



<http://dx.doi.org/10.11646/zootaxa.3904.3.1>

<http://zoobank.org/urn:lsid:zoobank.org:pub:FC00E6FA-7442-4F9C-84F4-543D93311FE5>

Taxonomic revision of the Neotropical genus *Pityocera* Giglio-Tos, 1896 (Diptera: Tabanidae: Scionini)

TIAGO KÜTTER KROLOW^{1,6}, AUGUSTO LOUREIRO HENRIQUES², INOCÊNCIO DE SOUSA GORAYEB³,
FRANCISCO LIMEIRA-DE-OLIVEIRA⁴ & JAIME BUESTÁN⁵

¹Coordenação de Ciências Biológicas, Universidade Federal do Tocantins, Cx. Postal 136, 77500-000, Porto Nacional, TO, Brazil.
E-mail: tkkrolow@gmail.com

²Coordenação de Biodiversidade, Instituto Nacional de Pesquisas da Amazônia, Cx. Postal 2223, 69080-971, Manaus, AM, Brazil.
E-mail: loureiro@inpa.gov.br

³Coordenação de Zoologia, Entomologia, Museu Paraense Emílio Goeldi, Av. Perimetral 1901, Bairro Terra firme, Cx. Postal 399,
66017-970, Belém, Pará, Brazil. E-mail: gorayeb@museu-goeldi.br

⁴Laboratório de Estudos dos Invertebrados, Universidade Estadual do Maranhão, 65604–380, Caxias, Maranhão, Brazil.
E-mail: f.limeiradeoliveira@pq.cnpq.br

⁵Facultad de Ciencias Naturales, Universidad de Guayaquil, Av. Raúl Gómez Lince s/n y Av. Juan Tanca Marengo, Guayaquil, Ecuador.
E-mail: jaime_buestan@hotmail.com

⁶Corresponding author

Abstract

The genus *Pityocera* Giglio-Tos is revised based on examination of external morphology and genitalia of type material and specimens from Brazilian and foreign institutions. Five currently valid species in three subgenera are recognized: *P. (Elaphella) cervus* (Wiedemann, 1828); *P. (Pityocera) festai* Giglio-Tos, 1896; *P. (Pseudelaphella) nana* (Walker, 1850); *P. (Pseudelaphella) nigribasis* Fairchild, 1964; *P. (Pseudelaphella) patellicornis* (Kröber, 1930). Five new species are described: *P. (Pseudelaphella) barrosi* Gorayeb & Krolow **sp. nov.** (Brazil: Mato Grosso do Sul); *P. (Pseudelaphella) gorayebi* Limeira-de-Oliveira & Krolow **sp. nov.** (Brazil: Maranhão, Tocantins and Bahia); *P. (Pseudelaphella) pernaquila* Gorayeb & Krolow **sp. nov.** (Brazil: Pará and Rondônia); *P. (Pseudelaphella) rhinolissa* Krolow & Henriques **sp. nov.** (Brazil: Pará, Maranhão, Tocantins, Rondônia, Mato Grosso, Goiás and Mato Grosso do Sul; Bolivia: Santa Cruz); *P. (Pseudelaphella) ecuadorensis* Buestán & Krolow **sp. nov.** (Ecuador: Manabí, Guayas, Santa Elena and Loja). We provide diagnosis, descriptions, redescriptions, distribution records, illustrations and discussion for all species, as well as a key for identification of species.

Key words: *Elaphella*, new species, Pangoniinae, *Pseudelaphella*

Introduction

Pityocera was proposed by Giglio-Tos (1896) as monotypic for *Pityocera festai* Giglio-Tos, 1896, a species with a conspicuous bipectinate antenna. The subgenus *Elaphella* was published by Bezzi (1913) as a *nomen novum* for *Dicranomyia* Hunter (1901), the Type species of *Pangonia cervus* Wiedemann, 1828. In the same year Enderlein (1913) proposed the genus *Allodicerania* as *nomen novum* for *Dicrania* Macquart (1834), which in turn had already been replaced by *Dicranomyia* Hunter because it was preoccupied by Lepeletier & Serville (1828). Hine (1920) proposed the *nomen novum* *Stichocera* for *Dicrania* Macquart and *Dicranomyia* Hunter, which had both been used to name the same genus of the Type species *Pangonia cervus* Wiedemann, but was preoccupied. In the following year, Bezzi (1921) determined that *Elaphella* Bezzi was the name that should be kept since it was published thirteen days before *Allodicerania* Enderlein and seven years before *Stichocera* Hine. In 1850, Walker described *Pangonia comprehensa*, which was synonymized by Ricardo (1904) under *Elaphella cervus* (Wiedemann).

Although *Pityocera* shares many morphological similarities with *Fidena* Walker, the peculiar antenna with the modified flagellomeres and the closed r_5 cell with the elongate petiole of *P. festai* and *E. cervus* allowed an easy

ACKNOWLEDGMENTS

We thank all curators of institutions cited in origin of the material for their collaboration, in particular to Erica McAlister (BMNH) for provide photos of type-material. To Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) for the fellowship to first author (process number 156156/2010-5) and financial support for the second author (Programa Ciências Sem Fronteiras, process number 246878/2012-6). To Dr. Paulo Lucinda and all colleagues of Laboratório de Ictiologia Sistemática from Universidade Federal do Tocantins for the support on images acquisition. The biologist Wanieulli Pascoal to help in some photos. To Gabriel Brito for help with specimens of Ecuador. Thanks to anonymous referees for these helpful comments.

References

- Aldrich, J.M. (1905) A catalog of North American Diptera. *Smithsonian Institution Miscellaneous Collections*, 46 (2), 1–680. [Series: Publication (Smithsonian Institution); 1444]
- Barretto, M.P. (1957) Tabânidas da Guiana Inglêsa, com as descrições de seis novas espécies da fauna guianoamazônica (Diptera, Tabanidae). *Revista Brasileira de Malariologia e Doenças Tropicais*, 8 (1), 75–89. [“1956”]
- Benchimol, J.L. & Sá, M.R. (2005) *Adolpho Lutz. Obra completa. 2 (2). Entomologia – Tabanideos. Entomology – Tabanidae*. Editora FIOCRUZ, Rio de Janeiro, 699 pp.
- Bequaert, J. (1930) Medical and economic entomology. In: Strong, R.P. (Ed.), *The African Republic of Liberia and the Belgian Congo based on the observations made and material collected during the Harvard African Expedition 1926–1927. Vol.2. Contributions from the Harvard Institute for tropical Biology and Medicine*, 5, pp. 797–1001.
- Bequaert, J. & Renjifo-Salcedo, S. (1946) The Tabanidae of Colombia (Diptera). *Psyche*, 53 (3–4), 52–86.
- Bezzi, M. (1913) Einige alte und neue Namen bei den Dipteren. *Societas Entomologica*, 28 (13), 56.
- Bezzi, M. (1921) The correct name for the Dipteran genus *Dicrania*. *Annals of the Entomological Society of America*, 13, 408.
- Blanchard, E. (1845) *Histoire des insectes, traitant de leursmoeurs et leurs métamorphoses en général, et comprenant une nouvelle classification fondée sur leurs rapports naturels. Vol. 2*. Didot, Paris, 524 pp.
<http://dx.doi.org/10.5962/bhl.title.35820>
- Buestán J.A., Navarrete, R.A. & Mejía, M.T. (2007) Lista actualizada de tábanos (Diptera: Tabanidae) del Ecuador. *Revista Ecuatoriana de Higiene y Medicina Tropical*, 44 (1), 23–78.
- Burger, J.F. (2009) Tabanidae (horse flies, deer flies, tabanos). In: Brown, B.V. et al. (Eds.), *Manual of Central American Diptera. Vol. 1*. NRC Research Press, Ottawa, Ontario, Canada, pp. 495–507.
- Campos, F. (1953) Las moscas (Brachycera) del Ecuador. *Revista Ecuatoriana de Higiene y Medicina Tropical*, 8–9 (1–4), 99–106. (“1952”)
- Cardenas, R.E., Buestan, J.A. & Dangles, O. (2009) Diversity and distribution models of horse flies (Diptera: Tabanidae) from Ecuador. *Annales de la Société Entomologique de France (Nouvelle Série)*, 45 (4), 511–528.
<http://dx.doi.org/10.1080/00379271.2009.10697633>
- Chainey, J.E. (1990) Tabanidae. In: Townsend, B.C., Chainey, J.E., Crosskey, R.W., Pont, A.C., Lane, R.P., Boorman, J.P.T. & Lowry, C.A. (Eds.), *A Catalogue of the types of bloodsucking flies in the British Museum (Natural History). Occasional Papers on Systematic Entomology*, 7, 1–371. [The Natural History Museum, London]
- Chainey, J.E., Hall, M.J.R., Amayo, J.L. & Bettella, P. (1994) A preliminary checklist and key to the genera and subgenera of Tabanidae (Diptera) of Bolivia with particular reference to Santa Cruz Department. *Memórias do Instituto Oswaldo Cruz*, 89, 321–345.
<http://dx.doi.org/10.1590/s0074-02761994000300007>
- Coscarón, S. & Papavero, N. (2009a) Manual of Neotropical Diptera. Tabanidae. *Neotropical Diptera*, 6, 1–137.
- Coscarón, S. & Papavero, N. (2009b) Catalogue of Neotropical Diptera. Tabanidae. *Neotropical Diptera*, 16, 1–199.
- Cumming, J.M. (1992) Lactic acid as an agent for macerating Diptera specimens. *Fly Times*, 8, 7.
- Cumming, J.M. & Wood, D.M. (2009) Adult morphology and terminology. In: Brown, B.V. et al. (Eds.), *Manual of Central American Diptera. Vol. 1*. NRC Research Press, Ottawa, Ontario, Canada, pp. 9–50.
- Enderlein, G. (1913) Dipterologische Studien III. Über *Lagarimus* nov. gen., eine isoliert stehende Fliegen-Gattung. *Zoologischer Anzeiger*, 42 (6), 250–253.
- Enderlein, G. (1922) Ein neues Tabanidensystem. *Mitteilungen aus dem Zoologischen Museum in Berlin*, 10 (2), 333–351.
- Enderlein, G. (1925) Studien an blutsaugenden Insekten. I. Grundlagen eines neuen Systems der Tabaniden. *Mitteilungen aus dem Zoologischen Museum in Berlin*, 11 (2), 255–409.
- Fairchild, G.B. (1942) Notes on Tabanidae (Dipt.) from Panama. VIII. The genera *Pityocera*, *Scione* and *Esenbeckia*. *Annals of the Entomological Society of America*, 35 (2), 183–199.
- Fairchild, G.B. (1956) Synonymical notes on Neotropical flies of the family Tabanidae (Diptera). *Smithsonian Miscellaneous Collections*, 131 (3), 1–38.
- Fairchild, G.B. (1961a) The Adolfo Lutz collection of Tabanidae (Diptera). I. The described genera and species, condition of

- the collection, and selection of lectotypes. *Memórias do Instituto Oswaldo Cruz*, 59 (2), 185–249.
<http://dx.doi.org/10.1590/s0074-02761961000200006>
- Fairchild, G.B. (1961b) Insecta Amapaensia – Diptera: Tabanidae. *Studia Entomologica*, 4 (1–4), 433–448.
- Fairchild, G.B. (1964) Notes on Neotropical Tabanidae (Diptera). IV. Further new species and new records for Panama. *Journal of Medical Entomology*, 1 (2), 169–185.
- Fairchild, G.B. (1967a) Notes on Neotropical Tabanidae (Diptera), VII. The species described by C.R.W. Wiedemann. *Pacific Insects*, 9 (1), 73–104.
- Fairchild, G.B. (1967b) Notes on Neotropical Tabanidae (Diptera). IX. The species described by Otto Kröber. *Studia Entomologica*, 9 (1–4), 329–379.
- Fairchild, G.B. (1969) Notes on Neotropical Tabanidae. —XII. Classification and distribution, with keys to genera and subgenera. *Arquivos de Zoologia*, 17 (4), 199–255.
<http://dx.doi.org/10.11606/issn.2176-7793.v17i4p199-255>
- Fairchild, G.B. (1971) Family Tabanidae, In: Papavero, N., (Ed.), *A Catalogue of the Diptera of the Americas south of the United States*. Museu de Zoologia, Universidade de São Paulo, São Paulo, 28, 1–163.
- Fairchild, G.B. (1985) Notes on Neotropical Tabanidae (Diptera). XVIII. The genus *Leucotabanus* Lutz. *Myia*, 3, 299–331.
- Fairchild, G.B. (1986) The Tabanidae of Panama. *Contributions of the American Entomological Institute*, 22 (3), 1–139.
- Fairchild, G.B., Philip, C.B., Mackerras, I.M. & Oldroyd, H. (1956) Proposed use of the Plenary Powers to validate the generic names “*Elaphella*” Bezzi, 1913 (Class Insecta, Order Diptera) and “*Lophiotherium*” Gervais, 1850 (Class Mammalia). *Bulletin of Zoological Nomenclature*, 12, 195–199.
- Fairchild, G.B. & León, L.A. (1986) Lista provisional de Tabanidae (Diptera) del Ecuador. *Publicaciones del Museo Ecuatoriano de Ciencias Naturales*, 5, 97–122.
- Fairchild, G.B. & Burger, J.F. (1994) A catalog of the Tabanidae (Diptera) of the Americas south of the United States. *Memoirs of the American Entomological Institute*, 55, 1–249.
- Giglio-Tos, E. (1896) Un nuovo genere di Tabanidi raccolto nel Darien dal Dott. E. Festa. *Bollettino dei Musei di Zoologia ed Anatomia Comparata della Reale Università di Torino*, 11 (224), 1–5.
- Giglio-Tos, E. (1897) Il maschio della *Dicrania cervus* Wied. *Bollettino dei Musei di Zoologia ed Anatomia Comparata della Reale Università di Torino*, 12 (276), 1–3.
- Henriques, A.L. (1997) A coleção de Tabanidae (Insecta: Diptera) do Instituto Nacional de Pesquisas da Amazônia (INPA), Manaus, Amazonas, Brasil. *Boletim do Museu Paraense Emílio Goeldi, série Zoologia*, 11 (1), 57–99. [1995]
- Henriques, A.L. & Gorayeb, I.S. (1993) A coleção de Tabanidae (Insecta: Diptera) do Museu Paraense Emílio Goeldi (MPEG), Belém, Pará, Brasil. *Goeldiana Zoologia*, 20, 1–23.
- Henriques A.L., Krolow, T.K. & Rafael, J.A. (2012) Corrections and additions to Catalogue of Neotropical Diptera (Tabanidae) of Coscarón & Papavero (2009). *Revista Brasileira de Entomologia*, 56, 277–280.
<http://dx.doi.org/10.1590/s0085-56262012005000042>
- Hine, J.S. (1920) Descriptions of horseflies from Middle America. —I. *Ohio Journal of Science*, 20 (6), 185–192.
- Hunter, W.D. (1901) A catalogue of the Diptera of South America, Pt. 2. *Transactions of the American Entomological Society*, 27, 136–147.
- Kertész, K. (1900) Catalogus tabanidorum orbis terrarum universi. *Természetrájsi Füzetek*, 23, 1–69.
- Kertész, K. (1908) *Catalogus dipterorum hucusque descriptorum*. Lipsiae & Budapestini [= Leipzig and Budapest], 367 pp.
<http://dx.doi.org/10.5962/bhl.title.5141>
- Kröber, O. (1929) Ergebnisse einer zoologischen Sammelreise nach Brasilien, insbesondere das Amazonasgebiet, ausgeführt von Dr. H. Zerny. I. Teil, Diptera: Tabanidae. *Annalen des Naturhistorischen Museums in Wien*, 43, 244–255.
- Kröber, O. (1930) Die Pityocerini der neotropische Region. *Zoologischer Anzeiger*, 88, 305–312.
- Kröber, O. (1934) Catalogo dos Tabanidae da America do Sul e Central, incluindo o Mexico e as Antilhas. *Revista de Entomologia*, 4 (2–3), 222–276, 291–333.
- Lepelletier, A.L.M. & Serville, J.G.A. (1828) Entomologie, In: *Encyclopédie Méthodique, ou par ordre de matière, par un société de gens de lettres. Entomologie*. Veuve Agasse, Paris, 10 (2), 345–832.
- Lessard, B.D., Cameron, S.L., Bayless, K.M., Wiegmann, B.M. & Yeates, D.K. (2013) The evolution and biogeography of the austral horse fly tribe Scionini (Diptera: Tabanidae: Pangoniinae) inferred from multiple mitochondrial and nuclear genes. *Molecular Phylogenetics and Evolution*, 68, 516–540.
<http://dx.doi.org/10.1016/j.ympev.2013.04.030>
- Lessard, B.D. (2014) Revision of the austral horse fly tribe Scionini (Diptera: Tabanidae). *Austral Entomology*, 53, 203–239.
<http://dx.doi.org/10.1111/aen.12076>
- Lutz, A. (1909) Tabaniden Brasiliens und einiger Nachbarstaaten. *Zoologische Jahrbücher*, 4 (Supplement 10), 619–692.
- Lutz, A. (1911) Novas contribuições para o conhecimento das pangoninas e chrysopinas do Brasil. Neue Beiträge zur Kenntnis der Pangoninen und Chrysopinen Brasiliens. *Memórias do Instituto Oswaldo Cruz*, 3 (1), 65–85.
- Mackerras, I.M. (1954) The classification and distribution of Tabanidae. I. General review. *Australian Journal of Zoology*, 2 (3), 431–454.
- Mackerras, I.M. (1955) The classification and distribution of Tabanidae. II. History: morphology: classification: subfamily Pangoniinae. *Australian Journal of Zoology*, 3 (3), 439–511.
- Macquart, J. (1834) *Histoire naturelle des insectes. Diptères. Tome I*. Roret, Paris, 578 pp.

- <http://dx.doi.org/10.5962/bhl.title.14274>
- Macquart, J. (1837) Notice sur le genre Pangoie. *Annales de la Société entomologique de France*, 5, 429–458.
- Macquart, J. (1838) Diptères exotiques nouveaux ou peu connus. *Mémoires de la Société Royale des Sciences, de l'Agriculture et des Arts, de Lille*, 2, 9–225.
<http://dx.doi.org/10.5962/bhl.title.51482>
- Moucha, J. (1976) Horseflies (Diptera: Tabanidae) of the World. Synoptic Catalogue. *Acta Entomologica Musei Nationalis Pragae Supplementum*, 7, 1–319.
- Papavero, N. (1973) *Essays on the history of Neotropical Dipterology, with special reference to collectors (1750–1905)*. Vol. 2. Museu de Zoologia, Universidade de São Paulo, São Paulo, iii + 230 pp. [pp. 217–446]
- Philip, C.B. (1947) A catalog of the blood-sucking fly family Tabanidae (horseflies and deerflies) of the Nearctic Region North of Mexico. *The American Midland Naturalist*, 37, 257–324.
<http://dx.doi.org/10.2307/2421658>
- Ricardo, G. (1900) Notes on the Pangoineae of the family Tabanidae in the British Museum Collection. *Annals and Magazine of Natural History*, Series 7, 5, 97–121, 167–182.
<http://dx.doi.org/10.1080/00222930008678264>
- Ricardo, G. (1904) Notes on the smaller genera of the Tabaninae of the family Tabanidae in the British Museum collection. *Annals and magazine of natural history*, Series 7, 14, 349–373.
<http://dx.doi.org/10.1080/03745480409443020>
- Sinclair, B.J., Cumming, J.M. & Wood, D.M. (1993) Homology and phylogenetic implications of male genitalia in Diptera – lower Brachycera. *Entomologica Scandinavica*, 24, 407–432.
<http://dx.doi.org/10.1163/187631293x00190>
- Surcouf, J.M.R. (1921) Fam. Tabanidae. *Genera Insectorum*, 175, 1–182.
- Surcouf, J.M.R. & González-Rincones, R. (1912) *Essai sur les diptères vulnérants de Venezuela. Matériaux pour servir à l'étude des diptères piqueurs et suceurs de sang de l'Amérique intertropicale. Deuxième partie. Diptères brachycères vulnérants*. A. Maloine, Paris, 240 pp.
<http://dx.doi.org/10.5962/bhl.title.11832>
- Stephens, J.F. (1829) *A Systematic catalogue of British insects: being an attempt to arrange all the hitherto indigenous insects*. Published for the author, by Baldwin and Cradock, London, 388 pp.
<http://dx.doi.org/10.5962/bhl.title.8987>
- Walker, F. (1850) *Insecta Saundersiana, or characters of undescribed insects in the collection of W. W. Saunders. Diptera. Vol. 1*. Van Voorst, London, 76 pp.
<http://dx.doi.org/10.5962/bhl.title.66010>
- Walker, F. (1854) *List of the specimens of dipterous insects in the collection of the British Museum, 5 (Supplement I)*. Printed by order of the Trustees, London, 330 pp. [London]
<http://dx.doi.org/10.5962/bhl.title.20821>
- Wiedemann, C.R.W. (1828) *Aussereuropäische zweiflügelige Insekten. Vol. 1*. in der Schulzischen Buchhandlung, Hamm, xxxii + 608 pp.
<http://dx.doi.org/10.5962/bhl.title.14603>
- Wilkerson, R.C. (1979) Horse flies (Dipt. Taban.) of the Colombian Departments of Choco, Valle and Cauca. *Cespedesia*, 8 (31–35), 87–433.
<http://dx.doi.org/10.5962/bhl.title.45984>