

Taxonomic revisionary notes on some Neotropical Coenosiini (Diptera: Muscidae)

Jaime I. Rodríguez-Fernández^{1, 3}; Claudio J. B. de Carvalho¹ & Márcia S. Couri²

¹ Departamento de Zoologia, Universidade Federal do Paraná. Caixa Postal 19020, 81531-980 Curitiba, Paraná, Brasil.

² Departamento de Entomologia, Museu Nacional, Universidade Federal do Rio de Janeiro. Quinta da Boa Vista, 20940-040 Rio de Janeiro, Rio de Janeiro, Brazil.

³ Corresponding author. E-mail: formycusub@yahoo.com.br

ABSTRACT. Coenosiinae is an important component of the Neotropical Muscidae diversity due to the high diversity of species and high population numbers. Based on the examination of type-specimens of some species of Coenosiini, the following taxonomic changes are proposed: *Neodexiopsis medinae* Snyder, 1957 stat. rev., *Pilispina xanthogaster* (Albuquerque, 1958) **comb. nov.**, *Pilispina differa* Couri & Carvalho, 1999 is a junior synonym of *Pilispina pilitibia* Albuquerque, 1954, *Neodexiopsis barbiventris* Couri & Albuquerque, 1979 is a junior synonym of *Neodexiopsis flavipalpis* Albuquerque, 1956 and a neotype is proposed for *Coenosia latitibia* Albuquerque 1957. In all cases, remarks include reevaluation of relevant characters.

KEY WORDS. Coenosiinae; new combination; revalidation; synonymy; taxonomy.

Coenosiinae is the most diverse subfamily of Neotropical Muscidae and is considered to be one of the apical groups within the family (CARVALHO 1989b). Two tribes are currently recognized, Limnophorini and Coenosiini (CARVALHO *et al.* 2005), but only the monophyly of the latter is strongly supported (COURI & PONT 2000). The Coenosiini are very abundant in well-preserved forests (COSTACURTA *et al.* 2003a, b) and are usually collected by sweeping over grass or other short vegetation (SNYDER 1958). The Coenosiini are an important component of the Neotropical Muscidae diversity due to the high diversity of species and high population numbers (RODRÍGUEZ-FERNÁNDEZ *et al.* 2006).

Following a revision of the type material deposited in the collection of the Museu Nacional (Rio de Janeiro), this contribution proposes several taxonomic changes for species included in the Coenosiini.

MATERIAL AND METHODS

The material studied is deposited in the following institutions: Coleção de Entomologia Pe. J.S. Moure, Departamento de Zoologia, Universidade Federal do Paraná, Curitiba (DZUP); Museu Nacional, Universidade Federal do Rio de Janeiro, Rio de Janeiro (MNRJ), and United States National Museum, Washington, D.C. (USNM).

The morphological terminology follows McALPINE (1981) and HUCKETT & VOCKEROTH (1987), with a few exceptions indicated by CARVALHO (1989a). The following abbreviations were used: (DC) dorsocentral setae, (PD) posterodorsal setae, and (AV) anteroventral setae. In this paper, only a reference to the

original description of a species is given. A complete list of references for each species can be found in CARVALHO *et al.* (2005).

TAXONOMY

Pilispina pilitibia Albuquerque, 1954

Figs 1-3

Pilispina pilitibia Albuquerque, 1954: 180.

Parvomusca differa Couri & Carvalho, 1993: 732. **Syn. nov.**

Pilispina differa; Couri & Pont 1999: 99 (key, synonym of *Pilispina*).

Type material examined. *Pilispina pilitibia*: holotype male (MNRJ) labeled: "Itatiaia, 2000m P. Wichart, II/[19]41"; "HOLÓTIPO [red label], n°4974" [Albuquerque handwriting]; "*Pilispina pilitibia*" [Albuquerque handwriting]. *Parvomusca differa*: paratype male (DZUP) labeled: "CURITIBA-PR [Paraná]/03.XI.1989./Maia, J.C.S. LEG."; "CAPÃO DA IMBUÍA/MALAISE TRAP"; "PARATYPO" [Green label]; "*Parvomusca differa*/Couri & Carvalho, **sp. nov.**/M. S. Couri det. 92" [handwriting]; "1 ♂...DZUP"; "*Pilispina pilitibia*/Albuquerque, 1954/J.I.R. Fernández det. 2008".

Distribution. Brazil: Rio de Janeiro, Paraná.

Remarks. ALBUQUERQUE (1954) erected the genus *Pilispina* based on a single asymmetrical specimen of the type-species, *P. pilitibia* (Figs 1-3). The specimen has one presutural DC seta on the left side, two on the right side, and three postsutural setae on either side. Mistakenly, the author described the DC setae pattern as 2+2. Latter, COURI (2000) noted the error in the interpretation of the number of postsutural setae and corrected

the DC pattern to 2+3. However, examination of additional specimens from the type-locality indicates that the DC pattern for this species is actually 1+3 (Fig. 2). *Parvomusca differa* was tentatively described in *Parvomusca* Medeiros, 1980, a monobasic genus, mainly based on similarities shared with the type-species, *P. paula* Medeiros, in the chaetotaxy of the hind leg. Latter, COURI & CARVALHO (1993) questioned the inclusion of *P. differa* in *Parvomusca*, noting the following: "but the general aspect is not the same, *P. differa* was included in this genus tentatively, until other studies clarify the position of the Neotropical Coenosiinae genera." After the correct interpretation of the DC setae of *P. pilitibia* and comparison of the holotype of this species with that of *P. differa*, we herein propose the synonymy of these two species. Additionally, we have observed that the posterior femur of *P. pilitibia* has three preapical setae and not two, as described in the literature.

Pilispina xanthogaster (Albuquerque, 1958) **comb. nov.**

Figs 4-6

Levallonia xanthogaster Albuquerque, 1958: 101.

Levallonia medinai; Couri & Albuquerque 1979: 516.

Pilispina medinai; Couri & Pont 1999: 99 (key).

Type material examined. *Levallonia xanthogaster* male (MNRJ) labeled: "Petrópolis; Estado do Rio, Le Vallon, Alt. Mosella, Albuquerque, 1/II-8/III/[19]57"; "HOLOTIPO [red label], n° 5360" [Albuquerque handwriting]; "*Levallonia xanthogaster*" [Albuquerque handwriting].

Distribution. Brazil: Rio de Janeiro.

Remarks. The examination of the type material of *P. xanthogaster* enabled the reevaluation of the following characters mentioned in the original description: pollinosity on head

and mesonotum, observed under white light, grey (and not golden); apex of flagellum rounded (and not pointed); and vitta on mesonotum absent (and not three faint ones) (Fig. 4). Other morphological differences between *P. xanthogaster* and other related species are in the table I. Originally ALBUQUERQUE (1958) described the second and the third (posterior) frontal setae of the head as reclinate. This led to some discussions by subsequent authors (HENNIG 1965, COURI & PONT 2000) because in all other genera of Neotropical Coenosiini only the last pair (the third one) is reclinate and only non-Neotropical genera species of Coenosiini have the second and the third (posterior) frontal setae reclinated. After examining the holotype of *P. xanthogaster* we have concluded that the interpretation of ALBUQUERQUE (1958) was wrong and that only the last pair of frontal setae is reclinate as in all other genera of Neotropical Coenosiini and, contrasting with the state found in other, non-Neotropical Coenosiini genera, in which the second and third frontal setae are clearly reclinate, and the curvature of the second seta follows the curvature of the third (Fig. 4). Historical differences in taxonomic concepts associated with *P. xanthogaster* are in the table II.

Neodexiopsis flavipalpis Albuquerque, 1956

Figs 7-8

Neodexiopsis flavipalpis Albuquerque, 1956: 198.

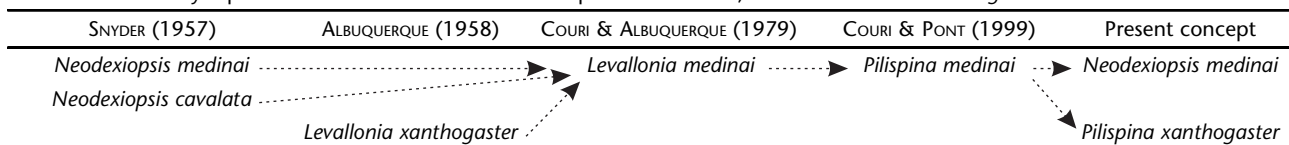
Neodexiopsis barbiventris Couri & Albuquerque, 1979: 502. **Syn. nov.**

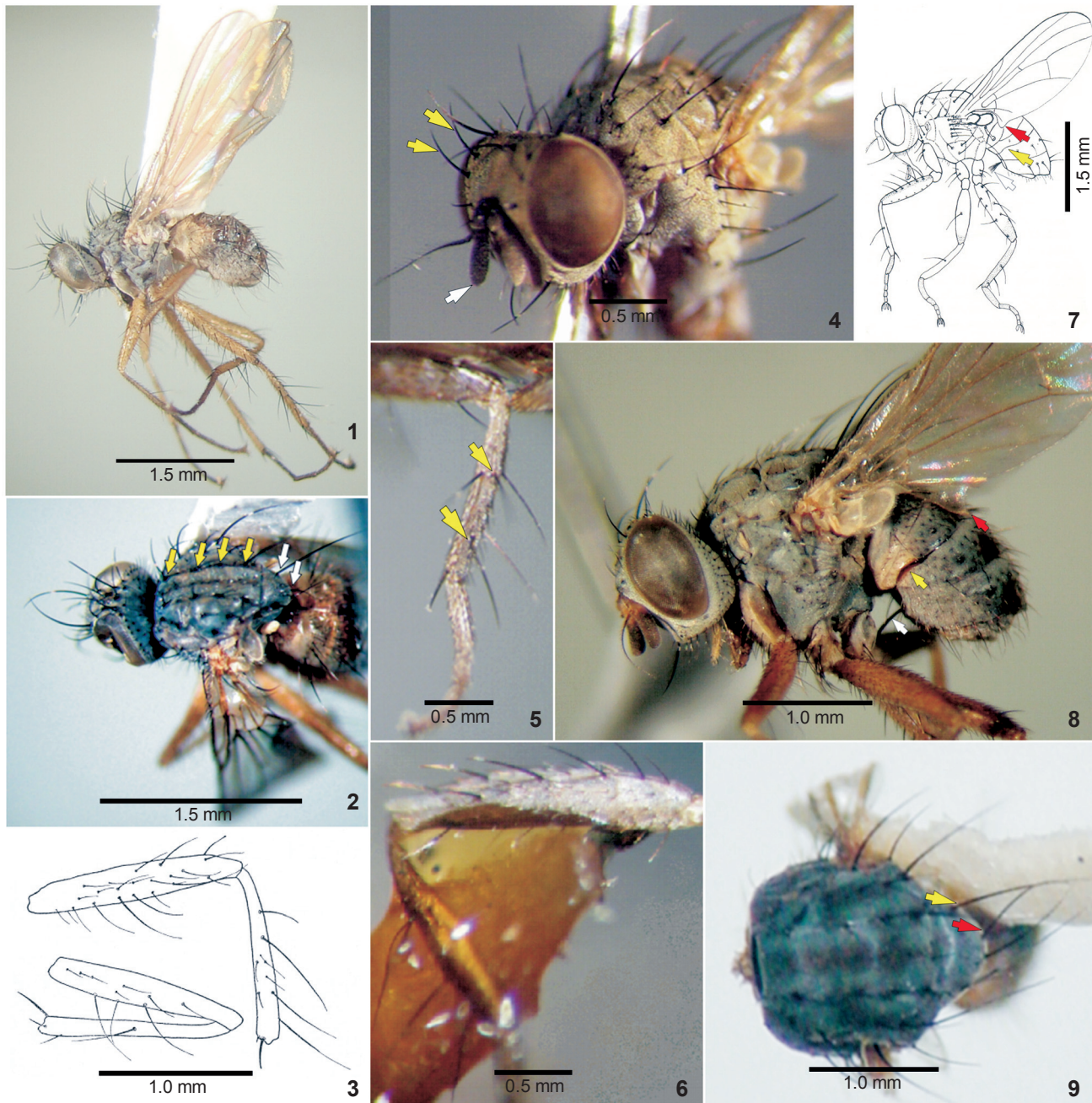
Type material examined. *Neodexiopsis flavipalpis*: holotype: male (MNRJ) labeled: "Itatiaia, L. [lake] Azul, E. do Rio [Rio de Janeiro State], Trav. [L. Travassos], [R.] Barth, [D.] Albuquerque, [A.R.R.] Barros col., 26/IX/[1]954; n° 4755 [Albuquerque handwriting]; "HOLOTIPO" [red label]; "*Neodexiopsis flavipalpis*"

Table I. Morphological differences between *N. medinai* and *P. xanthogaster* based on the examination of type material.

Character	<i>N. medinai</i>	<i>P. xanthogaster</i>
Apical scutellar setae related to the sub-basal ones	a little shorter	much shorter
Length of the gena related to the flagellum	0.5 times	0.75 times
Number of preapical setae on posterior femur	3	2
Stripes on mesonotum	present	Absent
Color of legs	yellow	Brown
Number of AD setae on middle third of posterior tibia	1	2
Number of PD setae on middle third of posterior tibia	1	2
Median seta on posterior tibia	present	Absent

Table II. Historical synopsis of the different taxonomic concepts of *N. medinai*, *N. cavallata* and *P. xanthogaster*.





Figures 1-9. (1-3) *Pilispina pilitibia*: (1) habitus; (2) DC setae (yellow arrows) and scutellar setae (white arrows); (3) mid (lower) and hind (upper) legs in anterior view redrawn from ALBUQUERQUE (1954). (4-6) *Pilispina xanthogaster*: (4) habitus, second and the third frontal pairs of setae (yellow arrows), pollinosity on head and mesonotum and apex of flagellum rounded (white arrows); (5) hind tibia in anterior view and AD setae on middle third of posterior tibia (yellow arrows), (see Tab. I); (6) colour of the hind femur in anterior view. (7-8) *Neodexiopsis flavipalpis*: (7) modification with a lobe of the male wing (red arrow), third and fourth tergites modified (yellow arrow) and presence of a group of strong, comb-like setae on sternite 4 (white arrow), redrawn from COURI & ALBUQUERQUE (1979); (8) same as figure 7. (9) *Neodexiopsis medinai*: apical scutellar setae (red arrow) a little shorter related to the sub-basal ones (yellow arrow).

[Albuquerque handwriting]. *Neodexiopsis barbiventris*: holotype: male (MNRJ) labeled: "Itatiaia, L. [lake] Azul, 19-21/VI/[19]55, [D.] Albuquerque, [A.R.R.] Barros, Pearson [Albuquerque handwriting]"; "HOLÓTIPO" [red label]; "*Neodexiopsis barbiventris* Couri & Albuquerque, 1979" [Couri handwriting].

Distribution. Brazil: Rio de Janeiro, Paraná.

Remarks. This is a typical species of the *ovata*-group of *Neodexiopsis* Malloch, 1920, proposed by SNYDER (1958). Males and females of this group are easily differentiated from congeners by modifications in the anal area of the wing. In males, this area is shaped like a lobe (Figs 7 and 8). In females, it is more angular than in other species of *Neodexiopsis* (SNYDER 1958: figs 1-13 and 16). Additionally, the following modifications in the male abdomen are unique for this group of species: the abdomen, in lateral view, is short and distinctly oval; tergites 3-5 are conspicuously narrow ventrally, but the fifth sternite is more elongated dorsally and a small lateral posterior portion of the third abdominal tergite, and the anterior portion of the fourth abdominal tergite are shiny and without pollinosity (Fig. 8) (SNYDER 1958). In his original description of *N. flavipalpis*, ALBUQUERQUE (1956) did not mention the modification in the anal area of the male wing. Subsequently, COURI & ALBUQUERQUE (1979) represented the modification of the male wing in a figure in their description of *N. barbiventris* (Fig. 7). ALBUQUERQUE (1956) also failed to note the presence of a group of strong, comb-like setae on the abdominal sternite 4 of *N. flavipalpis*. This autoapomorphic character was subsequently described for *N. barbiventris* by COURI & ALBUQUERQUE (1979), and the specific epithet, *barbiventris*, refers to the condition (Figs 7 and 8). After detecting the afore mentioned problems in the original description of *N. flavipalpis*, and based on the examination of the holotypes of *N. flavipalpis* and *N. barbiventris*, we herein propose the synonymy of these two species.

Neodexiopsis medinai Snyder, 1957 stat. rev.

Fig. 9

Neodexiopsis medinai Snyder, 1957: 223.

Levallonia medinai; Couri & Albuquerque 1979: 516.

Pilisipina medinai; Couri & Pont 1999: 99 (key).

Neodexiopsis cavalata Snyder, 1957: 224.

Type material examined. *Neodexiopsis medinai* male (USNM) labeled: "El Yunque, P.R., March 20-22, 1954 (J. Maldonado & S. Medina)". "Holotype ♂/*Neodexiopsis medinai* Snyder" (handwriting red label). *Neodexiopsis cavalata* male (USNM) labeled: "El Yunque, P.R., March 20-22, 1954 (J. Maldonado & S. Medina)". "Holotype ♂/*Neodexiopsis cavalata* Snyder" (handwriting red label).

Distribution: Puerto Rico.

Remarks. COURI & ALBUQUERQUE (1979) proposed the synonymy of *Levallonia xanthogaster* Albuquerque, 1958, *Neodexiopsis medinai* Snyder, 1957 and *Neodexiopsis cavalata* Snyder, 1957. Based on one synapomorphy, a reduction in the length of the apical scutellar setae, COURI & PONT (1999, 2000)

synonymized some phylogenetically related Coenosiini genera under *Pilisipina* (*Levallonia* Albuquerque, 1958, *Noelia* Albuquerque, 1957, *Parvomusca*, and *Cholomyioides* Albuquerque, 1954). The examination of the type material of *L. xanthogaster* and *N. medinai* revealed that they are different species (Figs 4-6 and 9), as shown in table I. Consequently, the specific status of *N. medinai* Snyder is herein revalidated (different taxonomic positions shown in table II). *Neodexiopsis cavalata* is maintained as a synonym of *N. medinai*, and *L. xanthogaster* received a new combination as indicated above.

Coenosia latitibia Albuquerque, 1957

Coenosia latitibia Albuquerque, 1957: 362.

Type material examined. Neotype: male (DZUP) labeled: "BRASIL PR [Paraná] Antonina/Reserva Biol. Sapitundava/21.XII.1987/Lev Ent. PROFAUPAR"; "*Plumispina* sp. nov. 2/J.I.Rodríguez-Fernández/det. 2003"; "NEÓTIPO" [red label]. Additional material examined. "BRASIL PR Antonina/Reserva Biol. Sapitundava/21. IX.1987 (1 male, DZUP), 23.XI.1987 (1 male, DZUP), 07.XII.1987 (1 male, DZUP), 26.X.1987 (1 male, DZUP), 02.XI.1987 (2 males, DZUP), 12.X.1987 (1 male, DZUP), 14.XII.1987 (1 male, DZUP), 28.XII.1987 (1 male, DZUP), 07.IX.1987 (1 male, DZUP), 16.XI.1987 (1 male, MNRJ)/Lev Ent. PROFAUPAR"; "*Plumispina* sp. nov. 2/J.I.Rodríguez-Fernández/det. 2003".

Distribution. Brazil: Rio de Janeiro, Paraná.

Remarks. In the description of *C. latitibia*, ALBUQUERQUE (1957) wrote the possibility that this species belong to another genus. Years later, COURI & CARVALHO (2002) placed *C. latitibia* on a list of species that are not included in any key to the identification of species of *Coenosia* and noted that the Neotropical *Coenosia* needs to be revised. When the identification is based in the last key to the Neotropical genera of Muscidae (CARVALHO 2002), *C. latitibia* may be erroneously assigned as a species of *Neodexiopsis*, *Plumispina*, *Pilisipina* (see above) or *Cordiluroides* By the combination of autapomorphic characters. The International Code of Zoological Nomenclature (ICZN 1999: articles 75.3.1 and 75.3.4) states that a neotype may be designed if the author includes (1) "a statement that it is designated with the express purpose of clarifying the taxonomic status or the type locality of a nominal taxon" and (2) the "reasons for believing the name-bearing type specimen(s) (i.e. holotype, or lectotype, or all syntypes, or prior neotype) to be lost or destroyed, and the steps that had been taken to trace it or them". After examining all type material of the Coenosiini described by Dalcy de Oliveira Albuquerque, deposited at MNRJ, we have concluded that the type-material of *C. latitibia* is lost, as indicated by LOPES *et al.* (1997). Thus, a neotype is herein designated.

ACKNOWLEDGEMENTS

JIRF thanks Valéria C. Maia (Museu Nacional, Rio de Janeiro) and Nancy Orellana (Instituto Oswaldo Cruz, Rio de Janeiro) for all support during the scientific visits to their insti-

tutions. JIRF also thanks Ana Paula Marques-Costa (Universidade Federal do Paraná – UFPR) for taking photographs of the type material deposited at USNM; to the people of the Laboratório de Sistemática e Ecologia de Coleoptera (UFPR) for their assistance in taking photographs; to Marcio Pie (UFPR) for the English revision; to Kirstern L.F. Haseyama (UFPR), James O'Hara (Agriculture and Agri-Food Canada), Gabriel Mejdalani (Museu Nacional, Rio de Janeiro), Ana DalMolin (Texas A&M University), and two anonymous referees for reviewing the manuscript. CJBC and MSC are fellows of CNPq (processes 302454/2005-5 and 301301/2007-7, respectively). JIRF thanks the Program of Qualification in Taxonomy (PROTAX-CNPq) for providing a Post-doctoral fellowship.

LITERATURE CITED

- ALBUQUERQUE, D. DE O. 1954. Fauna do Distrito Federal. XV: Descrição de dois gêneros e quatro espécies novas de Coenosiinae (Diptera, Muscidae). *Revista Brasileira de Biologia* 14: 177-186.
- ALBUQUERQUE, D. DE O. 1956. Duas espécies novas de “*Neodexiopsis*” Mall., 1920 (Diptera, Muscidae). *Revista Brasileira de Biologia* 16: 195-200.
- ALBUQUERQUE, D. DE O. 1957. Um gênero e duas novas espécies de “Coenosiinae” do Brasil (Diptera, Muscidae). *Revista Brasileira de Biologia* 17: 359-365.
- ALBUQUERQUE, D. DE O. 1958. Descrição de um gênero e uma espécie nova de “Coenosiinae” (Diptera, Muscidae). *Revista Brasileira de Biologia* 18: 101-104.
- CARVALHO, C.J.B. DE. 1989a. Revisão das espécies e posição sistemática de *Palpibracus* Rondani (Diptera, Muscidae). *Revista Brasileira de Zoologia* 6: 325-376.
- CARVALHO, C.J.B. DE. 1989b. Classificação de Muscidae (Diptera): uma proposta através da análise cladística. *Revista Brasileira de Zoologia* 6: 627-648.
- CARVALHO, C.J.B. DE. 2002. **Muscidae (Diptera) of the Neotropical Region: taxonomy**. Curitiba, Editora Universidade Federal do Paraná, 287p.
- CARVALHO, C.J.B. DE; M.S. COURI; A.C. PONT; D.M. PAMPLONA & S. M. LOPES. 2005. A Catalogue of the Muscidae (Diptera) of the Neotropical Region. *Zootaxa* 860: 1-282.
- COSTACURTA, N. DO C.; C.J.B. DE CARVALHO & M.S. COURI. 2003a. A new species of *Plumispina* Albuquerque (Diptera: Muscidae) from Southern Brazil. *Proceedings of the Entomological Society of Washington* 105: 127-131.
- COSTACURTA, N. C.; R.C. MARINONI & C.J.B. DE CARVALHO. 2003b. Fauna de Muscidae (Diptera) em três localidades do Estado de Paraná, capturada com armadilha Malaise. *Revista Brasileira de Entomologia* 47: 389-397.
- COURI, M.S. 2000. A revision of the genus *Pilisipina* Albuquerque (Diptera, Muscidae, Coenosiinae, Coenosiini). *Boletim do Museu Nacional, Nova Série, Zoologia*, 437: 1-8.
- COURI, M.S. & D. DE O. ALBUQUERQUE. 1979. Estudos sobre *Neodexiopsis* Malloch, 1920 com notas nomenclaturais sobre Coenosiinae (Diptera, Muscidae). *Revista Brasileira de Biologia* 39: 499-517.
- COURI, M.S. & C.J.B. DE CARVALHO. 1993. *Parvomusca* Medeiros, 1980: redescricao do gênero e descricao de uma espécie nova (Diptera, Muscidae). *Revista Brasileira de Entomologia* 37: 731-735.
- COURI, M.S. & C.J.B. DE CARVALHO. 2002. Part II, Apical Muscidae, p. 133-259. *In*: C.J.B. DE CARVALHO (Ed.). **Muscidae (Diptera) of the Neotropical Region: taxonomy**. Curitiba, Editora Universidade Federal do Paraná, 287p.
- COURI, M.S. & A.C. PONT. 1999. A key to the world genera of the Coenosiini (Diptera, Muscidae, Coenosiinae). *Studia Dipterologica* 6: 93-102.
- COURI, M.S. & A.C. PONT. 2000. Cladistic analysis of Coenosiini (Diptera: Muscidae: Coenosiinae). *Systematic Entomology* 25: 373-392.
- HENNIG, W. 1965. Vorarbeiten zu einem phylogenetischen System der Muscidae (Diptera, Cyclorhapha). *Stuttgarter Beiträge zur Naturkunde* 141: 1-100.
- HUCKETT, H.C. & J.R. VOCKEROTH. 1987. Muscidae, p. 115-1131. *In*: J.F. McALPINE; B.V. PETERSON; G.E. SHEWELL; H.J. TESKEY; J.R. VOCKEROTH & D.M. WOOD (Eds). **Manual of Nearctic Diptera**. Ottawa, Agriculture Canada, Research Branch, Monograph 28, vol. II, VI+675-1332.
- ICZN. 1999. **International Code of Zoological Nomenclature**. London, The International Trust for Zoological Nomenclature, 4th ed., 306p.
- LOPES, S.M.; M.S. COURI; D.M. PAMPLONA & C.J.B. DE CARVALHO. 1997. Notes on the Neotropical types described by Albuquerque. **Publicações avulsas do Nacional do Rio de Janeiro** 69: 1-33.
- McALPINE, J.F. 1981. Morphology and terminology: adults, p. 9-63. *In*: J.F. McALPINE; B.V. PETERSON; G.E. SHEWELL; H.J. TESKEY; J.R. VOCKEROTH & D.M. WOOD (Eds). **Manual of Nearctic Diptera**. Ottawa, Research Branch, Agriculture Canada, Monograph 27, vol. 1, VI+674p.
- RODRÍGUEZ-FERNÁNDEZ, J.I.; C.J.B. DE CARVALHO & M.O. MOURA. 2006. Estrutura de assembléias de Muscidae (Diptera) no Paraná: uma análise por modelos nulos. *Revista Brasileira de Entomologia* 50: 93-100.
- SNYDER, F.M. 1957. Puerto Rican *Neodexiopsis* (Diptera: Muscidae: Coenosiinae). *Journal of Agriculture of the University of Puerto Rico* 41: 207-229.
- SNYDER, F.M. 1958. A review of New World *Neodexiopsis* (Diptera, Muscidae). The ovata group. *American Museum Novitates* 1892: 1-27.

Submitted: 28.I.2009; Accepted: 16.I.2010.

Editorial responsibility: Gabriel L.F. Mejdalani