

## SYSTEMATICS, MORPHOLOGY AND PHYSIOLOGY

### Cynipoidea Parasitoids of Dung-Flies in Brazil. II (Insecta: Hymenoptera)

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Cynipoidea Parasitóides de Moscas Associadas a Fezes Bovinas no Brasil. II (Insecta: Hymenoptera)

RESUMO - Neste trabalho são fornecidos chave de identificação ilustrada e dados de hospedeiros e distribuição geográfica para cada uma das 11 espécies de Cynipoidea parasitóides de moscas associadas a fezes bovinas coletadas no Brasil, a saber: *Neralsia splendens* (Borgmeier 1935), *Triplasta (Triplasta) atrocoxalis* (Ashmead 1895), *Triplasta (Pentaplasta) coxalis* (Ashmead 1895), *Acantheucoela armata* (Cresson 1865), *Acantheucoila brevispina* Dettmer 1930, *Acantheucoila coprophila* Borgmeier 1935, *Acantheucoila fumipennis* Borgmeier 1935, *Coneucoela brasiliensis* Kieffer 1909, *Ganaspis fulvocincta* Kieffer 1909, *Kleidotoma nigra* (Hartig 1840) e *Paraganaspis egeria* Diaz & Gallardo 1996.

PALAVRAS-CHAVE: Taxonomia, Figitidae, Diptera, fezes bovina.

ABSTRACT - This paper deals with 11 species of Cynipoidea parasitoids of dung-flies in Brazil: *Neralsia splendens* (Borgmeier 1935), *Triplasta (Triplasta) atrocoxalis* (Ashmead 1895), *Triplasta (Pentaplasta) coxalis* (Ashmead 1895), *Acantheucoela armata* (Cresson 1865), *Acantheucoila brevispina* Dettmer 1930, *Acantheucoila coprophila* Borgmeier 1935, *Acantheucoila fumipennis* Borgmeier 1935, *Coneucoela brasiliensis* Kieffer 1909, *Ganaspis fulvocincta* Kieffer 1909, *Kleidotoma nigra* (Hartig 1840), and *Paraganaspis egeria* Diaz & Gallardo 1996. An illustrated key for their identification, the hosts and the geographic distribution for each species are also given.

KEY WORDS: Taxonomy, Figitidae, Diptera, cattle dung.

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The Cynipoidea (Hymenoptera) that are the primary parasitoids of dung-fly larvae belong to the family Figitidae. In the Neotropical region, few studies have been done on this group (Borgmeier 1935, Diaz 1987, 1990, Diaz & Gallardo 1995, Diaz *et al.* 1996), and in Brazil the investigations are still in the initial phase of development (Diaz & Gallardo 1996). The purposes of this work were to make a key for quick identification of the taxa occurring in Brazil, to present their geographical distribution and nomenclatural changes and to indicate the host species whenever possible.

Most of the material used in this work was collected by Dr. Carlos H. Marchiori. The classificatory system and the morphological terms used are those proposed by Ronquist (1994). In the synonymic list of taxa only the original citation has been consigned.

### Results and Discussion

The Figitidae parasitoids of dung flies in Brazil belong to the Microcynipoidea group, in which tergite III or fused tergites III and IV form the longest sclerite of the metasoma. They can be recognized by the following combination of characters (Weld 1952):

- 1 - Scutellum without a characteristic raised cup on the disk (Fig. 1). Tergite III of metasoma shorter than IV, not tongue shaped (Fig. 2) ..... Figitinae  
 2 - Scutellum with a characteristic raised cup on the disk (Fig. 3). Tergite III and IV of metasoma fused (Fig. 4) ..... Eucoilinae

#### Figitinae

**Head.** Cheeks usually marginated. Antennae filiform, 13-segmented in female; 14-segmented in male, with the third segment usually excavated.

**Mesosoma.** Notaulices usually present and percurrent. Scutellum without cup on the disk.

**Metasoma.** Sessile in most species. Tergite III shorter than IV, not liguliform, and not hairy at the base.

#### Genus *Neralsia* Cameron

*Neralsia* Cameron 1883. Biol. Centr. Amer. Hym. 1: 74

*Neralsia splendens* (Borgmeier)

*Xyalophora splendens* Borgmeier 1935. Arch. Int. Biol. Veget. 2: 102

Host: *Sarcophagula occidua* (Fabricius) (Diptera: Sarcophagidae), collected on human, equine and bovine dung.

Geographic distribution: Argentina (Diaz 1990, Diaz & Gallardo 1995, Diaz *et al.* 1996); and Brazil; São Paulo (Borgmeier 1935), and Mato Grosso do Sul (Diaz & Gallardo 1996).

#### Eucoilinae

**Head.** Cheeks usually rounded; antennae filiform or clubed, 13-segmented in female and 15-segmented in male, with third or fourth segments usually excavated.

**Mesosoma.** Notaulices usually absent. Scutellum with cup on the disk.

**Metasoma.** Usually sessile in most of species. Tergite III and IV fused, hairy or not at base.

- 1 - Tergite III without a hairy ring and striate at the base (Fig. 5). Radial cell entirely open at front margin. Disk smooth or nearly so, margined; cup narrow ..... *Triplasta* Kieffer  
 a - Antennae of female with a 3-segmented club ..... *T. (Triplasta)* Kieffer  
 b - Antennae of female with a 5-segmented club ..... *T. (Pentaplasta)* Kieffer  
 1' - Tergite III with a hairy ring and smooth at base (Fig. 6). Radial cell open or closed on front margin ..... 2

- 2 - Scutellum bearing a sharp spine on dorsal surface of cup (Fig. 7). Mesoscutum smooth. Radial cell closed. Wings clouded. ....

- ..... *Acantheucoela* Ashmead  
 a - Posterior surface of scutellum smooth, with three longitudinal keels behind cup. Wings with scarce discal and marginal setae .....  
 b  
 a' - Posterior surface of scutellum more or less rugose, with two longitudinal keels be-

- hind cup. Wings with abundant discal and marginal setae ..... c  
 b - Lateral keels behind cup straight. Spine of the cup posteriorly ..... *A. armata* (Cresson)  
 b' - Lateral keels behind cup concave outside. Spine of the cup not posteriorly .....  
 ..... *A. brevispina* Dettmer  
 c - Cup of scutellum oval and narrow. First sector of radius perpendicular to anterior border of wing. Face lateral striation reduced to antennal base ..... *A. coprophila* Borgmeier  
 c' - Cup of scutellum circular and broad. First sector of radius oblique to anterior border of wing. Face lateral striation extending to lower border of eyes ..... *A. fumipennis* Borgmeier  
 2' - Scutellum without a sharp spine on dorsal surface of cup ..... 3  
 3 - Scutellum (Fig. 8) conical in dorsal view, tapering gradually to a point. Cup normal, not reaching over two-thirds of the disk. Radial cell partially or entirely open on front margin ..... *Coneucoela* Kieffer  
 3' - Scutellum truncate or rounded behind ...  
 ..... 4  
 4 - Scutellum (Fig. 9) truncate behind, disk longitudinally striate. Radial cell open. Fore wings emarginate at distal end, cup narrow ..... *Kleidotoma* Westwood  
 4' - Scutellum (Fig. 10) rounded behind, disk areolate-rugose. Radial cell closed ..... 5  
 5 - Female antennae 6- segmented, with a conspicuous club; disk areolate .....  
 ..... *Paraganaspis* Diaz & Gallardo  
 5' - Female antennae 7- segmented, with an inconspicuous club; disk punctate .....  
 ..... *Ganaspis* Foerster

### Genus *Triplasta* (Kieffer)

- Ectolyta* (*Triplasta*) Kieffer 1901. Feuille Natural 31: 160.  
*Triplasta* (*Triplasta*) *atrocoxalis* (Ashmead)  
*Kleidotoma* *atrocoxalis* Ashmead 1895. P. Zool. Soc. London, 746p.  
 Host. *Paleosepsis* sp. (Diptera: Sepsidae) (Diaz & Gallardo 1996)  
 Geographic distribution: Grenada Island (Dalla Torre & Kieffer 1910), and Brazil; São

Paulo, Mato Grosso do Sul (Diaz & Gallardo 1996), and Goiás.

Material examined. Brazil. Goiás: Itumbiara, 18 females, August 1994, four females, November 1994, three females, December 1994, 12 females, January 1995, 25 females and three males, February 1995, four females, March 1995, seven female, April 1995, one female, June 1995, one female, August 1995, four females, October 1995, Marchiori col. Minas Gerais: Uberlândia, 35 females, January 1994, 29 females, February 1994, 80 females, March 1994, 34 females, April 1994, six females, September 1994, 113 female, November 1994, Marchiori col. (ILES).

### *Triplasta* (*Pentaplasta*) *coxalis* (Ashmead)

*Pentacrita coxalis* Ashmead 1895. P. Zool. Soc. London, 749p.

Host. Unknown.

Geographic distribution. Grenada Island (Dalla Torre & Kieffer 1910) and Brazil: Santa Catarina (Diaz & Gallardo 1996).

### Genus *Acantheucoela* Ashmead

*Acantheucoela* Ashmead 1900. Trans. Ent. Soc. London, 333p.

*Acantheucoela armata* (Cresson)

*Cynips* (?) *armatus* Cresson 1865. Proc. Ent. Soc. Phil. 4: 4-5.

Host. Unknown, collected on human dung (Borgmeier 1935).

Geographic distribution: Cuba (Cresson 1865); and Brazil, Rio de Janeiro (Borgmeier 1935).

*Acantheucoela brevispina* Dettmer

*Acantheucoela brevispina* Dettmer 1930. Broteria. Zool. 26: 66.

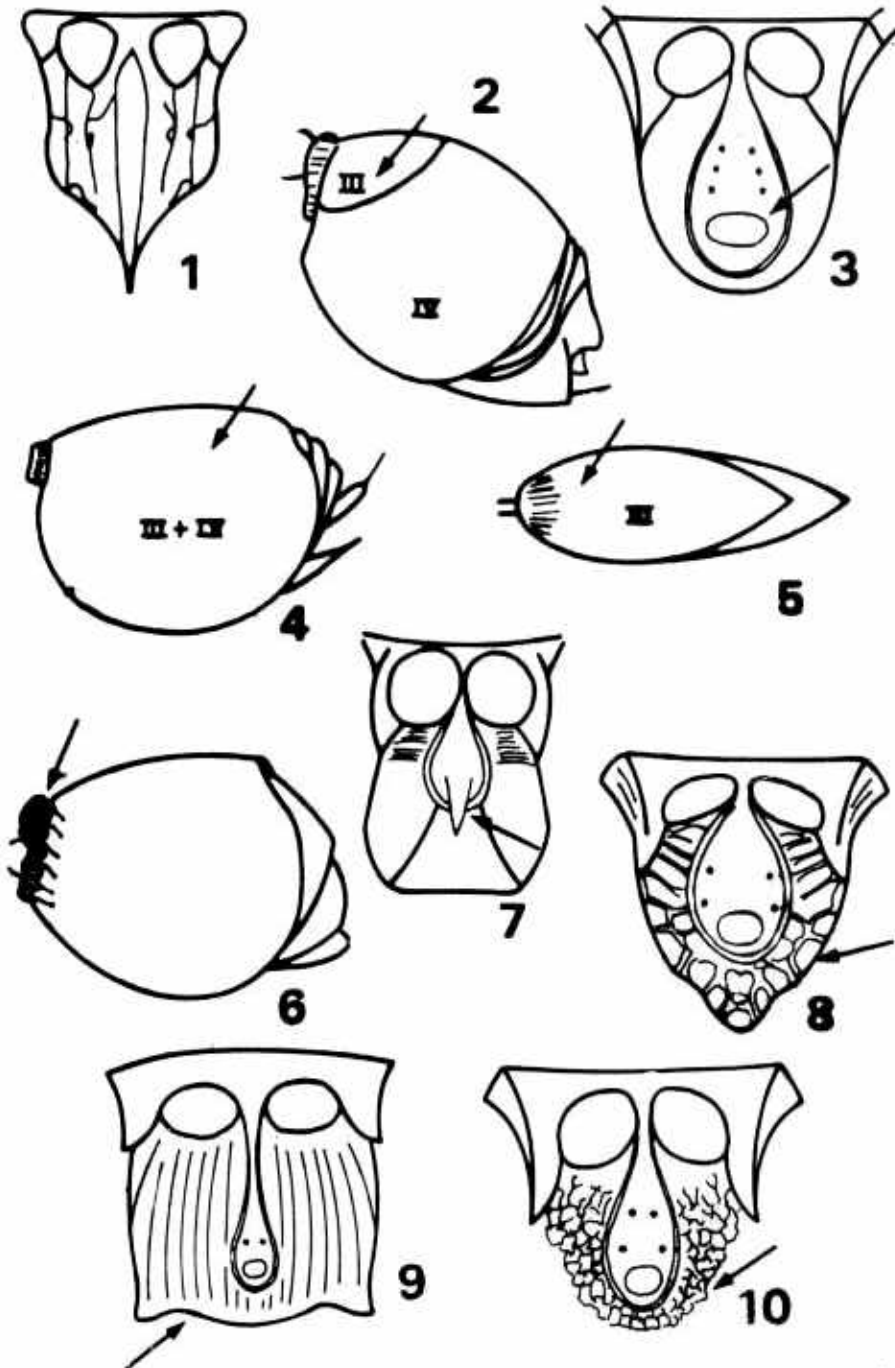
Host. Unknown, collected on human dung (Dettmer 1930).

Geographic distribution: Brazil, Santa Catarina (Dettmer 1930).

*Acantheucoela coprophila* Borgmeier

*Acantheucoela coprophila* Borgmeier, 1935. Arch. Inst. Biol. Veget. 2: 106.

Host. Unknown, collected on human dung (Borgmeier 1935)



Figures: 1-10. 1,3,7-10. Scutellum; 1, *Neralsia* sp.; 3, Eucoilinae; 7, *Acantheucoela* sp.; 8, *Coneucoela* sp.; 9, *Kleidotoma* sp.; 10, *Paraganaspis* sp.; 2,4-6. Metasoma. 2, Figitinae; 4, Eucoilinae; 5, *Triplasta* sp.; 6, *Acantheucoela* sp.

Geographic distribution. Argentina (Diaz 1974); and Brazil, São Paulo (Borgmeier 1935).

*Acantheucoela fumipennis* Borgmeier

*Acantheucoela fumipennis* Borgmeier 1935. Arch. Inst. Biol. Veget. 2: 106.

Host. Unknown, collected on human dung (Borgmeier 1935).

Geographic distribution. Bolivia (Diaz 1987); and Brazil, Rio de Janeiro (Borgmeier 1935).

### **Genus *Coneucoela* Kieffer**

*Coneucoela* Kieffer 1909. Bull. Soc. Hist. Nat. Metz. 2: 63-64.

*Coneucoela brasiliensis* Kieffer

*Coneucoela brasiliensis* Kieffer 1909. Bull. Soc. Hist. Nat. Metz. 2: 63-64.

Host. *Sarcophagula* sp. (Diptera: Sarcophagidae), collected on bovine dung.

Geographic distribution: Brazil, Pará (Kieffer 1909), São Paulo (Diaz & Gallardo 1996), Goiás and Mato Grosso (Nordlander 1982). Material examined: Brazil; Goiás; Itumbiara, one male, December 1994, Marchiori col.

### **Genus *Ganaspis* Foerster**

*Ganaspis* Foerster 1869. Verch. Zool. Bot. Wien. 19: 334-335.

*Ganaspis fulvocincta* Kieffer

*Ganaspis fulvocincta* Kieffer 1909. Bull. Soc. Hist. Nat. Metz. 2: 69.

Host. *Sarcophagula* sp. (Diptera: Sarcophagidae), collected on bovine dung (Diaz & Gallardo 1996).

Geographic distribution: Brazil, Pará (Kieffer 1909), and Mato Grosso do Sul (Diaz & Gallardo 1996).

### **Genus *Kleidotoma* Westwood**

*Kleidotoma* Westwood 1833. Mag. Nat. Hist. 6: 494.

*Kleidotoma nigra* (Hartig)

*Cothonaspis nigra* Hartig 1840. Z. Ent. Germar. 2: 201.

Host. *Palaeosepsis* sp. (Diptera: Sepsidae), collected on bovine dung (Diaz & Gallardo

1996).

Geographic distribution: Brazil, Mato Grosso do Sul (Diaz & Gallardo 1996).

### **Genus *Paraganaspis* Diaz & Gallardo**

*Paraganaspis* Diaz & Gallardo 1996. Ann. Ent. Soc. Am. 89: 497-498.

*Paraganaspis egeria* Diaz & Gallardo

*Paraganaspis egeria* Diaz & Gallardo 1996. Ann. Ent. Soc. Am. 89: 498-500.

Hosts. *Sarcophagula occidua* (F.) (Diaz & Gallardo 1996, Diaz *et al.* 1996), *Sarcophagula* sp. (Diptera: Sarcophagidae), *Brontaea quadristigma* Thomson (Diptera: Muscidae).

Geographic distribution: Argentina (Diaz *et al.* 1996); and Brazil, São Paulo, Mato Grosso do Sul (Diaz & Gallardo 1996a) and Goiás. Material examined: Brazil; Goiás; Itumbiara, two females, November 1994; nine females, December 1994; 45 females, January 1995; three females, March 1995; 51 females, April 1995; one female, May 1995, Marchiori col. Minas Gerais: Uberlândia: one female, December 1993; seven females, April 1994; three females, May 1994; two females, October 1994; three females, June 1995, Marchiori col. (ILES).

### **Conclusions**

A key for the identification of the subfamilies, genus and species of Cynipoidea (Hymenoptera) parasitoids of dung-flies occurring in the Brazilian fauna is presented. The geographical distributions of *Triplasta* (*Triplasta*) *atrocoxalis* and *Paraganaspis egeria* in Brazil was expanded, and *Brontaea quadristigma* Thomson (Diptera: Muscidae) was identified as a new host for *P. egeria*.

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