

***Neosilba* (Tephritoidea: Lonchaeidae) Species Reared from Coffee in Brazil, with Description of a New Species**

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ABSTRACT: *Neosilba* species are believed to be secondary invaders of fruit, so, little attention has been paid to its presence in coffee fruits. In this article we present a key to *Neosilba* species present in coffee fruits and describe a new species that is considered a primary invader. We hope this will help researchers working with coffee fruits to better quantify the economic importance of *Neosilba* species associated with coffee fruits.

Key Words: Fruit-fly, new pest, *Neosilba* new species.

INTRODUCTION

Coffee crops are grown in much of the southeast of Brazil, in the states of Parana, São Paulo, Minas Gerais, Rio de Janeiro and Espírito Santo. In the year 2000 coffee exportation added 1.65 billion dollars to the Brazilian economy (IBGE 2000). The damage caused by fruit flies (Tephritidae) in coffee plantation is well known (Eskafi & Cunningham 1987, Malvasi & Zucchi 2000), but little attention has been paid to Lonchaeidae species present in coffee fruit. This may be due to the fact that lonchaeids in fruit are often thought to be secondary invaders, associated with tephritid flies or with fruit damaged by other causes, and the lack of an identification key to species present in coffee. Araújo & Zucchi (2002) reported *Neosilba pendula* (Bezzi) as an important pest of Barbados cherry crops (*Malpighia ermaginata*) in the state of Rio grande do Norte, Brazil. This species is also present in coffee fruits, along with *N. zadolicha* McAlpine & Steyskal, *N. glaberrima* (Wiedemann), *N. certa* (Walker), *N. bifida* Strikis & Prado, *N. pseudopendula* (Korytkowski e Ojeda) and *N. bella* n. sp. Souza et al. (2005) found six species of

Neosilba present in coffee fruits. Aguiar-Menezes et al. (2007) describe *N. bifida* and *Neosilba* n. sp 10, here designed *Neosilba bella* n. sp, as primary invaders of coffee fruits.

MATERIALS AND METHODS

Samples of *Neosilba* species reared from coffee fruits (*Coffea arabica*., Rubiaceae), cultivars Icatú Amarelo, Catucaí Amarelo, Oieiras and Obatã, have been sent to our laboratory at the Departamento de Parasitologia of the Instituto de Biologia of Universidade Estadual de Campinas to be identified.

From male specimens received, kept in alcohol 70%, the abdomen was separated and put into a solution of 10% KOH at room temperature for 24 h. After clearing the abdomens were washed gently and put in glycerin in order to extract the genitalia under a Zeiss stereomicroscope enabling us to identify the *Neosilba* flies. Voucher specimens are deposited in the laboratory L2a at the Departamento de Parasitologia at UNICAMP.

All measurements were made using a Zeiss Axioplan photomicroscope and the software Image-ProLite, version 4.0 for Windows 95/NT/98.

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RESULTS

Species of *Neosilba* Reared from **Coffee Arabica**

Neosilba bifida Strikis & Prado

Neosilba bifida Strikis & Prado 2005: 1.

Material examined: Rio de Janeiro: Seropédica, 2005, Ellen Aguiar-Menezes: 01 ♂.

Neosilba certa (Walker)

Anthomyia certa Walker 1850-56: 364.

Neosilba certa: McAlpine & Steyskal 1982: 112.

Lonchaea certa: Stein 1901: 192.

Silba certa: Gaud & Martorell 1973: 249.

Lonchaea pendula: Bezzi 1919: 249.

Material examined: São Paulo: Campinas, 1994, Adalton Raga: 01 ♂; Rio de Janeiro: Seropédica, 2005, Ellen Aguiar-Menezes: 29 ♂♂.

Neosilba glaberrima (Wiedemann)

Lonchaea glaberrima Wiedemann 1830: 475.

Neosilba glaberrima: McAlpine & Steyskal 1982: 114.

Lonchaea pendula: Bezzi 1919: 249.

Carpolonchaea pendula: Hennig 1948: 360.

Silba pendula Korytkowski & Ojeda, 1971: 112.

Material examined: Rio de Janeiro: Seropédica, 2005, Ellen Aguiar-Menezes, 13 ♂♂.

Neosilba pendula (Bezzi)

Lonchaea pendula Bezzi 1919: 249.

Neosilba pendula: McAlpine & Steyskal 1982; Araújo & Zucchi 2002: 91; Strikis & Prado 2005: 1.

Lonchaea glaberrima: Ihering 1905: 3; Hempel 1905: 353, 1906: 208; Bezzi, 1910.

Lonchaea aenea: Ihering, 1912; Tavares 1915: 52.

Material examined: Rio de Janeiro: Seropédica, 2001, Ellen Aguiar-Menezes. 28 ♂♂. Sao Paulo: Campinas, 1998, Adalton Raga, 24 ♂♂; Garça, 1997, Adalton Raga. 09 ♂♂

Neosilba pseudopendula (Korytkowski & Ojeda)

Silba pseudopendula Korytkowski & Ojeda 1971: 113; Steyskal, 1978: 72.

Neosilba pseudopendula: McAlpine & Steyskal 1982: 127; Souza et al. 2005: 639.

Material examined: Rio de Janeiro: Seropédica, 2005, Ellen Aguir-Menezes: 02 ♂♂.

Neosilba zadolicha McAlpine & Steyskal

Neosilba zadolicha McAlpine & Steyskal 1982: 127; Uchoa-Fernandes et al., 2004: 515; Santos, et al. 2004: 653; Strikis & Prado 2005: 1; Han & Ro 2005: 420.

Material examined: São Paulo: Campinas 1999 Adalton Raga: 01 ♂; Campinas, 2000, Adalton Raga: 03 ♂♂.

Neosilba bella n. sp.

Material examined: Rio de Janeiro: Seropédica, 2005, Ellen Aguiar Menezes: 41 ♂♂.

TAXONOMY

Neosilba bella n. sp.

Holotype: Male, reared from *Cytherexylum myrianthum* Chamb. collected by Adalton Raga, on 30 Jan 2002 in Caraguatatuba, SP, deposited in the Museo de Zoologia da Universidade de São Paulo (MZUSP).

Paratypes: 3 males, in very good condition, reared from *Eryobotria japonica* (Thumb.) Lindl., collected in Monte Alegre do Sul, SP, on 08 Jun. 2002 by Pedro Carlos Strikis, deposited in MZUSP.

DESCRIPTION OF HOLOTYPE:

MALE BODY SIZE: 6.7 MM

Head: Frons: narrowed toward lunule, 1.8 mm long and 1.4 mm wide; length/width ratio: 1.28. Lunule with 8-9 setulae. Ocellar plate with 8 strong bristles, 2 inter ocellar bristles under ocellar plate and 2 others above ocellar plate. Antenna, 1.8 mm long, with one prominent bristle on the pedicel. First flagellomere 0.846 mm long and 0.34 mm wide; length/width ratio: 2.48. Arista 0.9 mm long and plumose. Palpus large and broad.

Thorax: thorax 2.0 mm in long dorsal view and setulose. Scutellum bare, with 2 strong marginal basal bristles with 3 setae between it and 2 strong marginal api-

cal bristles, and 3 setae between marginal apical bristle and marginal basal bristle at each side of scutellum. Anepisternum with a cluster of 5 strong posterior bristles, with one setae below, and a cluster of 4 strong anterior bristles, weaker than posterior bristles.

Wings: hyaline, 5.2 mm long and 2.3 mm wide; length/width ratio: 2.26; hyalines with brownish veins and microtrichia, calypteres white with white fringes and with about 12 long blackish setae at fold.

Male terminalia: Total length: 0.93 mm; epandrium short, 0.46 mm long, but longer than wide; 0.38 mm wide, length/width ratio: 1.21 and with long hairs, longer at end of epandrium (figs. 1 and 2). Aedeagus with filament fine and slender after "C" shaped base until apex, ending slightly be-

yond prensisetae. Surstylus with 10 strong prensisetae distally. Cerci with scarce but long setae; easily seen in ventral and lateral views (figs. 1 and 2). Paramere with a conspicuous shape, more or less triangular, (fig. 1 and 3).

FEMALE: UNKNOWN.

OTHER SPECIMENS EXAMINED:

São Paulo: Caraguatatuba, *Cytharexylum myrianthum* Chmab. 30 Jan. 2002 Adalton Raga: 03 ♂♂; Monte Alegre do Sul *Eryobotria japonica* (Thumb.) Lind., 08 Jun. 2006, Pedro Carlos Strikis 8 ♂♂; São Bento do Sapucaí *Malpphigia puniceifolia* L., 14 Apr. 1998, Miguel de Souza Filho: 2 ♂♂; Espírito Santo: Viana, *Eugenia uniflora* L., 24 Oct.

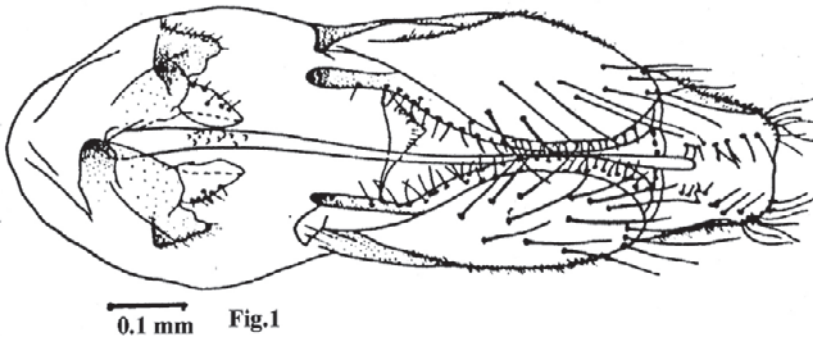


Fig. 1, male terminalia of *N. bella* n.sp in ventral view;

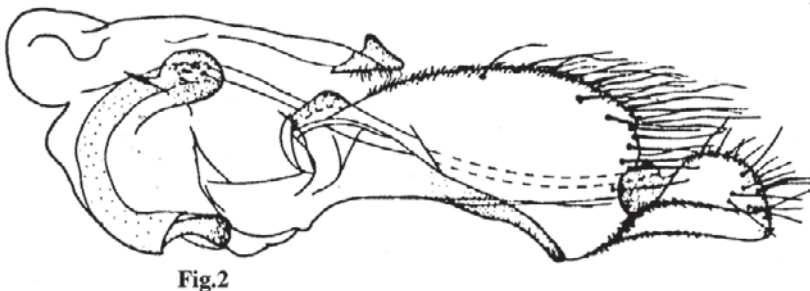


Fig. 2, male terminalia of *N. bella* n.sp in lateral view;

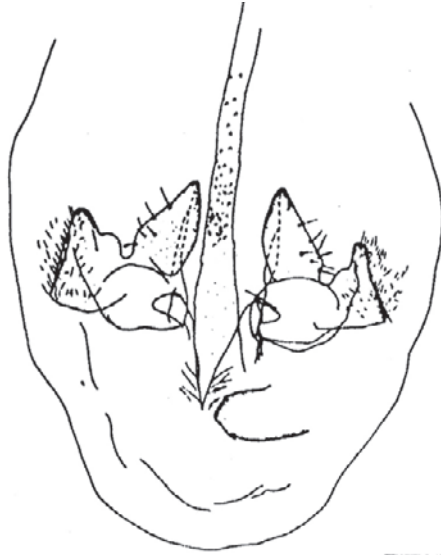


Fig.3

0.1 mm

Fig. 3, male terminalia of *N. bella* n. sp in ventral view showing detail of paramere.

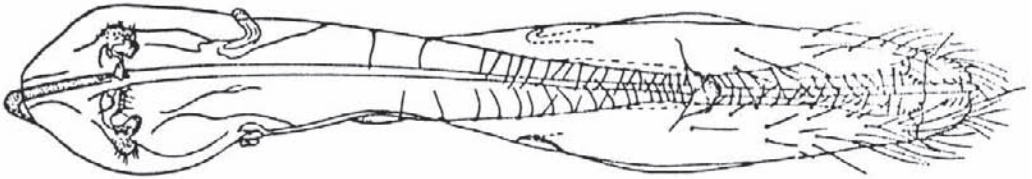


Fig. 4

Fig. 4, male terminalia of *N. zadolicha* in ventral view;

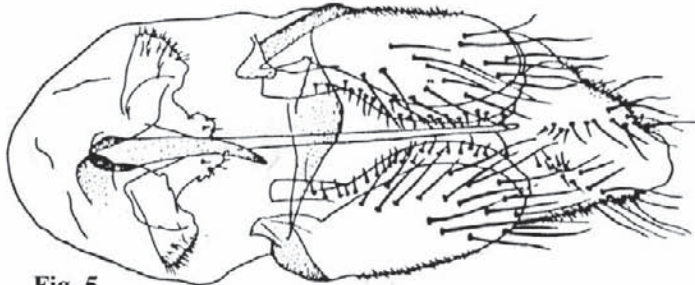


Fig. 5

Fig. 5, male terminalia of *N. bifida* in ventral view;

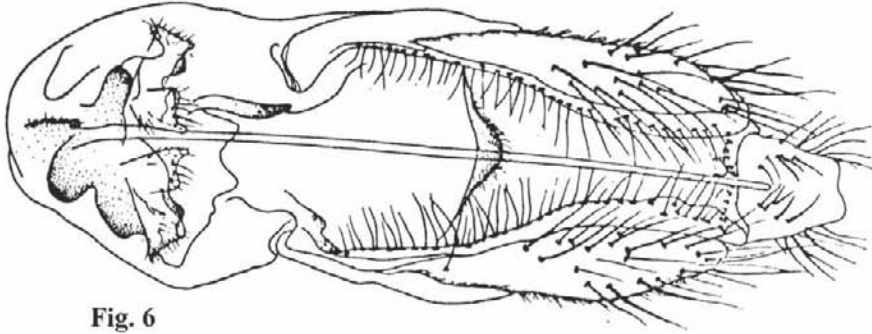


Fig. 6

Fig. 6, male terminalia of *N. certa* in ventral view;

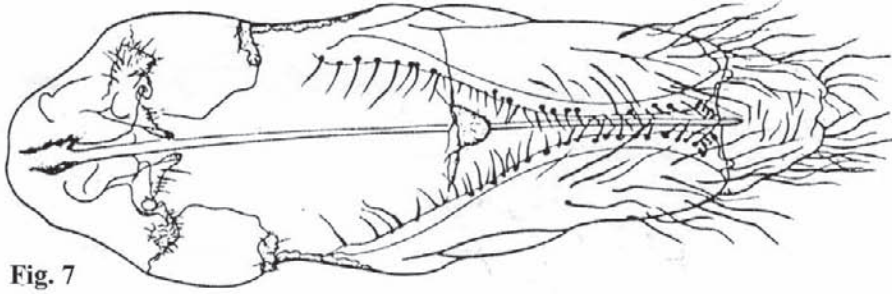


Fig. 7

Fig. 7, male terminalia of *N. glaberrima* in ventral view.

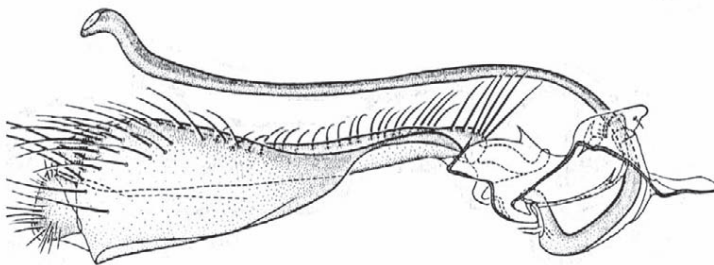


Fig.8

Fig. 8, male terminalia of *N. pseudopendula* in lateral view;

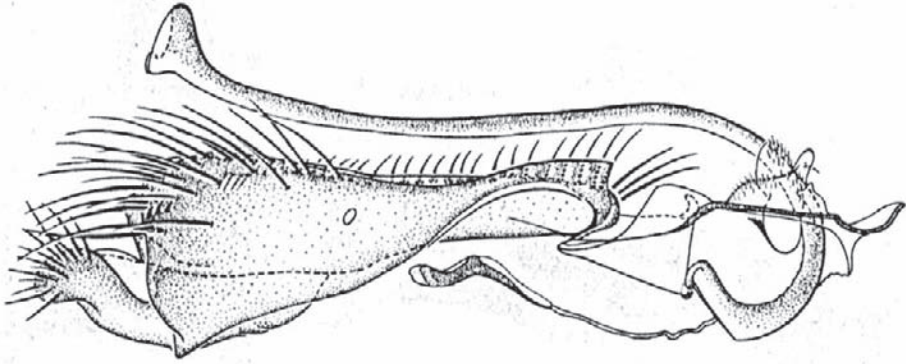


Fig. 9

Fig. 9, male terminalia of *N. pendula* in lateral view. Figures taken from McAlpine & Steyskal, 1982.

2002, David Martins 01 ♂; Viana, Ingá laurina Willd.; 27 Oct. 2002, David Martins 02 ♂♂; Linhares: *Eugenia gemminiflora* Berg., 28 Jan. 2004 David Martins: 3 ♂♂; Linhares: *Talisia esculenta* Radlk (native name: Pitomba-rosa): 06 Feb. 2004, David Martins: 04 ♂♂; Paraná: *Eugenia uniflora* L.; 20 Apr. 2004, Flávio Garcia: 01 ♂; Bahia: Ilhéus trapped in McPhail trap placed in a border of mata atlântica reservoir, 13 Jun. 2004, Maria Aparecida Leão Bittencourt: 04 ♂♂; Amazonas: Manaus, Sample labeled only Sapotaceae, with no species discrimination, 24 Apr. 2004, Sergio Costa: 06 ♂♂.

Families of host plants of *N. bella* n. sp:

Verbenaceae, Rosaceae, Malpighiaceae, Myrtaceae, Fabaceae, Sapindaceae, Rubiaceae and Sapotaceae.

Diagnosis: The shape and size of the male terminalia, the shape of the paramere, and the curvature of the aedeagus after the "C" shaped base are the best characters to identify *N. bella*.

Distribution: known only from Brazil (Amazonas, Bahia, Espírito Santo, Paraná, Rio de Janeiro and São Paulo).

KEY TO SPECIES OF NEOSILBA USUALLY FOUND IN COFFEE FRUITS IN BRAZIL (ADAPTED FROM MCALPINE & STEYSKAL (1982) AND STRIKIS & PRADO (2005))

1. Male terminalia in ventral view approximately 6 times as long as wide (Fig. 4)
 *N. zadolicha*
 Male terminalia in ventral view with length/width ratio less than 4 2
2. Male terminalia in ventral view with a left bended spine-like structure arising above "C" shaped base of aedeagus (Fig. 5)
 *N. bifida*
 No special structure visible in ventral view arising above "C" shaped base of aedeagus 3
3. Tip of aedeagus strongly sinuous or swollen 4
 Tip of aedeagus not strongly sinuous nor swollen 5
4. Tip of aedeagus S-shaped in lateral view (Fig. 8) *N. pseudopendula*
 Tip of aedeagus swollen in lateral view (Fig. 9) *N. pendula*

5. Paramere with somewhat blade-like shape in ventral view (Fig. 7) *N. glaberrima*
 Paramere not blade-shaped in ventral view...
 6
 6. Paramere bilobed in ventral view (Fig. 6).....
 *N. certa*
 Paramere more or less triangular in ventral view (Figs. 1, 3)..... *N. bella*

REFERENCES

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