

Description of 11 new species of genus *Neosilba* (Diptera: Lonchaeidae) from Brazil, its hosts and geographical distribution

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ABSTRACT

The species of genus *Neosilba* McAlpine are known to be distributed mainly in Neotropical region, some are polyphagous and few species are known to be monophagous or oligophagous. In this paper 11 new species of genus *Neosilba* are described. The geographical distribution of these new species in Brazil and their associations with host fruits are presented.

KEYWORDS: Lonchaeidae, *Neosilba*, new species

INTRODUCTION

To date 19 species of genus *Neosilba* are known to science [1, 2, 3, 4, 5]. Some are considered primary invaders of commercial fruit crops, *N. zadolicha* McAlpine & Steyskal [6], *N. pendula* (Bezzi) [7], and *N. bella* Strikis & Prado [5]. The genus *Neosilba* is distributed mainly in Neotropical regions, but some species like *N. zadolicha* and *N. batesi* (Curran) [1] are found in Neartica. In spite of its economic importance the genus is poorly studied. The knowledge of this genus will help to understand the process of rapid speciation in Neotropica and bring clues to the evolutionary relationships among the families of superfamily Tephritoidea, once Lonchaeidae is

placed on the basal portion of the Tephritoidea evolutionary tree [8].

MATERIAL AND METHOD

Specimens of *Neosilba* were sent to the Laboratory of Entomology L2A at the Departamento de Biologia Animal in the Instituto de Biologia from Universidade Estadual de Campinas (UNICAMP) in order to be identified, samples came from many localities in Brazil. The male specimens were then clarified in KOH 10% solution at room temperature for 14 hours, gently washed in running filtered water for 3 minutes; the genitalia was extracted in glycerin in a microscope slide and examined under light microscopy, photographed and drawn using a microscope camera lucida. The holotypes and paratypes are deposited in the Museo de Zoologia da Universidade de São Paulo (MZUSP).

RESULTS

Description of new species of genus *Neosilba*

Neosilba mcalpiniei n. sp.

Material examined: 1 male reared from flower bud of *Eschweilera coriacea* (DC.) S. A. Mori sin: *Eschweilera odora* (Popp) Miers; *E. odoraa* Camab.; *Lecthis coriacea* DC.; from Porto Grande Amapá (0°42'79''N; 51°24'39''W; elevation: 69m), collected by Ezequiel da Glória de Deus in May 2005. Belongs to the complex of *Neosilba peltae* McAlpine & Steyskal (1982) [1], its chaetotaxy is similar to *N. peltae* chaetotaxy and

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won't be redescribed, the only difference is that the prosternum of *N. mcalpinei* n. sp. is hairless.

Description: Holotype: Male in poor state of conservation, antenna and left wing missing. Male genitalia: Ventral margin of surstylus with broadly spaced long setulae (Fig. 1), posterior base of surstylus with a row of four prensisetae and one more smaller and more spaced, at each side (Fig. 2). Cerci large and broad. Aedeagus short, with an arrow-like shape in the dorsal portion of apex (Fig. 1). Posterior lobe of epiandrium with long and fine setae.

Head, thorax and wings common to complex, no distinction can be made between the species of this complex using characters of head; thorax or wings, for details see McAlpine & Steyskal (1982).



Fig. 1. Ventral view of male genitalia.



Fig. 2. Ventral view of male genitalia showing disposition of prensisetae.

The only remark is that the prosternum of these species is bare.

Neosilba parapeltae n. sp.

Material examined: 1 male, collected in McPhail trap in a guajava orchard (*Psidium guajava* L. 1753) in Janaúba Minas Gerais (15°48'30''S; 43°19'53''W; elevation: 539m), in April, 2005 by Elisângela Novais Lopes.

Description: Holotype: Male. Head, thorax chaetotaxy and wings similar to *N. peltae*.

Male genitalia: Aedeagus short and thick, apex ending in a crown-like shape with a serrate border (Fig. 3), without spicules or other ornaments. Posterior ventral margin of surstylus with grouped setae heterogeneously spaced; median portion of ventral margin of surstylus with 2 large setae separated by a smaller one; posterior portion of ventral margin of surstylus with 5 large setae, a cluster of 4 prensisetae in the distal portion of each surstylus followed by a cluster of 2 prensisetae and a third one placed more anterior (Fig. 4). Cerci broad, but not as broad as in *N. mcalpinei* n. sp. Posterior lobe of epiandrium with few setae.

Neosilba ilheuense n. sp.

Description: Holotype: Male trapped in McPhail trap in Ilhéus, Bahia near a *Passiflora edulis* Sims.

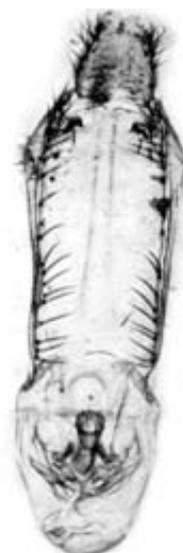


Fig. 3. Ventral view of male genitalia of *N. parapeltae* n. sp.

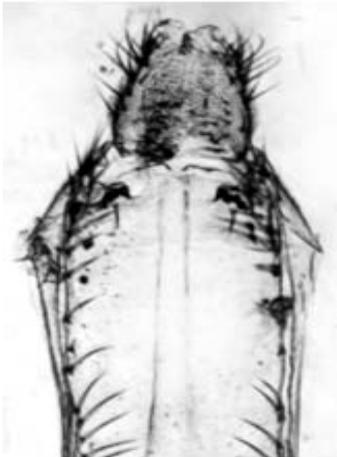


Fig. 4. Ventral view of male genitalia showing prenisetae arrangement.



Fig. 5. Ventral view of male genitalia.

1818 orchard at Universidade Estadual de Santa Cruz (14°47'49.75"S; 39°10'20.10"W; elevation: 32m), 2 paratypes collected in the same place in August, 2011. Wings, head and thorax chaetotaxy similar to *N. peltae*.

Male genitalia: Aedeagus long when compared to other species of *peltae* complex, completely closed until apex; apex thinner than the portion of aedeagus after the "C" shaped base (Fig. 5). Cerci large and broad. Anterior margin of surstylus with thin and almost evenly spaced setae; posterior margin of surstylus with longer setae. Posterior

most lobe of surstylus with a row of 5 prenisetae and one more prenisetae more spaced. Posterior margin of epandrium with long and fine setulae.

Taxonomic Discussion of the *peltae* complex: The most important characters in separating the species of this group are the shape, size and ornamentation of the aedeagus, the shape of cerci and the pattern of setae and setulae disposition of surstylus and epandrium. The species described above are easily separated by these characters and so is *N. peltae*. All the above described species have the prosternum bare. The shape of cerci in *N. mcaldpiniei* n. sp., *N. ihleuense* n. sp. and *N. peltae* is more similar than in *N. parapeltae*.

***Neosilba cornuphallas* n. sp.**

Material examined: 2 males reared from *Inga* sp., in Goiânia-GO (16°40'71"S; 49°15'12"W elevation: 804m); by Uchôa-Fernandes in 11/2/1995; 1 male reared from *Inga edulis* Mart. in Viana-ES (20°23'21.30"S; 40°29'41.16"W; elevation: 53m), by David Martins in 08/03/2000; 1 male reared from *Citharexylum myrianthum* Cham. in São Bento do Sapucaí-SP (22°41'73"S; 45°44'64"W; elevation: 887m), by Miguel Francisco de Souza Filho in 2/02/2000. 1 male reared from *Eriobotrya japonica* (Thunb.) Lindl. in Nazaré Paulista-SP (23°10'30"S 46°23'49"W; elevation: 864m); by Miguel Francisco de Souza Filho in 07/19/1996; 1 male reared from *Citrus sinensis* (L.) Osbeck. in Viana-ES (20°23'30"S; 40°29'16"W; elevation: 53m), by David Martins in 05/21/01; 1 male reared from *Inga* sp. in Presidente Prudente-SP (22°07'34"S; 51°23'22"W; elevation: 414m), by Miguel Francisco de Souza Filho in 01/08/1997; 2 males reared from *Guatteria discolor* R. E. Fr. in Manaus [Rserva Ducke (2°53'S; 59°59'W; elevation 90m)], by Sérgio Geraldo Medeiros da Costa in 07/2004; 1 male reared from *Ampelocera edentula* Kuhl. in Manaus [Rserva Ducke (2°53'S; 59°59'W; elevation 90m)], by Sérgio Geraldo Medeiros da Costa in 07/2004; 2 males reared in unknown fruit, in Manaus [Rserva Ducke (2°53'S; 59°59'W; elevation 90m)], by Sérgio Geraldo Medeiros da Costa em 06/2004; 2 males reared from *Coffea arabica* L. in Seropédica-RJ (22°44'00"S; 43°42'91"W; elevation: 37m), by Aguiar-Menezes in 19/05/03; 1 male reared from fruit of *Anacardium occidentale* L. in Itabuna BA (14°47'29"S; 39°16'16"W; elevation: 77m) by Maria Aparecida de Leão Bittencourt.

Description: Holotype: Male reared from Maçarandubinha [*Manilkara salzmannii*, (A. DC.) H. J. Lam.]), collected in Porto Grande-AP (0°42'79''N; 51°24'39''W; elevation: 69m), by Ezequiel da Glória de Deus in 05/2009.

Head: Round in front view, frons broad with parallel sides; not narrowing toward lunule, with a cluster of 4 inter-frontal setae slightly prominent at each side, right above lunule, other inter-frontal setae small and sparse; 2 prominent supra-orbital bristles, 2 ocellar bristles. Inner orbital bristles slightly larger than external orbitals. Lunule with a cluster of 5 setulae at each side. Antenna: scape and pedicel usual to genus; first flagellomere long, reaching palpus. Palpus large and broad with one more prominent apical sub-marginal seta.

Thorax: Anepisternum with 5 prominent, evenly spaced posterior bristles aligned dorso-ventrally and 3 smaller anterior bristles aligned dorso-ventrally. Katepisternum with 2 prominent bristles and 3 setae; epimeron and episternum with 1 bristle each. Scutellum with a pair of prominent apical marginal bristles and 2 anterior submarginal bristles, with a cluster of 3 setae at each side between anterior submarginal bristles and apical bristles; and 2 setae between apical marginal bristles. Prosternum bare.

Abdomen with a tuft of very prominent bristles at each side of last abdominal segment, it resembles the situation found in *N. galberrima*, although more stout in *N. cornuphallus* n. sp.

Male terminalia: Paramere ligulate, pilose in inner margin (Fig. 6); aedeagus with variable diameter along its extension, apex of aedeagus large and ending in a smooth "S" shaped (Fig. 7, 8 and 9), ending close to cerci, base of aedeagus slender, right after the "C" shaped base the aedeagus is very slender and becomes large abruptly giving the impression, in lateral view, to enter a sclerotic structure (Fig. 8), this is the most remarkable autapomorphic character of this species. Cerci small, lamellate, having the shape of a folded membrane (Fig. 9) with long setae in lateral view. Surstylus with long ventral posterior marginal setae (Fig. 7); the first 3 anterior marginal setae more spaced than others; posterior lobe of surstylus with 2 prenisetae perpendicular to aedeagus; and 14 prenisetae aligned parallel to aedeagus; of these the 3 anterior more spaced and

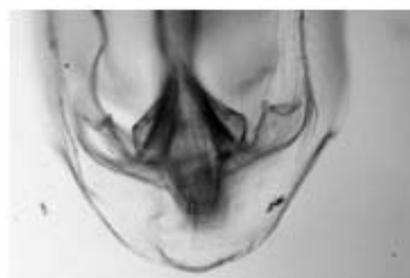


Fig. 6. Detail of male genitalia showing paramere.

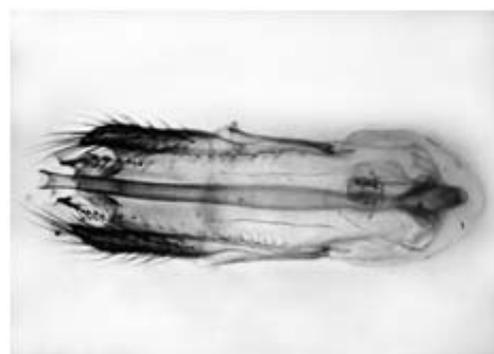


Fig. 7. Ventral view of male genitalia.

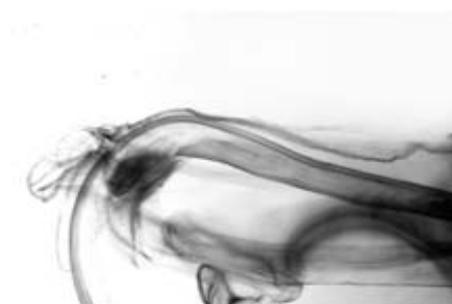


Fig. 8. Lateral view of male genitalia showing the abrupt enlargement of aedeagus.

the 2 following setae grouped. Epandrium with long setae covering surstylus in lateral view. The anterior dorsal portion of epandrium concave, very curved (Fig. 9).

Taxonomic Discussion: *N. cornuphallus* n. sp. belongs to the complex of *N. longicerata* (Hennig) and can be easily separated from other species examining the portion of aedeagus after the "C" shaped base and the concavity of epandrium.

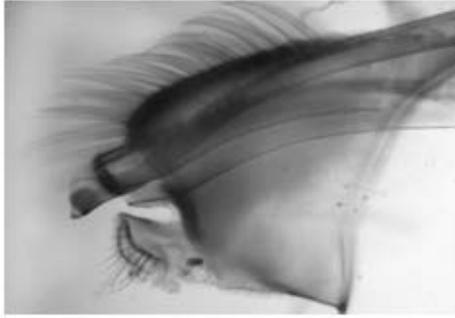


Fig. 9. Lateral view of male genitalia showing cerci; apex of aedeagus and posterior lobe of epandrium.

***Neosilba turgidiphallus* n. sp.**

Material examined: 1 male reared from fruit of *Capsicum annum* L., in Viana-ES (20°23'30''S; 40°29'16''W; elevation: 53m), collected by David Martins in 07/2002.

Description: Holotype: Male. Head slightly oval, frons narrows toward lunule, with 8 setae right above margin of lunule; lunule with 5 setae at each side. Antenna with pubescent arista, arista longer than first flagellomere; gena width similar to first flagellomere width, with 2 prominent oral-vibrissa-like setae. Palpus large and moderately broad without prominent setae. Ocellar, vertical and superior frontal bristles missing.

Thorax: Anepisternum with 6 prominent posterior bristles dorso-ventrally aligned and 5 superior anterior bristles dorso-ventrally aligned. Katepisternum with 2 prominent bristles and 2 clusters of setae longitudinally aligned close to the bristles cited above, one with 4 setae and the other with 3 setae. Episternum and epimeron with 1 prominent bristle. Prosternum bare. Scutellum with bristle pattern common to genus, and 2 apical basal setae and 5 lateral marginal setae.

Wings hyaline, calipters with white fringes and a cluster of 11 long and black setulae at fold.

Abdomen: Triangular shaped; last tergite approximately 2.5X larger than preceding ones. Last abdominal sternite with stout long bristles.

Male genitalia: Aedeagus larger at median portion (Fig. 10), apex very large after bent ventrally (Fig. 10). Paramere ligulate, and setulose in inner margin (Fig. 10). Surstylus with prominent setae along ventral margin, anterior margin with 5 long

setae curved in the direction of aedeagus (Fig. 10); a cluster of 5 prenisetae in position perpendicular to aedeagus, and 3 more spaced parallel to aedeagus (Fig. 11); 1 seta in front of the cluster of prenisetae; surstylus exposed in median portion. Setae in posterior ventral margin of surstylus less spaced; the spacing of setae of surstylus margin grows in posterior anterior direction. Cerci lobose and short. Epandrium pilose until median portion of genitalia with thin and long setae in the posterior margin and lobe (Fig. 11).

Taxonomic Discussion: *Neosilba turgidiphallus* n. sp. belongs to the same cryptic complex that

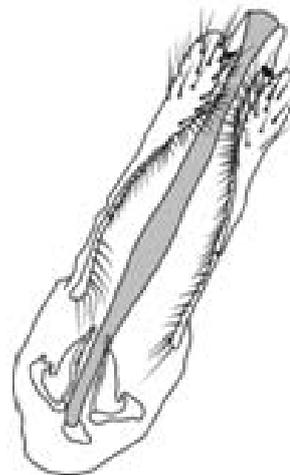


Fig. 10. Ventral view of male genitalia.



Fig. 11. Side view of male terminalia showing apex of aedeagus and prenisetae.

N. longicerata and is very close to *Neosilba cornuphallus* n. sp., can be easily separated from *Neosilba cornuphallus* n. sp. by the pattern of prenisetae, shape of cerci and the shape of aedeagus right after the “C” shaped base.

***Neosilba pantanense* n. sp.**

Material examined: 478 males and 504 females reared from fruits of *Psittachantus acinarius* (Martius) Martius in Aquidauana-MS (20°28'71”S; 55°47'59”W; elevation: 183m), collected by José Nicácio do Nascimento from August 1998 until June 2000; 1 male reared from fruit of *Physalis angulata* L. in Aquidauana-MS (20°28'71”S; 55°47'59”W; elevation: 183m) collected by José Nicácio do Nascimento in May 1998; 1 male reared from fruit of *Allagoptera leucocalyx* (Drude) Kuntze collected in Anastácio-MS (29°29'56.74”S; 55°49'04.39”W; elevation: 191m) by José Nicácio do Nascimento in February 2000.

Description: Holotype: Male. Head rounded; frons narrows slightly toward lunule; 6 interfrontal setae right above plus 5 smaller setae at each side above lunule; other setae small and sparse. Superior orbital bristles smaller than in other species of genus. Ocellar triangle with 2 prominent bristles and 9 setulae, outer verticals smaller than inner verticals. Lunule with 12 setulae, 6 at each side; antenna usual to genus, arista long and pubescent 1 cluster of 4 setulae close to oral margin and another cluster of 4 setae at the base of frontal suture close to oral margin.

Thorax: Prosternum bare. Katepisternum with 2 prominent bristles and a cluster of 4 superior median setae longer than others. Episternum with 1 stout bristle, epimeron with 1 prominent seta. Anepisternum with a row of 5 aligned prominent equally spaced posterior bristles and 5 anterior-superior prominent aligned and equally spaced bristles. Scutellum with 2 prominent apical-marginal bristles and anteriorlateral prominent bristles, 6 marginal setae at each side and 2 apical-marginal setae between apical-marginal bristles.

Wings hyaline with brownish venation, calypteres white with white fringes and a cluster of 10 to 12 brown setulae at fold.

Abdomen usual to genus without any chaetotaxy distinction.

Male terminalia: Aedeagus uniform in diameter after the “C” shaped base; apex a little larger, the last third of aedeagus with small spicules until reaching the prenisetae; aedeagus reaches the middle of cerci (Fig. 12). Paramere wedge-shaped, with fine hairs in interior margin close to aedeagus (Fig. 13). Gonopods with fine hairs. Surstylus with fine long setae in anterior margin reaching paramere (Fig. 12); setae of posterior margin of surstylus short and thick (Fig. 14). A cluster of 3 prenisetae at each side of surstylus in the posterior apical margin and 5 other prenisetae

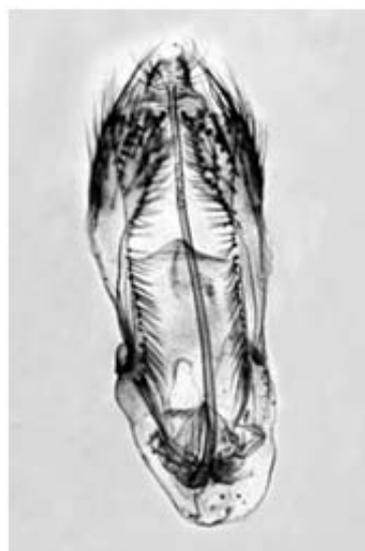


Fig. 12. Ventral view of male genitalia.



Fig. 13. Male genitalia showing paramere.



Fig. 14. Male genitalia showing spicules of aedeagus and anterior setae of surstylus.

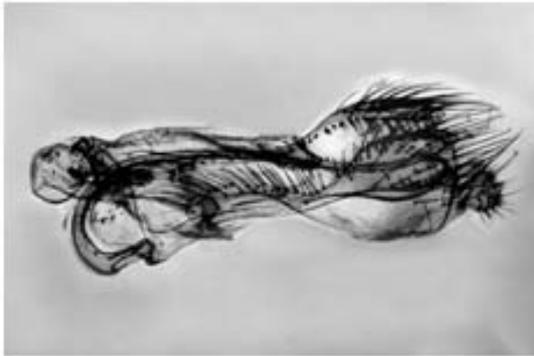


Fig. 15. Ventral view of male genitalia showing setae of epandrium and spicules of aedeagus.

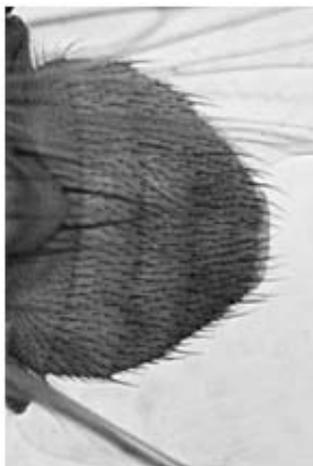


Fig. 16. End of abdomen of female.

aligned, at each side of surstylus almost parallel to aedeagus. (Fig. 14). Posterior lobe of epandrium with long setae covering surstylus (Fig. 15).

Female: Similar to male except for sexual characters. End of abdomen with unusually broad oviscape (Fig. 16), aculeus short.

Taxonomic discussion: *N. pantanense* n. sp. belongs to the same complex of *N. oxacana* McAlpine & Steyskal, is easily separated by the spicules of aedeagus and the pattern of prensisetae.

***Neosilba pseudozadolicha* n. sp.**

Material examined: 1 male reared from *Inga ingoides* (Rich.) Willd. Collected in Igarassú-Recife-PE (7°53'31"S; 34°51'00"W; elevation: 8m); 1 male reared from fruit of *Malpighia glabra* L. collected in Bom Fim-RR (2°49'34"N; 60°40'04"W; elevation 68m) by Alberto Marssaro in 06/20/2008; 2 males reared from fruit of *M. glabra* collected in Cantá-RR (2°31'50"N; 60°38'98"W; elevation: 98m), by Alberto Marssaro in 10/21/2007; 1 male reared from fruit of *M. glabra* in 08/14/2008 in Macapá AP (0°02'05"N; 51°03'63"W; elevation: 0m) by Ricardo Adaime da Silva; 4 males reared from fruits of *M. glabra* collected in Pacaraima-RR (4°25'24"N; 61°08'79"W; elevation 478m), by Ricardo Adaime da Silva in 07/10/2007.

Description: Holotype: Male reared from fruit of *M. glabra* collected in Cantá-RR (4°25'24"N; 61°08'79"W; elevation 478m), by Alberto Marssaro in 10/21/2007.

Head: Frons narrow toward lunule, with short and sparse hairs, inferior inter-frontal setae close to lunule more prominent. Lunule with a cluster of 6 setae at each side. Antenna: scape with setae more prominent than other species, pedicel with one prominent setae and short setae at margin, arista pubescent and longer than first flagellomere. Palpus large and broad. Seven prominent orbital setae, 2 large supra-orbital bristles. Seven small ocellar setae.

Thorax: Katepisternum with 2 prominent posterior-superior bristles; anepisternum with 4 to 5 aligned posterior bristles equally spaced sometimes with a sixtieth smaller bristle superior to the cluster; a cluster of 4 to 5 anterior-superior bristles. Episternum and epimeron with one

prominent bristle each. Scutellum with 2 apical-marginal and 2 prominent anterior-marginal bristles, 2 apical-marginal setae between each apical-marginal bristles, and 4 marginal-lateral setae at each side. Prosternum bare.

Wings hyaline calypteres white with white fringes and a cluster of 5 long black setae at fold.

Male genitalia: Epandrium length/width ratio approximately 3.7 with long thin setae in posterior lobe (Fig. 17). Surstylus with 5 well exposed long and thin setae in anterior-ventral margin; 10 prenisetae, 5 at each side, the number of prenisetae may vary from 10 to 12 (Fig. 18). Cerci small with thin setae. Paramere blade-like shaped, with few hairs in outer margin (Fig. 19). "C" shaped base of aedeagus very salient, more than in *N. zadolicha*; with larger diameter at the "C" shaped base, after the "C" shaped base follows homogeneously in diameter projecting

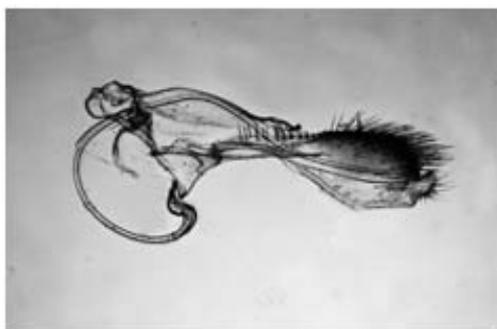


Fig. 17. Lateral view of male genitalia.

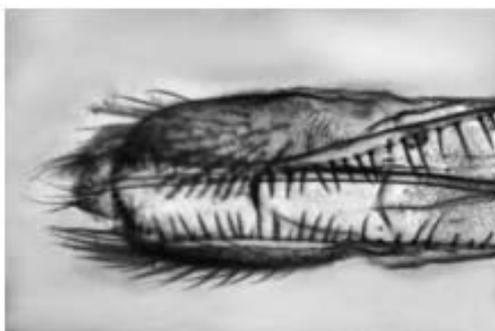


Fig. 18. Ventral view of male genitalia showing prenisetae and end of aedeagus.

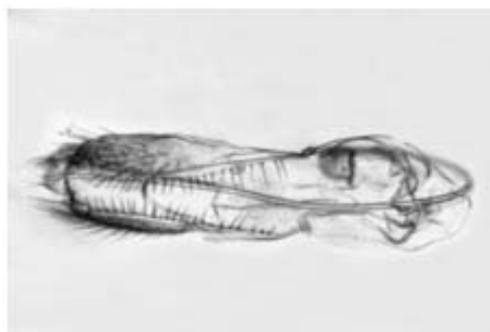


Fig. 19. Ventral view of male genitalia.

beyond cerci. The overall shape of genitalia is similar to *N. zadolicha*.

Taxonomic discussion: The best way to separate *N. pseudozadolicha* n. sp. from *N. zadolicha* is the length/width ratio of epandrium; 3.7 in *N. pseudozadolicha* n. sp. and 6 in *N. zadolicha*.

Neosilba pseudobifida n. sp.

Material examined: 3 males reared from fruit of *Guatteria discolor* R. E. Fr. Collected at Reserva Ducke in Manaus-AM (2°53'S; 59°59'W; elevation: 90m) by Sérgio Geraldo Medeiros da Costa em 06/2004; 1 male reared from fruit of *Chrysophyllum sparsiflorum* Klotzsch ex Miq. Collected at Reserva Ducke em Manaus-AM, by Sérgio Geraldo Medeiros da Costa in 05/2004; 1 male reared from fruit of *Guatteria* sp. collected at Reserva Ducke in Manaus-AM, by Sérgio Geraldo Medeiros da Costa in 05/2004; 8 males, reared from fruits of *G. discolor* collected at Reserva Ducke in Manaus-AM by Sérgio Geraldo Medeiros da Costa in 06/2004; 01 male reared from an unknown fruit collected at Reserva Ducke in Manaus-AM, by Sérgio Geraldo Medeiros da Costa in 04/2004.

Description: Holotype: Male reared from fruit of *Guatteria discolor* collected at Reserva Ducke in Manaus-AM (2°53'S; 59°59'W; elevation: 90m), by Sérgio Geraldo Medeiros da Costa in 06/2004.

Head oval, wider than high, frons with parallel sides, with a cluster of 5 inter-frontal setae right above lunule, at each side of lunule. 1 seta above each supra-orbital bristle; lunule with 10 prominent setae. Antenna usual to genus, arista longer than first flagellomere and pubescent; gena

width similar to first flagellomere, a cluster of 4 setae aligned inferior to frontal suture; 2 setae close to oral margin. Palpus large and broad with 1 marginal seta close to its apex.

Thorax: Katepisternum with 2 prominent bristles and many setae anterior to the bristles. Anepisternum with 5 prominent posterior bristles dorso-ventrally aligned and 4 prominent anterior-superior bristles aligned dorso-ventrally; several small sparsed setae. Scutellum with 2 apical bristles and 2 prominent lateral-marginal bristles, 3 marginal setae at each side and 2 apical marginal setae between apical bristles. Prosternum bare.

Wings white with dark-yellowish veins, calypteres white with white fringes and a cluster of 8 black long setae at fold.

Abdomen: Last tergite twice larger than others, with a cluster of bristles at end, resembles *N. glaberrima*.

Male genitalia: Epandrium longer than wide (3:1) in ventral view, completely covering surstylus in lateral view, with long setae in the posterior lobe reaching a little beyond cerci in lateral view (Fig. 20). Surstylus with a row of 6 prenisetae at each side; setae in ventral margin of surstylus short and thick (Fig. 21). Aedeagus slender after the "C" shaped base reaching beyond prenisetae. There is a spicule-like projection in the aedeagus after the "C" shaped base slightly left bent, similar to *N. bifida* Strikis & Prado.

Taxonomic discussion: *N. pseudobifida* n. sp. belongs to *N. bifida* complex, can be distinguished from *N. bifida* by the size of male genitalia, much

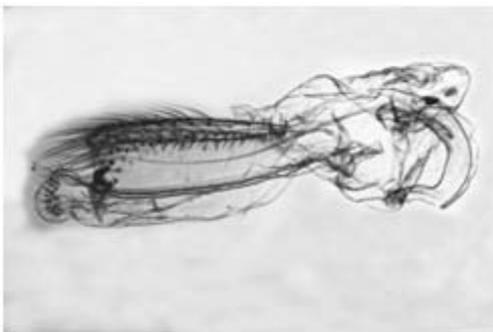


Fig. 20. Lateral view of male genitalia showing spicule-like structure of aedeagus.

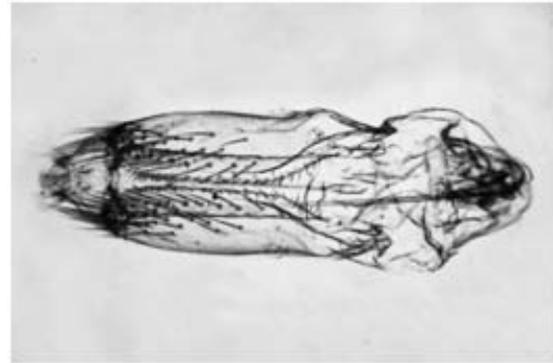


Fig. 21. Ventral view of male genitalia.

larger in *N. pseudobifida* n. sp., by the ratio length/width of epandrium (3:1), in *N. bifida* it is close to (1:1) and the proportion of cerci in relation to genitalia that is larger in *N. bifida*.

Neosilba paramerolatus n. sp.

Material examined: 3 males reared from fruits of *Eschweilera atropetiolata* Mori collected at Reserva Ducke in Manaus-AM (2°53'S; 59°59'W; elevation: 90m), by Sérgio Geraldo Medeiros da Costa in 02/2004.

Description: Holotype: Male reared from fruit of *Eschweilera atropetiolata* Mori collected at Reserva Ducke in Manaus-AM (2°53'S; 59°59'W; elevation: 90m), by Sérgio Geraldo Medeiros da Costa in 02/2004.

Head oval, frons longer than wide, narrows toward lunule; 6 inter-frontal setae above lunule larger than others, 1 seta above supra-orbital bristles. Ocellar, supra-orbital and inner-vertical bristles similar in size, outer vertical bristles smaller. Lunule with 6 setae 3 at each side; antenna usual to genus, arista pubescent and longer than first flagellomere. Gena width similar to first flagellomere width. Palpus large and broad with one prominent seta close to apical region; 3 larger setae at oral margin and a row of 3 setae at the base of frontal suture.

Thorax: Anepisternum with 6 prominent equally spaced posterior bristles dorso-ventrally aligned; a dorso-ventral row of 5 anterior-superior bristles, many prominent setae between these rows of bristles and under it. Katepisternum with 2 prominent bristles and a row of anterior-superior

setae similar in size of anepisternum setae, other bristles small. Episternum and epimeron with one bristle each, episternum bristle larger. Scutellum with 4 lateral-marginal setae at each side, 2 apical-marginal setae between 2 apical-marginal bristles; 2 basal-lateral bristles. Prosternum bare.

Wings almost hyaline with pale brownish veins and microtrichia; calypteres white with white fringes and a cluster of 7 black long setae at fold.

Male genitalia: Epandrium slightly longer than wide, with fine long setae in ventral margin covering surstylus in its ventral-posterior portion in ventral view. Margin of surstylus, in ventral view, with short and thick setae (Fig. 22); 9 prensisetae at each side of surstylus, 2 posterior ones perpendicular to aedeagus and other 7 anterior ones parallel to aedeagus. Aedeagus thick at base and slender after the "C" shaped base; in this region the aedeagus presents thin and dense (Fig. 23), aedeagus ends before prensisetae. Paramere large, with fine setulae in posterior inner margin. The size of paramere in relation to other structures is unusual to genus.

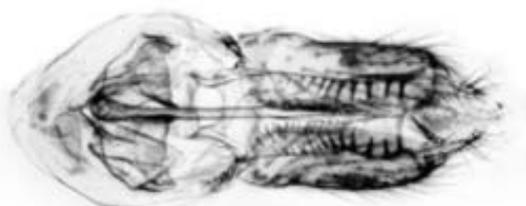


Fig. 22. Ventral view of male genitalia showing paramere and setae of surstylus and epandrium.

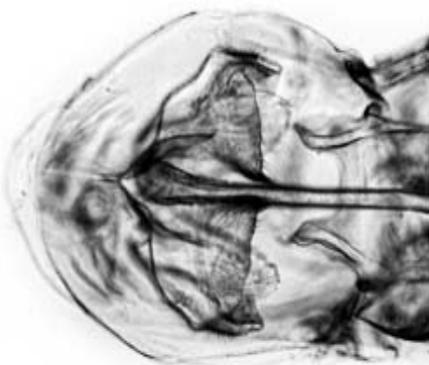


Fig. 23. Ventral view of male genitalia showing detail of paramere and spicules of aedeagus.

Taxonomic discussion: *Neosilba paramerolatus* n. sp. may be part of *N. certa* complex, but is easily distinguished by examining the male genitalia.

Neosilba laura n. sp.

Material examined: 1 male reared from fruit of *Dalbergia brasiliensis* Vogel, collected in Itapetininga-SP (23°35'12"S; 48°03'05"W; elevation: 673m) by Miguel Francisco de Souza Filho in 03/25/2008; 16 males reared from fruits of *Inga* sp., collected in Campinas-SP (22°54'91"S; 47°03'67"W; elevation: 680m) by Francisco de Souza Filho in 01/13/1998; 7 males reared from fruits of *Inga vera* Willd collected in Campinas-SP by Miguel Francisco de Souza Filho in 03/07/1997; 1 male reared from fruit of *Celtis iguanaea* (Jacq.) Sarg. collected in Chapecó-SC (27°05'41"S; 52°37'99"W; elevation: 659m), by Flávio Garcia in 03/2005.

Description: Holotype: Male reared from fruit of *Dalbergia brasiliensis* Vogel, collected in Itapetininga-SP (23°35'12"S; 48°03'05"W; elevation: 673m) by Miguel Francisco de Souza Filho in 03/25/2008.

Head oval, wider than high, frons narrows toward lunule, with concave sides; 5 to 6 inter-frontal setae above lunule not easily distinguished from other interfrontal setae, superior orbital bristles, ocellar bristles and inner vertical bristles similar in size; outer vertical bristles smaller; 2 prominent post-ocellar setae, lunule with 8 setae, 4 at each side. Antenna with a pubescent arista longer than first flagellomere, 2 prominent setae at oral margin and 2 at the base of frontal suture.

Thorax: Anepisternum with a dorso-ventral row of 5 prominent posterior bristles and a dorso-ventral row of 5 anterior-superior bristles. Katepisternum with 2 prominent bristles and 2 prominent setae in front of the bristles. Episternum and epimeron with 1 prominent bristle each. Scutellum with 5 marginal setae at each side and 2 apical-marginal setae; 4 prominent bristles, 2 apical-marginal and 2 lateral-basal.

Wings: Sub-hyaline with brown-yellowish veins, calypteres white with white fringes and a cluster of 8 to 9 dark brown setae at fold. Humeral and costal breaks inconspicuous, curvature of vein R 4+ 5 similar to *Dasiops*.

Abdomen: Fifth tergite triangular shaped approximately 2.5X larger than others, with prominent apical bristles.

Male genitalia: Paramere ligulate with few hairs, inner margin more pilose (Fig. 24); epandrium with long setae in posterior lobe (Fig. 25). Anterior ventral margin of surstylus with long setae thinner than others and closely spaced; median ventral margin with shorter setae and posterior ventral margin with short and thick setae (Fig. 24), a row of 6 prenisetae at each side of surstylus; median ventral margin marked by a space with only one seta separating the anterior group of setae from the posterior group. Aedeagus with homogeneous diameter after the "C" shaped base, and ornamented with small spicules at the base, apex ending in a smooth dorsal curve.

Taxonomic discussion: *Neosilba lauraea* n. sp. belongs to *N. pendula* (Bezzi) cryptic complex of

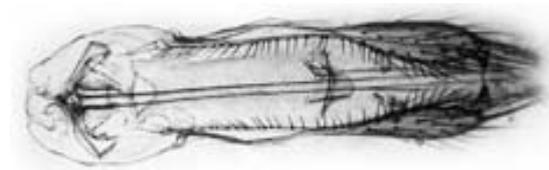


Fig. 24. Male genitalia in ventral view.



Fig. 25. Male genitalia in lateral view, showing detail of posterior lobe of epandrium.

species, and can be distinguished from other species by the shape and ornamentation of aedeagus and the pattern of setae of surstylus.

Neosilba delvechioi n. sp.

This species is named in honor of Maria Cecilia Del Vechio, who, along with Professor Angelo Pires do Prado and Hebe Mirina Laghi de Souza made great advances in the study of this genus in Brazil.

Unfortunately there is no specimen of this species, only the drawings of the male genitalia made by Prado and Del Vechio; which is considered by the author to be enough, once Dr. Angelo Pires do Prado, a renowned entomologist, assured the drawings belong to a male of genus *Neosilba*, moreover the most important structure in identifying a species, in this particular genus, is the male genitalia.

The specimen was reared from fruit of *Coffea arabica* L. collected at Estação Experimental do Instituto Agronômico de Campinas in the municipality of Monte Alegre do Sul-SP (22°40'56.83"S; 46°40'53.21"W; elevation: 829m) by Maria Cecília Del Vechio in June, 1977, another male was reared from fruit of *Citrofortunella microcarpa* (Bunge.) Wijnands at Estação Experimental do Instituto Agronômico de Campinas in the municipality of Credeirópolis-SP (22°28'84"S; 47°27'53"W; elevation: 669m) by Maria Cecília Del Vechio in May, 1976.

Description: Male genitalia: Aedeagus with even diameter after the "C" shaped base, ending beyond prenisetae reaching median portion of cerci (Fig. 26), with many spicules from the apex of "C" shaped base until median portion (Fig. 27); at the apex of "C" shaped base of aedeagus there are two projections one at each side of aedeagus, well visible in ventral view, that forms a figure of a trident (Fig. 28), there are small spicules in these projections. Paramere ligulate and pilose, more pilose in inner margin. Epandrium longer than wide in ventral view with long and thin setae in posterior ventral margin covering surstylus in lateral view. Surstylus with setae more spaced in anterior margin, with a row of 4 prenisetae at each side. Cerci globose with thin and long setae.

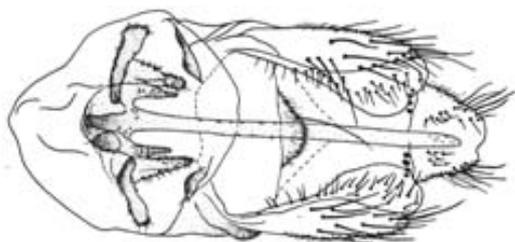


Fig. 26. Ventral view of male genitalia.

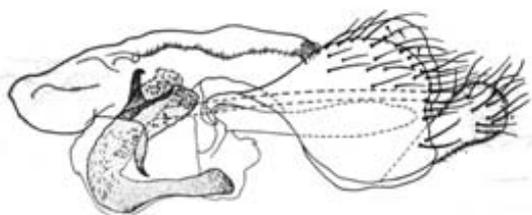


Fig. 27. Lateral view of male genitalia.

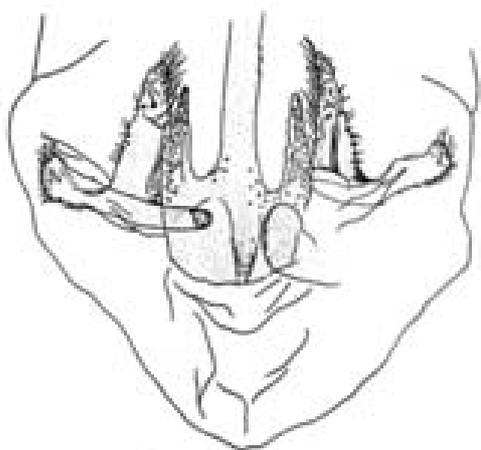


Fig. 28. Detail of paramere and trident-like figure.

Geographic distribution and hosts of new species

Neosilba mcalpiniei n. sp. was collected in the State of Amapá, Northeastern of Brazil in a border of lowland Amazonian forest; it was reared from flower bud of *Eschweilera coriacea* that has a wide distribution in the north and Northwest of South America. It is the first *Neosilba* species reared from flower bud.

Neosilba parapeltae n. sp. host unknown. It was collected in the North of State of Minas Gerais in

the Southeastern of Brazil a region that is very dry during winter season and wet in summer, characterized by a cerrado-like vegetation, also in the same sample came 2 specimens of *N. peltae*.

Neosilba ilheuense n. sp. host unknown. It was collected in the State of Bahia, close to a preserved Atlantic forest area with a wet climate all the year, with higher pluviosity during summer.

Neosilba cornuphallus n. sp. is known to infest 8 botanical families Verbenaceae, Fabaceae, Rosaceae, Rutaceae, Annonaceae, Ulmaceae, Rubiaceae and Anacardiaceae. Its geographical distribution ranges from The North to Southeastern of Brazil, including Amazonian forest, Atlantic forest, Cerrado in the Central west of Brazil, and places with temperate climate like São Bento do Sapucaí in the State of São Paulo.

Neosilba turgidiphallus n. sp. is known to infest fruits of *C. annum*, was collected in a place close to a spot of Atlantic forest in the State of Espírito Santo Southeastern of Brazil.

Neosilba pantanense n. sp. reared from fruits of *P. acinarius* from family Loranthaceae and *A. leucocalyx* from family Arecaceae. These fruits were collected in the State of Mato Grosso do Sul in a particular biome of Central West of Brazil, "Pantanal" that is flooded in winter. This biome ranges from Brazil to Paraguay.

Neosilba pseudozadolicha n. sp. reared from fruits of Fabaceae and Malpighiaceae from The State of Pernambuco Northeastern of Brazil and Roraima North of Brazil respectively. The first one is characterized by Atlantic forest and the second by upland Amazonian forest.

Neosilba pseudobifida n. sp. this species was reared from fruits of family Sapotaceae and Annonaceae, in the State of Amazonas in Reserva Ducke that is a typical Amazonian rain forest.

Neosilba paramerolatus n. sp. was collected from fruit of family Lecythidaceae, in the State of Amazonas in Reserva Ducke that is a typical Amazonian rain forest.

Neosilba laura n. sp. this species was reared from fruits of Fabaceae (*D. brasiliensis* and *Inga* sp.) and Cannabaceae (*Celtis iguanaea*). This species is known to occur in the State of São Paulo in

Itapetininga in a spot of preserved Atlantic forest and Santa Catarina, the localities sampled present a subtropical climate.

Neosilba delvechiosi n. sp. is known only from the State of São Paulo, was reared from fruits of Rubiaceae and Rutaceae. The fruits of Rubiaceae were collected in a locality close to a fragment of Atlantic forest; this place has been sampled intensively during the last 15 years and this species was never collected again.

REFERENCES

1. McAlpine, J. F. and Steyskal, G. C. 1982, *Can. Ent.*, 114, 105.
2. Strikis, P. C. and Prado, A. P. 2005, *Zootaxa.*, 828, 1.
3. Strikis, P. C. and Prado, A. P. 2006, *Proceedings of 7th Symposium on Fruit Flies of Economic Importance*, 187.
4. Strikis, P. C. and Prado, A. P. 2009, *Arq. Inst. Biol. São Paulo*, 76, 49.
5. Strikis, P. C. and Lerena, M. L. M. 2009, *Iheringia, Sér. Zool., Porto Alegre.*, 99, 273.
6. Lopes, E. B., Batista, J. L., Albuquerque, I. C., and Brito, C. H. 2007, *Tecno. & Ciência Agropec.*, João Pessoa., 1, 31.
7. Araújo, E. L., and Zucchi, R. A. 2002, *Arq. Inst. Biol. São Paulo*, 69, 91.
8. Sivinsk, J. 1999, *Fruit Flies (Tephritidae) Phylogeny and Evolution of Behavior*, Edited by Aluja, M. and Norrbom A. L. CRC Press.