ABOUT THE NEOTROPICAL GENUS *LOPHEUCOILA* WELD (HYMENOPTERA: CYNIPOIDEA: FIGITIDAE): IDENTITY AND GEOGRAPHICAL DISTRIBUTION[1]

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ABSTRACT: In this paper a new species synonymy is established, *Lopheucoila anastrephae* (Rohwer, 1919) (= *Lopheucoila truncicola* Weld, 1951) and a new record of *Lopheucoila mexicana* Weld, 1951 is reported from Cuba.

KEY WORDS: *Zaeucoila* group, *Lopheucoila*, new record, new synonymy, parasitoids, frugivorous flies.

Díaz and Gallardo (1997, 1998a, b) and Gallardo and Díaz (1999) proposed the *Zaeucoila* group to be placed in the following neotropical genera: *Agrostocynips* Díaz, *Dettmeria* Borgmeier, *Moneucoela* Kieffer, *Penteucoila* Weld, *Rhabdeucoela* Kieffer, *Tropideucoila* Ashmead, *Zaeucoila* Ashmead and *Lopheucoila* Weld. Buffington and Scheffer (2008) have added four genera to the *Zaeucoila* group: *Diceratapsis* Ashmead, *Aegeseucoela* Buffington, *Moritiella* Buffington and *Preseucoela* Buffington. The *Zaeucoila* group species are koinobiont endoparasitoids of cyclorraphous Diptera, parasitizing either leafminers (Agromyzidae) or the frugivorous flies of Drosophilidae, Lonchaeidae, Otitidae and Tephritidae (Borgmeier, 1935; Buffington, 2002, 2004; De Santis et al., 1976; Díaz and Valladares, 1979; Díaz et al., 1999; Fontal and Nieves-Aldrey, 2004; Guimarães and Zucchi, 2004; Murphy and La Salle, 1999; Rohwer, 1919; Wharton et al., 1998). Some of the frugivorous species are known as true "fruit flies" (Tephritidae) and are considered a most important group of pests of economic importance due to their damage to worldwide pomiculture (Aluja, 1994).

Lopheucoila is a Neotropical genus included in the *Zaeucoila* group. This genus was created by Weld (1951) based on *Diglyphosema anastrephae* Rohwer, 1919 (type species). More recently another two species, *L. mexicana* Weld and *L. truncicola* Weld, were also included in *Lopheucoila*. Thus, today, *Lopheucoila* is known to be represented by three species, which are associated with Lonchaeidae and Tephritidae larvae (Guimarães et al., 2003). However, Gallardo and Díaz (1999) reviewed this genus and observed that the differences between *L. truncicola* and *L. anastrephae*, mainly related to the body size and to the form of the edge of the posterior margin of the cup, were considered to be individual variations. This statement suggested that *L. truncicola* could be a synonym of *L. anastrephae*.

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The objectives of this paper are to provide diagnostic characters for identification of the known species, to establish the appropriate nomenclatural changes, and update information on geographical distributions.

METHODS

We studied 288 (144 females and 144 males) specimens belonging to *Lopheucoila.* The names of the institutions where the studied specimens are housed were designated by their initials between parentheses. The material belongs to the following institutions: Texas A & M University (TAMU), USA; United States National Museum of Natural History Washington (USNM), USA; Museu de Entomologia da Escola Superior de Agricultura "Luiz de Queiróz" (ESALQ), BRAZIL; Instituto Superior de Entomología de la Fundación Miguel Lillo (INSUE); ARGENTINA and Museo de La Plata (MLP), ARGENTINA.

All specimens were examined using a Leica S8APO stereomicroscope. Drawing was made with camera lucida adapted to a Leitz compound microscope.

The geographical distribution of the species following the scheme proposed by Cabrera and Willink (1980).

***Lopheucoila* Weld** (Figs. 1, 2)

Lopheucoila Weld, 1951: 223; 1952: 105, 195 (citation); Nordlander, 1982: 22 (citation); Díaz and Gallardo, 1997: 32 (citation); 1998a: 113 (citation), 1998b: 318 (citation); Wharton et al*.,* 1998: 110 (distribution and bionomics); Gallardo and Díaz, 1999: 16 (review); Guimarães et al*.,* 1999: 263 (bionomics), 2000: 129, 130, 133 (citation), 2003: 4 (distribution); Ovruski et al*.*, 2000: 84 (citation); Uchôa-Fernandes et al*.*, 2003: 182 (citation); Fontal-Cazalla et al., 2002: 186 (phylogeny); Fontal and Nieves-Aldrey, 2004: 64, 74 (citation); Strikis and do Prado, 2004: 647 (bionomics); García and Corseuil, 2004: 517, 520 (bionomics).

Type Species. *Diglyphosema anastrephae* Rohwer, 1919, by original designation of Weld, 1951.

Distribution (Fig. 1). Mexico, Costa Rica, Panama, Venezuela, Trinidad and Tobago, Peru, Brazil and Argentina (Gallardo and Díaz, 1999). Here we present a new record from Cuba. The geographical distribution of *Lopheucoila* species is exclusively Neotropical, mainly in biogeographic provinces characterized by wide variety of flora, such as the Xerofila Mexicana, Caribe (Domain Caribe), Amazonica, Pacifica, Cerrado, Paraense, Sabana, Atlántica (Domain Amazonico) and Altoandina (Domain Andino-Patagonico) *sensu* Cabrera and Willink (1980).

Biology. Koinobiont endoparasitoids of the third instar larvae-pupae of the dipterous families Lonchaeidae and Tephritidae.

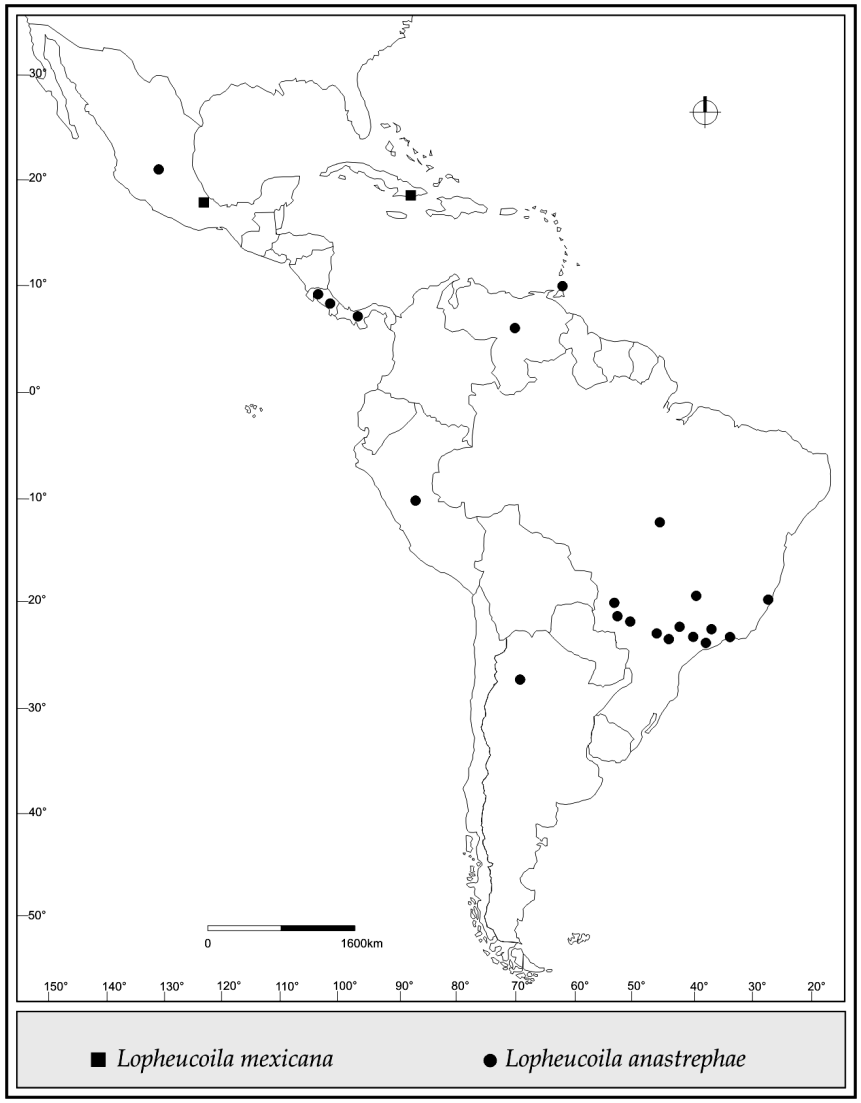

Figure 1. Distribution of the species of *Lopheucoila*. Symbols indicate the localities.

Lopheucoila mexicana Weld, 1951 (Fig. 1)
Lopheucoila mexicana Weld, 1951: 224; Gallardo and Díaz, 1999: 21 (redescription).

Diagnosis. Keel of mesoscutum conspicuous. Base of metasoma smooth.

Distribution. Neotropical region (Fig. 1): Mexico (Gallardo and Díaz, 1999) and Cuba (**new record**).

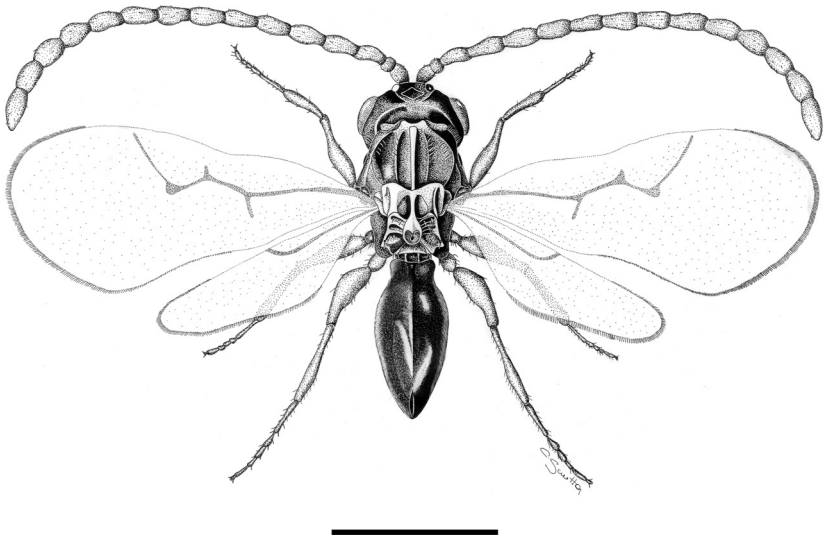

Figure 2. Dorsal habitus of *Lopheucoila anastrephae* (Rohwer, 1919). Scale: 1mm.

Hosts. Unknown.

Type Material. **MEXICO. Cordoba.** Holotype Female, without date, Crawford col., (USNM Type 60981).

Other material examined. CUBA. Santiago, Pr. Gran Piedra 1100 m. Meteo Station, 1 female, 6-7-XII-1995; 1 female, 14-17-XII-1995, coll. L. Masner, (yellow pan traps) (TAMU).

Lopheucoila anastrephae (Rohwer, 1919) (Figs. 1, 2)

Diglyphosema anastrephae Rohwer, 1919: 156.

Lopheucoila anastrephae; Weld, 1951: 224; Wharton et al*.,* 1998: 110 (distribution and bionomics); Gallardo and Díaz, 1999: 21 (redescription); Guimarães et al*.,* 1999: 263 (bionomics), 2003: 4 (distribution); Ovruski et al., 2000: 84 (citation); Fontal-Cazalla et al., 2002: 186 (phylogeny); Uchôa-Fernandes et al., 2003: 182 (citation); Fontal and Nieves-Aldrey, 2004: 64, 74 (citation); Strikis and do Prado, 2004: 647 (bionomics); García and Corseuil, 2004: 517, 520 (bionomics).

Lopheucoila truncicola Weld, 1951: 223; Gallardo and Díaz, 1999: 23 (redescription); **New Synonymy**.

Diagnosis. Keel of mesoscutum inconspicuous on the distal part. Base of metasoma with two striate lateral depressions.

Distribution. Neotropical region (Fig. 1): Mexico, Costa Rica, Panama, Venezuela, Trinidad and Tobago, Brazil, Peru and Argentina (Gallardo and Díaz, 1999).

Hosts. Diptera-Tephritidae: *Anastrepha* sp. (Rohwer, 1919), *A. fraterculus* (Wied.) (Weld, 1951), *A. pseudoparallela* (Loew) and *A. amita* Zucchi (Guimarães et al., 2000). Diptera-Lonchaeidae: *Neosilba batesi* (Curran) (Wharton et al., 1998), *Neosilba* spp. (Guimarães et al., 1999, 2000; García and Corseuil, 2004), *Neosilba glaberrima* (Wied.) and *N. zadolicha* McAlpine and Steyskal (Strikis and do Prado, 2004).

Type Material. TRINIDAD and TOBAGO. Holotype Female of *L. anastrephae*, VII-1917, coll. Urich, (USNM Type 22029). **BRAZIL. *Rio de Janeiro*. Nova Iguassu,** Holotype Female of *L. truncicola*, 16-XI-1931, colls. Kisliuk and Cooley, (USNM Type 60980).

Other material examined. ARGENTINA. *Tucumán*. 1 female, 01-III-1991, obtained from puparium of Tephritidae in guava; **Horco Molle**, 3 females and 1 male, 28-III-1993, obtained from *Anastrepha* sp. in guava, coll. Ovruski, (INSUE). **BRAZIL. *Mato Grosso do Sul***. **Anastácio**, **Sitio Carandazal**, 2 males, 30-III-1993; 1 male, 6-IV-1993; 1 female, 27-IV-1993; 1 female and 1 male, 18-V-1993; 6 females and 3 males, 24-V-1993; 1 female and 1 male, 1-VI-1993; 1 male, 21-VI-1993; 1 male, 25-VII-1993; 2 males, 2-VIII-1993; 2 males, 17-VIII-1993; 1 female and 4 males, 23-VIII-1993; 2 males, 30-VIII-1993; 1 female and 2 males, 6-IX-1993; 10 females and 1 male, 13-IX-1993; 2 females and 1 male, 27-IX-1993; 1 female, 4-X-1993; 10 females and 4 males, 1- XI-1993; 1 male, 25-XI-1993; 2 females and 1 male, 6-XII-1993; 1 male, 4-IV-1994; 1 female, 18-IV-1994; 1 male, 2-V-1994; 3 males, 16-V-1994; 1 male, 6-VI-1994; 1 male, 22-VIII-1994; 1 male, 9-IV-1995; 1 female, 16-IV-1995; 3 females and 3 males, 21-V-1995 (ESALQ); 3 females and 5 males, 28-V-1995 (MLP); **Sítio Santo Antônio**, 2 males, 25-IV-1993; **Colonia Jamic, Terenos**, 3 females and 17 males, 31-III-1993, 3 females and 2 males, 26-IV-1993; 2 males, 3-V-1993; 7 females and 6 males, 14-V-1993; 2 females and 2 males, 7-VI-1993; 3 females and 8 males, 22-III-1994; 1 female, 17-V-1994; 1 female, 12-VII-1994; 1 female, 14-I-1994; **Aquidauana, Fazenda Ararda**, 13 females and 2 males, 24-VI-1994; **Ranchinho Rochedo**, 1 female, 24-I-1994, coll. Uchoa F.; ***Minas Gerais*, Grupiara**, 1 males, 8-X-2000, coll. Guimarães; ***São Paulo***. **Regente Feijó,** 3 males, 27-XI-1996; **São Bento do Sapucaí**, 14 females and 11 males, 1-III-1996; **Campinas**, 5 males, 3-II-1995; 2 males, 25-VI-1997; 18 females and 8 males, 20-XI-1997; 2 females and 2 males, 11-II-1998; 1 male, 9-V-1997, 3 males, 18-I-1996; 5 males, 30-VII-1997. **Assis**, 3 males, 5-II-1998; **Garça**, 1 male, 13-VIII-1997; **Limeira**, 1 female, 20-IV-1998, coll. M.F. Souza Filho (ESALQ); **Monte Alegre do sul. Estação experimental do Instituto Agronômico,** 3 females and 1 male, 21-V-2002, 1 male, 23-IX-2002, 1 female, 8-X-2002, 1 female, 5-XI-2002, obtained from puparium of *Neosilba zadolicha* in "níspero," 3 females, 3-IX-2002, obtained from puparium of *Neosilba zadolichain* in peach, 1 male, 3-IV-2003, obtained from puparium of *Neosilba zadoli-*

cha in guava, coll. Strikis (MLP). **COSTA RICA. *San José*. San Ignacio de Acosta,** 10 females and 5 males, 20-II-1981, orange, coll. M. Fischel; 3 females and 3 males, 1979-1981, Gilstrap Medfly Project (TAMU).

Remarks. The study of a great number of specimens from a wide geographical distribution, allowed to us corroborate the hypothesis proposed by Gallardo and Díaz (1999), which established that the morphological differences between *Lopheucoila anastrephae* and *L. truncicola* are intraspecifical variations and are not strong enough for them to be considered as two different species.

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