, parasitic wasp

DOI: 10.4289.0013-8797.112.1.253.140

Aulacidae are endoparasitoids of wood-boring Hymenoptera (Xiphydriidae) and Coleoptera (mainly Buprestidae and Cerambycidae) (Smith 2001). Although a revision of South American Aulacidae is underway by the senior author and it is preferable not to describe single species out of context, the three species described here are to provide names for part of a research project on Evanioidea by the junior author. Six species are involved in the studies by the junior author, three of which are new.

There is no current comprehensive treatment of South American Aulacidae. Smith (2001) provided a world catalog, (2005a) reviewed the species of Chile and adjacent Argentina, (2005b) treated some species that occur in Colombia and northern South America, and (2008) revised the family for southwestern United States, Mexico, and Central America. Currently, there are two genera with 18 described species of Aulacus Jurine and 26 described species of Pristaulacus Keiffer in South America. It is estimated that more than twice the total number of described aulacid species actually occur in South America.

Materials and Methods

Collections were made at the Peti Ambiental Station, a conservation area of the Energetic Company of Minas Gerais (CEMIG). Malaise traps were used in two locations. One was in a secondary forest (PO), from April 2002 to April 2003, 19°52'49"S, 43°22'07"W. The other was in an area of savanna or cerrado (A1), from April 2002 to April 2004, 19°53'07"S, 43°22'06"W.
Images were obtained using an EntoVision Imaging Suite that included a firewire JVC KY-75 3CCD digital camera mounted to a Leica M16 zoom lens via a Leica z-step microscope stand. Multiple focal planes were merged using Cartograph 5.6.0 (Microvision Instruments, France) software.

Descriptions are based both on specimens from the junior author and material on loan from the following collections: AEI, American Entomological Institute, Gainesville, FL, USA (David Wahl); CNCI, Canadian National Collection of Insects, Ottawa, Canada (John Huber); UFMG, Departamento de Zoologia, Universidade Federal de Minas Gerais; USNM, National Museum of Natural History, Smithsonian Institution, Washington, DC, U.S.A. Terminology follows Huber and Sharkey (1993).

RESULTS

**Aulacus gerais Smith, new species**

(Figs. 1–4)

Diagnosis.—Black with contrasting bright orange legs and metasoma. Wings hyaline. Mesoscutal middle lobe with transverse carinae. Flange on anterolateral margin of pronotum absent. Ovipositor with preapical white band; length subequal to forewing length.

Description.—Body length 7.0 mm; ovipositor length 6.5 mm; forewing length 6.5 mm. **Color:** Antenna and head black; mandible dark reddish brown; labium and maxilla brown. Mesosoma black, narrow inner dorsal margin of propleuron brown. Legs orange, tarsi more yellow. Metasoma orange with extreme base of first metasomal tergite black. Ovipositor black with preapical white ring. Wings hyaline; veins and stigma black. **Head:** Antennal length 2.8× head width. Lower interocular distance about 1.2× eye height; inner margins of eyes slightly converging below; malar space about 0.2× eye height. In dorsal view, head behind eyes short, about 0.7× eye length, lateral margins somewhat straight, then abruptly curving inward (Fig. 3). Distance between eye and lateral ocellus, between lateral ocelli, and from lateral ocellus to hind margin of head as 1.0:1.0:2.8. Genal carina absent. Shiny, punctate, punctures dense on gena and frons, separated by flat shiny interspaces about equal to or less than punctuation diameter, less dense and more widely separated on vertex (Fig. 3), with flat shiny interspaces several times greater than punctuation diameters; posterior margin of vertex almost impunctate. White hairs arising from punctures, densest on frons and gena. **Mesosoma** (Figs. 2, 4): Propleuron shiny, finely punctate. Mesoscutal middle lobe shiny, with 5 or 6 prominent transverse carinae, lateral lobes smooth, shiny, with few punctures on inner margins. Notauli meeting far apart on transscutal articulation. Axilla and mesoscutellum shiny with prominent transverse carinae, 2 or 3 on axilla, 5 or 6 on mesoscutellum. Mesopleurae finely reticulate; small shiny hairless spots in upper posterior margin of mesepisternum, dorsal portion of mesepimeron, and on upper portion of metapleuron; short scrobiculate area on upper mesepimeron; propodeum more coarsely reticulate than pleurae; mesosoma covered with fine white hairs except on shiny areas of pleurae. Hind coxa smooth, shiny; about 2.7× longer than broad in lateral view. Hind basitarsus subequal in length to remaining tarsomeres combined. Tarsal claws with minute inner tooth near base. **Metasoma:** Shiny, apical two segments with fine white pubescence. Ovipositor sheath subequal to forewing length.

Male.—Unknown.
Figs. 1–2. *Aulacus gerais*. 1, Lateral. 2, Mesosoma, lateral.

Etymology.—Named for Minas Gerais, the state from which the species is described. A noun in apposition.

Discussion.—This and the following species are separated from previously described species of Neotropical Aulacus by their hyaline wings, mesoscutal middle lobe with some transverse carinae, flange on anterior margin of pronotum absent, head in dorsal view short behind eyes with head length much less than eye length, black head and mesosoma, and lack of small spines on dorsum of mesonotum. The species most resembling these two new ones is A. fusiger Schletterer, 1889, described from “Brasilien.” Aulacus fusiger is larger, about 13 mm in length, has coarse transverse carinae on the entire length of the mesoscutal middle lobe, the ovipositor sheath length is greater than the forewing length, and has the head black, mesosoma orange, the legs orange brown, and the metastoma orange. Both new species are 7–8 mm long, have a different color combination, have less prominent carinae on the mesoscutal middle lobe, and the forewing length is subequal to the ovipositor sheath length. See characters in the diagnosis for each species.

Aulacus unicus Smith, new species
(Figs. 5–8)

Diagnosis.—Head black with brown spot on vertex. Mesosoma, abdomen, and legs mostly black; wings hyaline, apex of forewing infuscate. Mesoscutal middle lobe pitted anteriorly, transverse carinae posteriorly. Flange on anterolateral margin of pronotum absent. Ovipositor with preapical white band; length subequal to forewing length.

Description.—Body length 8.0 mm; ovipositor length 6.0 mm; forewing length 6.0 mm. Color: Antenna and head black; brown spot on vertex behind ocelli; scape and pedicel brown. Mesosoma black. Legs brown, with...
coxae, mid- and hind femora, and mid- and hind tibiae black; extreme base of hind tibia white. Metasoma black with transverse narrow brown bands on tergites 2 to apex. Ovipositor black, with preapical white band. Wings hyaline with infuscate apical spot on forewing; veins and stigma black. **Head:** Antennal length 2.8× head width. Lower interocular distance sub-equal to eye height; inner margins of eyes slightly converging below; malar space about 0.2× eye height. In dorsal view, head behind eyes about 0.6× eye length, lateral margins evenly rounded posteriorly (Fig. 7). Distances between eye and lateral ocellus, lateral ocelli, and lateral ocellus to hind margin of
head as 1.0:1.0:2.8. Genal carina absent. Frons with punctures close together, separated by shiny interspaces less than puncture diameters; vertex and gena with scattered, less dense punctures (Fig. 7), separated by shiny interspaces several times puncture diameters; posterior margin of head near occiput without punctures. White hairs arising from punctures, densest on lower inner orbits, lower gena, and between antennae. Mesosoma (Figs. 6, 8): Propleuron shiny, very finely punctate. Mesoscutal middle lobe anteriorly with scattered punctures with shiny interspaces about puncture diameters, middle of mesoscutum becoming finely transversely carinate, with 5 or 6 prominent carinae on posterior third; lateral lobes finely punctate to reticulate. Notauli meeting at same point at transscutal articulation. Axilla with several transverse carinae; mesoscutellum with several transverse carinae on posterior half, intermixed with punctures. Pleurae finely reticulate with shiny, impunctate areas on upper posterior margin of mesepisternum, upper mesepimeron, and upper metapleuron. Narrow scrobi culate area on posterior margin of mesepimeron. Propodeum coarsely reticulate. Mesosoma covered with white hairs. Hind coxa smooth, shiny; 2.5× longer than broad in lateral view. Hind basitarsus subequal in length to remaining tarsomeres combined. Tarsal claws with minute inner tooth near base. Metasoma: Smooth, shiny; apical two segments with fine white pubescence. Ovipositor sheath length subequal to forewing length.

Male.—Similar to female.

Type material.—Holotype female, labeled “S. Gonçalo Rio Abaixo-MG (Est. Amb./Peti-Cemig) 22.IX.2002, A. F. Kumagai col. (A1).” Deposited UFMG. Paratypes: Same data as holotype (1 ♂); same data as for holotype except 01.X.2002 (1 ♂); same data as

Figs. 7–8. *Aulacus unicus*. 7, Head, dorsal. 8, Mesosoma, dorsal.
Etymology.—The name is derived from the single brownish spot on the vertex of the head.

Discussion.—This species is almost entirely black, has an infuscate spot at the apex of the forewing, and the mesoscutal middle lobe is pitted anteriorly but transversely carinate posteriorly. These characters will separate it from *A. gerais*. See also discussion under *A. gerais* for separation of these two species from other species of *Aulacus*.

**Pristaulacus petiense** Smith, new species
(Figs. 9–12)

Diagnosis.—Black, with mid- and hind basitarsi and 2nd tarsomere mostly white. Wings hyaline. Head prolonged behind eyes. Mesonotum rounded anteriorly; anterolateral margin of pronotum with one anteriorly projecting tooth. Tarsal claws with 4 teeth.
Description.—Body length 13.0 mm; ovipositor length 8.0 mm; forewing length 8.0 mm. Color: Black; maxillary and labial palpi brown; mid- and hind basitarsi and 2nd tarsomeres white except for black at extreme base of basitarsi. Wings hyaline; veins and stigma black.

Head: Antennal length 4.0× head width. Lower interocular distance 0.9× eye height; eyes slightly converging below; malar space about 0.3× eye height. In dorsal view, prolonged behind eyes (Fig. 11), distance behind eyes subequal to eye length, lateral margins evenly curved posteriorly. Distances between eye and lateral ocellus, between lateral ocelli, and between lateral ocellus and hind margin of head as 0.7:1.0:3.6. Occipital carina narrow, less than one-third ocellar diameter. Frons, supraclyppeal area, and clypeus smooth, shiny, with few fine punctures; vertex and gena smooth, shiny; long, silver hairs on frons, lower inner eye margins, supraclyppeal area, and clypeus, less dense on gena and almost absent on vertex. Mesosoma (Figs. 10, 12): Mesonotum rounded anteriorly. Forward projecting tooth near dorsal margin of pronotum. Propodeon shiny, finely punctate. Mesoscutal middle lobe with strong transverse carinae and central longitudinal groove; lateral lobes shiny, with inner margins finely punctate. Axilla finely punctate; mesoscutellum shiny, hairs absent; areas lateral to mesoscutellum reticulate, with white hairs. Pleurae finely reticulate; mesepimeron with narrow posterior margin scrobiculate; propodeum coarsely reticulate. Mesosoma covered with fine white hairs. Hind coxae smooth, shiny; 3.0× longer than broad in lateral view. Hind basitarsus 1.3× length of remaining tarsomeres combined. Tarsal claws with 4 teeth and indistinct rounded basal lobe; 4th tooth smallest. Metasoma: Shiny; apical two segments with fine white pubescence.
Ovipositor length subequal to forewing length.

Male.—Unknown.

Type material.—Holotype female, labeled “S. Gonçalo Rio Abaixo-MG (Est. Amb./Peti-Cemig) 03.1.2003, A. F. Kumagai col. (PO).” Deposited UFMG. Paratypes: Brasilien, Rio Caraguatã, 21°48’B, 52°27’L, 400 m. XI-24-1953, Fritz Plaumann [according to the coordinates, this is in the eastern part of the State of Mato Grosso do Sul] (2 ♀, AEI); same but XI-6-1953 (7 ♀; AEI); Brasilien, Nova Teutonia [Santa Catarina], 27°11’B, 52°23’L, 200–500 m, 24-XI-1940 (3 ♀, CNCI); same but 24-VII-1966 (2 ♀, CNCI).

Other specimen examined.—“Parque Sooretama, Linhares, Es. San., Nov. 1967, Brazil, F. M. Oliveira” (1 ♀, head missing; AEI).

Etymology.—Named for the Peti Ambiental Station, the conservation area in which the holotype was collected.

Discussion.—The evenly rounded anterior mesonotum, single anteriorly projecting tooth on the lateroanterior margin of the pronotum, elongated head behind the eyes, and black color with only the first two tarsomeres of the mid- and hind legs white separate this species from almost all other described Pristaulacus. The most similar species is P. concolor Scheletterer, 1889, described from “Brasilien,” which is also black and has the head markedly prolonged behind the eyes. Pristaulacus concolor, however, has the tarsi entirely black, hind coxae with distinct transverse sculpture, 5-toothed tarsal claws, and is about 15 mm in length.

ACKNOWLEDGMENTS

Thanks are extended to authorities of CEMIG and the Peti Ambiental Station for allowing field work by the junior author and Alice Fumi Kumagai, Universidade Federal de Minas Gerais, for help in collections and use of lab equipment. We thank J. T. Huber (CNCI) and D. Wahl (AEI) for loan of specimens. Andy R. Deans, Department of Entomology, North Carolina State University, Raleigh, and Michael G. Pogue and Thomas J. Henry, Systematic Entomology Laboratory, U.S. Department of Agriculture, Washington, DC, kindly reviewed the manuscript.

LITERATURE CITED


