

Description of a Neotropical New Species of *Oxysarcodexia* Townsend, 1917 (Diptera: Sarcophagidae)

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EntomoBrasilis 8 (3): 222-225 (2015)

Registered in ZooBank: urn:lsid:zoobank.org:pub:CDE87122-53B3-4A09-B228-A4DCD87BDE3C

Nomenclatural Acts: urn:lsid:zoobank.org:act:0851654B-8EFB-4471-9E0A-EE00AFADB060

Abstract. A new species of *Oxysarcodexia* Townsend, 1917 (Diptera: Sarcophagidae) from Brazil is described based on male specimens. This is a mainly Neotropical genus of flesh flies, with few species also present in Nearctic, Australasian and Oceanian Regions. Its species have been associated with decomposing organic matter (feces of mammals or birds – dung-breeders species) and have potential forensic importance when associated with carcasses (attracted fauna and, in some cases, true carrion-breeding species). Digital photographs of the habitus in lateral view and of the terminalia in lateral, posterior and ventral views are provided. *Oxysarcodexia mineirensis* sp. n. is close-related to “*Xarcophaga* species-group” (i.e. with a postero-distal phallic enlargement) and is similar to *Oxysarcodexia favorabilis* (Lopes, 1935) due to the conformation of the terminalia, especially the phallus flower-like shaped.

Keywords: Brazil, Flesh fly; Morphology; *Oxysarcodexia mineirensis* sp. n.; Taxonomy

Descrição de Uma Nova Espécie Neotropical de *Oxysarcodexia* Townsend, 1917 (Diptera: Sarcophagidae)

Resumo. Uma nova espécie de *Oxysarcodexia* Townsend, 1917 (Diptera: Sarcophagidae) é descrita com base em espécimes machos. As espécies deste gênero de sarcófagídeos apresentam distribuição majoritariamente Neotropical, com algumas espécies ocorrendo também nas regiões Neártica, Australásia e Oceânica. As espécies deste gênero podem ser encontradas associadas à matéria orgânica em decomposição (fezes de mamíferos ou aves – espécies coprófilas) e podem apresentar importância forense quando associadas a carcaças (fauna atraída e, em alguns casos, espécies que se criam). Fotografias digitais do hábito em vista lateral e da terminália em vistas lateral, posterior e ventral são apresentadas. *Oxysarcodexia mineirensis* sp. n. pertence ao “grupo *Xarcophaga*” (i.e. possui o falo alargado postero-distalmente) e contém similaridades com *Oxysarcodexia favorabilis* (Lopes, 1935) devido à conformação da terminália, especialmente o formato do falo, semelhante a uma flor.

Palavras-chave: Brasil, Morfologia; *Oxysarcodexia mineirensis* sp. n.; Sarcófagídeo; Taxonomia.

Oxysarcodexia Townsend, 1917 (Diptera: Sarcophagidae) comprises 83 species (PAPE 1996; SOARES & MELLO-PATIU 2010) with mainly Neotropical distribution, but few species also expanding their occurrence to the Nearctic, Australasian and Oceanian regions (LOPES 1973; LOPES & TIBANA 1987; PAPE 1996). This genus is considered monophyletic based on the autapomorphic character: presence of a lateral triangular extension of the phallic tube (“tooth-like”) above the vesica (GIROUX *et al.* 2010). Species within *Oxysarcodexia* genus are recognized by the presence of postalar wall setose; mid femur of the males with ctenidium of flattened spines; darkish tegula and lighter basicosta (commonly light brown); male sternite 5 (ST5) deeply cleft with almost parallel branches (few exceptions of V-shaped branches); phallus unsegmented, with three conducting styli and a “tooth-like” extension of the phallic tube above the vesica; and vesica elongated, conspicuous, and always well developed (LOPES 1946; DODGE 1966; PAPE 1996; CARVALHO & MELLO-PATIU 2008; SILVA & MELLO-PATIU 2008).

Species of *Oxysarcodexia* are important from the ecological standpoint by acting as decomposers of organic material, as feces of mammals or birds (dung-breeders) and carcasses (some species are true carrion-breeders, but the great majority composes the attracted fauna) (PAPE & DAHLEM 2010; CARVALHO *et al.* 2012). Thus, these flesh flies are very frequent in forensic and

faunistic studies performed in the Neotropical region, especially in South America (e.g. LINHARES 1981; D’ALMEIDA 1984; DIAS *et al.* 1984; OLIVEIRA-COSTA *et al.* 2001; BARROS *et al.* 2008; ROSA *et al.* 2011; MELLO-PATIU *et al.* 2014).

Xarcophaga was proposed as a monotypic genus by DODGE (1968), with the description of *Xarcophaga xon* Dodge, 1968, which was considered different of *Oxysarcodexia* due to the presence of an elongated and slender phallus, with an apical distiphallic enlargement. After that, LOPES (1975) re-examined some species, re-described *O. pallisteri* Dodge, 1966 and synonymized *X. xon* with *Oxysarcodexia*, considering these species morphologically close to *Oxysarcodexia favorabilis* (Lopes, 1935) and *Oxysarcodexia vittata* (Walker, 1836). He also recommended an analysis of the females of these species in order to confirm the existence of these two separated genera. This relationship between *Xarcophaga* and *Oxysarcodexia* was also pointed out by SOARES & MELLO-PATIU (2010). *Oxysarcodexia*, *Xarcophaga*, *Apelophyla* Hall and *Hybopygia* Enderlein were considered distinct valid genera by LOPES (1982). Posteriorly, they were united within *Oxysarcodexia* by PAPE (1996). On the moment, the “*Xarcophaga* species-group”, i.e., the species with a characteristic enlarged apex of the distiphallus, here considered as a distal enlargement

Funding Agency: CNPq

of the juxta, includes *Oxysarcodexia favorabilis* (Lopes, 1935), *Oxysarcodexia fraterna* Lopes, 1946, *Oxysarcodexia nitida* Soares & Mello-Patiu, 2010, *Oxysarcodexia notata* Soares & Mello-Patiu, 2010, *Oxysarcodexia pallisteri* Dodge, 1966, *Oxysarcodexia peruviana* (Lopes, 1973), *Oxysarcodexia vittata* (Walker, 1836) and *Oxysarcodexia xon* (Dodge, 1968) (LOPES 1975; SOARES & MELLO-PATIU 2010).

A new species of *Oxysarcodexia* from Minas Gerais, Brazil is described and illustrated. Its male terminalia resembles that presented by the species considered belonging to the “*Xarcophaga* species-group”.

MATERIAL AND METHODS

Five male specimens were examined under a stereomicroscope Carl Zeiss Stemi SV11™. These males were pinned and the terminalia was pulled out with the aid of an entomological probe and minuten and/or fine entomological pins were set to avoid the retraction of the terminalia until the specimens dry (PAPE & DAHLEM 2010). Terminology follows McALPINE (1981) for external characters and MELLO-PATIU & PAPE (2000) and GIROUX *et al.* (2010) for male terminalia. Measurement of the body length was obtained by including the length of the head (without considering the antennae), thorax (from the neck to the posterior margin of the scutellum) and abdomen (from the anterior margin of abdominal tergite 2 to the posterior margin of tergite 5 plus terminalia length), in order to offset bias caused by any eventual curvature of the specimens.

Digital photographs were taken of the lateral habitus and of the male terminalia in lateral, anterior, and posterior views using a digital camera Carl Zeiss AXIOCAM MRC™ (5 megapixels), mounted on a Carl Zeiss STEREO DISCOVERY.V12™ stereoscope. The images were posteriorly processed, whenever needed, using Adobe® Lightroom® and/or Photoshop® software. For each view, photographs were taken with extended depth-focus and were stacked using Zerene Stacker™ software. Label information of the new species was transcribed without any modification; a forward slash (/) was used to separate individual labels and any additional comments about the label data were given in square brackets.

Type specimens are deposited pinned in the collections of the Museu Nacional (MNRJ), Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil, and Museu de Zoologia da Universidade Estadual de Campinas “Adão José Cardoso” (ZUEC), Universidade Estadual de Campinas, Campinas, São Paulo, Brazil, as posteriorly stated for each specimen.

RESULTS

Oxysarcodexia mineirensis sp. n.

[urn:lsid:zoobank.org:act:0851654B-8EFB-4471-9EOA-EE00AFADBo60](https://doi.org/10.21203/rs.3.rs-1234567/v1)

Type material. Male holotype: BRAZIL: Minas Gerais, Uberlândia, Fazenda Experimental do Glória. Mata (P2). 26 julho 2012. M.L. Paseto & L.S. Faria / *Oxysarcodexia* sp. n. / Holotype (MNRJ). **Paratypes:** BRAZIL: Minas Gerais, Uberlândia, Fazenda Experimental do Glória. Mata (P2). 08 março 2013. M.L. Paseto & L.S. Faria / *Oxysarcodexia* sp. n. / Paratype [1 male] (MNRJ). BRAZIL: Minas Gerais, Uberlândia, Fazenda Experimental do Glória. Mata. 25-VII-2012. M.L. Paseto & L.S. Faria / *Oxysarcodexia* sp. n. / Paratype [1 male] (MNRJ). BRAZIL: Minas Gerais, Uberlândia, Fazenda Experimental do Glória. M.L. Paseto & L.S. Faria [date of collection not available] / *Oxysarcodexia* sp. n. / Paratype [1 male] (ZUEC). BRAZIL: Minas Gerais, Uberlândia, Fazenda Experimental do Glória. M.L. Paseto & L.S. Faria [date of collection not available] / *Oxysarcodexia* sp. n. / Paratype [1 male] (ZUEC).

Description. Male (Figure 1-a). Total length = 6.8–8.4 mm (n=5).

Head. Fronto-orbital, parafacial and postocular plates with golden microtomentum. Occiput blackish with pale golden microtomentum. First two rows of occipital setae black, others yellowish. Front ranging about 0.10–0.11x head width at level of ocellar triangle. Frontal vitta brownish, with a row of 9–10 frontal setae. Inner vertical seta ranging from 3.0 to 4.7x as long as the postoculars. Outer vertical seta about 1.2–1.8x as long as the postoculars. Ocellar setae as long as the uppermost frontal seta. One reclinate orbital seta about 1.1–1.4x longer than the longest frontal setae. Proclinate orbital setae absent. Gena and postgena with golden microtomentum and black setae. Face with golden microtomentum. Pedicel dark brown. First flagellomere with pale golden microtomentum, about 1.7–2.7x as long as pedicel. Arista dark brown and long plumose on basal ¾. Palpus dark brown. Vibrissa dark brown, well-developed, and about 1.4x as long as the arista. Proboscis well-developed, dark brown, and with golden setulae apically.

Thorax. Golden microtomentum with three black stripes. Brownish thoracic spiracles. Greater ampulla oval. Chaetotaxy: acrostichals = 0 + 1, dorsocentrals = 3 + 3, intra-alars = 2 + 2, supra-alars = 2 + 3, postalars = 2, postpronotals = 3 (first one smaller than the others), notopleurals 4 (2 long primaries and 2 shorter subprimaries), katapisternals = 3 (middle one inserted slightly below the others), meropleurals = 8, postalar wall with black setulae, scutellum with no apical setae, one basal, one subapical and one discal seta. Prosternum with few scattered setulae on the distal half.

Wings. Hyaline, about 0.8x the mean body size, tegula and wing veins dark brown, basicosta whitish yellow, stem vein bare dorsal and ventrally, R₁ bare, R₄₊₅ with setulae in proximal ¾ of distance to r-m, costal spine-seta short, third costal sector with few ventral setae, upper and lower calypteres white with short white setulae dorsally.

Legs. Dark brownish. Fore femur with one posterodorsal, one posterior and one posteroventral row of setae. Fore tibia with two anterodorsal setae and one posterior, one posterodorsal and one posteroventral seta. Mid femur with two rows of ventral long setae, one row of anterodorsal setae, 2 pre-apical posterodorsal setae, ctenidium with flattened spines. Mid tibia with two anterior setae, one posterodorsal seta, two posterior, one dorsal preapical seta, and one long apical ventral seta. Hind femur with a row of long posterodorsal setae and a row of short posteroventral setae, one apical anteroventral row of setae and one long posteroventral seta. Hind tibia with two anteroventral setae, three anterodorsal setae, one dorsal preapical seta, and one posterodorsal seta. Tarsomeres of fore, mid and hind legs dark brownish.

Abdomen. Black with golden microtomentum. Tergites 2–5 with dorsal and lateral golden spots. Tergites 2–3 with one lateral marginal seta. Tergite 4 with 2–3 lateral marginal and one medial marginal seta. Tergite 5 with 13 strong setae along the posterior margin. Sternites 2–4 brownish, with setae along the edges and a few shorter scattered setae. Sternite 5 with posterior margin with a deep cleft of parallel edges.

Terminalia (Figure 1-b, -c, -d, -e). Syntergosternite 7+8 yellowish with golden microtomentum, scattered short black setae, and 6 marginal setae. Epandrium yellowish with golden microtomentum and black setae. Posterior margin of cerci slightly sinuous in lateral view, darker in the distal ¼, with pointed apex and long black setae on the basal half. Inner margins of the cerci in posterior view almost parallel. Cerci and surstyli cover with very small yellowish setulae. Surstylus triangular, with a few marginal black short setae. Postgonite slender and slightly curved on the apical portion, with rounded apex. Pregonite elongated, as long as half of the phallic length, broader and lighter than the

postgonite, almost straight with rounded apex ("spoon-like" shape). Phallus well-sclerotized slightly curved on the posterior margin. Phallic tube with a ventrolateral band more sclerotized. Phallic tube antero-proximally with a lateral triangular extension ("tooth-like") above the vesica. Distiphallus trumpet-shaped, with distal membranous appearance. Juxta with membranous projections with folded margins. Lateral and median styli apically positioned; median stylus long and narrow and lateral stylus short and broad. Vesica well developed, sclerotized and dark brown. Vesical proximal section as a lever-shaped arm, proximally linked to the medio-proximal area of the phallic tube. Vesical distal section slender oblong-shaped with distal serrated edge.

Female. Unknown.

Distribution. NEOTROPICAL – Brazil (Minas Gerais).

Etymology. The specific epithet is a noun in apposition and refers to the type locality.

Remarks. These specimens were collected associated to pig carcasses in a region of a semi-deciduous forest located in a Cerrado (savannah-like) area, belonging to the Fazenda Experimental do Glória, one of the facilities of the Universidade Federal de Uberlândia, Minas Gerais, Brazil.

Oxysarcodexia mineirensis **sp. n.** is very similar to *O. favorabilis* due to the conformation of the terminalia, especially the phallus flower-like shaped and the distal enlargement of the juxta, very remarkable in the "*Xarcophaga* species-group". Thus, we suggest the inclusion of *O. mineirensis* **sp. n.** in this species-group along with *O. favorabilis*, *O. fraterna*, *O. nitida*, *O. notata*, *O. pallisteri*, *O. peruviana*, *O. vittata*, and *O. xon*.

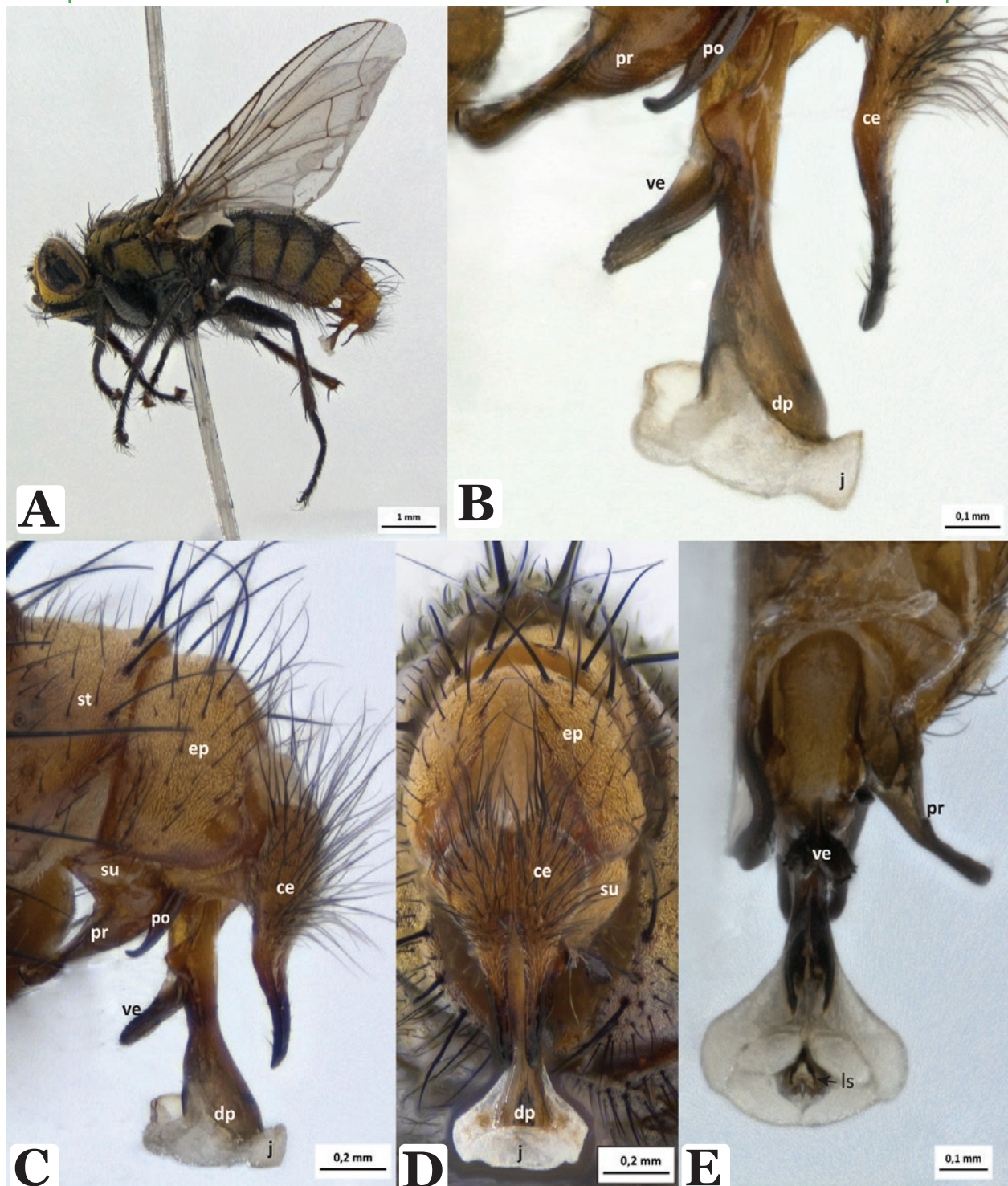


Figure 1. *Oxysarcodexia mineirensis* **sp. n.**, male holotype. **a.** habitus, lateral view, **b.** terminalia, lateral view, phallus in detail, **c.** terminalia, lateral view **d.** terminalia, posterior view, **e.** terminalia, anterior view. Abbreviations: ce = cercus; dp = distiphallus; ep = epandrium; j = juxta; ls = lateral stylus; po = postgonite; pr = pregonite; st = syntergosternite 7+8; su = surtylus; ve = vesica.

ACKNOWLEDGEMENTS

We would like to thank Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) for the scholarship support to the second author; the University of Campinas for providing facilities, workspace and equipment; Lucas Silva de Faria for helping in the collection of the specimens; Júlio Mendes for providing means for the accomplishment of the collection; Cátia Antunes de Mello Patiu for early discussion about this new species; Patricia Jacqueline Thyssen, Marcela Aquiyama Alonso, and Marina Ferrari Klemm de Aquino for their comments about this manuscript.

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Received in: 04/16/2015

Accept in: 07/17/2015

Suggestion citation:

Souza, C.M. de & M.L. Paseto, 2015. Description of a Neotropical New Species of *Oxysarcodexia* Townsend, 1917 (Diptera: Sarcophagidae). *EntomoBrasilis*, 8 (3): 222-225.

Available in: doi:10.12741/ebrazilis.v8i3.524

