Two new species of the subgenus Stilobezzia (Stilobezzia) KIEFFER from Peruvian Amazonia (Diptera: Ceratopogonidae)
by
C.C. Cazorla, G.R. Spinelli & F. Diaz

Lic. Carla C. Cazorla, Dr. Gustavo R. Spinelli & Lic. Florentina Diaz, División Entomología, Museo de La Plata, Paseo del Bosque s/n, 1900 La Plata, Argentina; e-mail: carlacazorla@fcnym.unlp.edu.ar & spinelli@fcnym.unlp.edu.ar
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Abstract
Adult and pupa of Stilobezzia (Stilobezzia) mcerzi CAZORLA & SPINELLI, n.sp. from Iquitos, and a "adult of Stilobezzia (S.) williamsi C. & S., n.sp. from Pagoreni, Cuzco, are described and illustrated. These species are compared with the similar congeners S. (S.) bicolor LANE and S. (S.) modesta LANE, and S. (S.) simplicius LANE & FORATTINI, respectively.

Keywords: Stilobezzia, new species, Peru, adult, pupa.

Resumen
Se describen e ilustran el adulto y la pupa de Stilobezzia (Stilobezzia) mcerzi CAZORLA & SPINELLI, n.sp. de Iquitos, y el adulto de Stilobezzia (S.) williamsi C. & S., n.sp. de Pagoreni, Cuzco. Estas especies son comparadas con sus congeneres S. (S.) bicolor LANE y S. (S.) modesta LANE, y S. (S.) simplicius LANE & FORATTINI, respectivamente.

Introduction
Stilobezzia KIEFFER is a large and diverse genus of Ceratopogonidae. Adult females are important predators on other small insects and immatures are found in a wide variety of aquatic and semi-aquatic habitats, including streams, lake and pond margins, puddles, swamps, rice fields, rock pools, and tree holes (DE MEILLON & WIRTH 1991; CAZORLA & MARINO 2004).

BORKENT & WIRTH (1997), in the World catalog of the Ceratopogonidae, listed 310 extant species of Stilobezzia. Four subgenera are included within the genus, the cosmopolitans Stilobezzia KIEFFER and Acanthohetaelea KIEFFER, Debekhamia WIRTH & GROGAN, restricted to Australia, and Eukraiohelea INGRAM & MACFIE, from Africa, America, southeast Asia and India.

According to the Neotropical catalog of the Ceratopogonidae (BORKENT & SPINELLI 2000), 64 species inhabit the region, 42 in the subgenus S. (Stilobezzia), 18 in S. (Acanthohetaelea), and 4 S. (Eukraiohelea). Most of the information on these species was published by KIEFFER (1917) for Paraguay, INGRAM & MACFIE (1931) for Patagonia, LANE (1947), LANE & FORATTINI (1956, 1958, 1961) and LANE et al. (1955) mainly from southeastern Brazil, and SPINELLI (1983) recorded species from

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eastern Argentina. It is worth remarking and surprising that only 3 species are recorded
in Amazonia. S. (A.) amazonica CLASTRIER, S. (A.) manuensis LANE & FORAT-
TINI, S. (E.) omigna (MACFIE), S. (S.) beckae WIRTH, and S. (S.) punctulata
LANE.

During the last years, several collecting trips were performed to different places in
the Peruvian Amazonia, resulting in a large collection of cercopogonoids which is being
studied in the Museo de La Plata, Argentina. The purpose of this paper is to give the
first results of this study, describing 2 new species of the subgenus Silobezzia (Silio-
bezzia).

LANE & FORATTINI (1961) provide a key for the identification of all Neotropical
species of the genus except the Patagonian Silobezzia (S=caustoholaeu) spp. described by
INGRAM & MACFIE (1931). However, many clue characters in this key, especially
those related to coloration, are very difficult to recognize in alcohol preserved and
posteriorly slide mounted specimens, and consequently both options of the dicotomic
key have to be checked. For this reason the use of this key is troublesome, and we
refused to consult it during the present study.

Material and methods

Floating pupae of S. merceri were collected from a sample containing mud and the hydropsyche Pteria
crassitibia L. and Nymphora sp. from a small pond. They were isolated in a vial with a drop of water and
observed daily in the laboratory till adult emergence. Adults of S. williamis were collected at light. Pups
were slide mounted in Canada balsam, and examined, measured and drawn using binocular comp-
ound microscope with attached camera lucida. The following measurements for pupae were taken and/or
calculated: peduncel length (P), respiratory organ length (P), peduncel respiratory organ ratio (P/R),
opening length (OL), opening width (OW), opening ratio (OW/OL), anal segment length, anal
segment width. For pupal terminology see BORKERT & CRAIG (2001), and the Manual of Neuropt.

The holotype and allotype of the new species are deposited in the collection of the Museo Nacional
de Historia Natural, Lima, Perú (MNHNP); paraatypes are deposited in the collection of the Museo de La
Plata, Argentina (MLP).

Results

Silobezzia (S.) merceri CAZORLA & SPINELLI, n.sp.
(Figs. 1-15)

Diagnosis. A brown species of the subgenus Silobezzia (Silobezzia) distinguished by the following
combination of characters: third palpal segment with scattered sensilla on
surface; wing membrane without spots; one ovoid spermatheca; mesal inner margin of
gonocoxite with two processes, proximal one larger, strong, triangular, directed posterior-
ly; distal portion of parameres nearly straight, directed laterally at apex; aecoidal
sclerites sinuate, slender.

Description of male. Similar to female with usual sexual differences. Wing length
1.30 (1.24-1.36, n = 2) mm; width 0.38 (0.34-0.42, n = 2) mm; CR 0.71 (n = 2).
Genitalia (Fig. 1): tergite 9 extending to apex of gonocoxite, rounded distally; cercus
stout; sternite 9 short, with shallow, broad posteroentral excavation. Gonocoxite stout,
2.28 x longer than greatest breadth, mesal inner tarsus with two processes, proximal
one larger, strong, triangular, directed posteriorly, distal one blunt; gonocoxites 1.6 x
shorter than gonocoxite, moderately curved, tip pointed. Parameres (Fig. 2) separate,
subparallel, with strong basal apodemes, distal portion nearly straight, directed laterally

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at apex, tip pointed. Aedeagus (Fig. 2) represented by two slender, sinuate, subparallel sclerites with short curved basal arms, extreme tip pointed.

Female. Head pale brown. Eyes bare, narrowly separated. Flagellum (Fig. 3) pale brown, flagellomeres 1-8 bottle-shaped, 9-13 elongated; AR 1:56 (1:55-1:58, n = 2). Palpus (Fig. 4) dark brown; third segment moderately slender with scattered sensilla on surface; PR 3:32 (3:00-3:75, n = 3). Mandible with 7 (n = 3) teeth.

Thorax: scutum uniformly dark brown. Legs brown, mid and hindlegs darker; foretibia broadly pale except tip brown, hindtibia with subapical pale ring; tarsi pale, tarsomeres 1-2 of fore and midlegs with one row of ventral palisade setae, in two rows on tarsomeres 1-2 of hindleg; hind tibial comb with 8 spines; tarsomere 5 in all legs with one pair of basal, blunt spines arising from common base; claws large with basal inner tooth, longer in midleg. Wing (Fig. 5) length 1.30 (1.24-1.34 n = 3) mm; width 0.43 (0.41-0.46, n = 3) mm; CR 0.70 (n = 3); membrane slightly infuscated, without brown spots, petiole of vein M 4 x the length of crossvein r-m, second radial cell 5 x the length of the first. Halter stem pale, knob dark brown.

Abdomen: segments 1-7 uniformly dark brown, 8-10 paler. One spermatheca, ovoid with short neck (Fig. 6), measuring 0.065 (n = 2) by 0.050 (n = 2) mm, neck 0.007 mm, width 0.007 mm (n = 2).

Pupa. Exuvia pale brown. Cephalothoracic tubercles as follows: 2 anterodorsal setae (ad) (Fig. 7) with rounded base, two setae, one long, stout, other long, thin; 2 dorsolateral setae (dl) (Fig. 8) with raised base, two setae, one stout, medium-sized, other long, thin; 2 dorsomedial setae (dm) (Fig. 9), one base raised with stout, long seta, other pore.

Thorax smooth, with medial crest extending between respiratory organs; 4 dorsal sensilla (d) (Fig. 10), three with long, thin setae, one with minute seta; 2 ventromedian setae (vm) (Fig. 11), represented by pores; 2 ventrolateral setae (vl) (Fig. 11), one thin, medium-sized, other minute setae. Respiratory organ (Fig. 12) pale brown except distal portion, directed anteriorly, straight with blunt apex, integument smooth, 7-9 apical spiracles, 2 postero-lateral, each one situated on tubercle, pedicel smooth, long, stout, PRH 0.30 (0.30-0.31, n = 3) mm; P 0.14 (0.12-0.14, n = 3) mm; PRH 0.47 (0.38-0.57, n = 3). Operculum (Fig. 13) broader than long, disk smooth, well-developed, strong, spiny tubercle anteromarginalia seta (am) located on tubercle; OL 0.14 (0.13-0.14, n = 2) mm; OW 0.22 (0.21-0.22, n = 2) mm; OW/OL = 1.57 (1.50-1.64, n = 2). Abdominal segments integument with few scattered small spines at base. Fourth abdominal segment (Fig. 14) tubercles as follows: 3 dorsoposteromarginal tubercles (dpm), ii, base rounded, iii large, conical, with additional pore at base, i pore, ii with minute setae, iii with short, stout seta; 2 dorsol anteromarginal tubercles (dam), i small, triangular, with medium-sized, thin seta, ii small, base rounded with minute, stout seta; 2 lateral pos preromarginal tubercles (lpm), i small, based rounded, with medium-sized, thin seta, ii large, conical, with long, stout seta; 4 ventro posteromarginal tubercles (vpm), i, ii large, conical, serrate, with short, stout setae, iii, iv base raised, iii with two thin setae, one small, other medium-sized, iv short, thin seta: 2 lateral anteromarginal tubercles (latm), both base rounded with minute, stout setae. Anal segment (segment 9) of female (Fig. 15) length 0.17 (0.16-0.20, n = 3) mm; width 0.18 (0.17-0.20, n = 3) mm; dorsal surface densely covered with posteriorly directed, pointed spicules only at base; apicolateral process triangular smooth, with wide base, slender, directed laterally, extreme tips darkish. Anal segment of male as in female, length 0.21 (0.20-0.23, n = 2) mm; width 0.22 (n = 2) mm.
Distribution

Known only from its type-locality.

Types: Holotype male, allotype female (collected as pupae, reared in laboratory), Peru, Iquitos, Quistecocha, 13-VIII-1996, G. SPINELLI. Paratypes, 1 male with pupal exuviae, 2 females with pupal exuviae, same data as type.

Derivation of specific epithet. This species is named after Dr. Randy MERCER for his kindness during the collection of the specimens herein described, and for his collaboration providing information on the hydrophobes present in the Iquitos pond.

Taxonomic discussion

The male genitalia of S. merceri n.sp. is very similar to the one of S. bicolor LANE, from Panama to eastern Argentina, especially by the shape of the parameres and by the gonocoxite with mesal inner processes, the proximal one large and triangular. It differs, however, by the aedeagus nearly straight, only slightly curved at the extreme apex. Besides, the legs of S. bicolor are yellowish and the petiole of vein M is only twice as long as crossed vein r-m.

The female of S. merceri also resembles the female of S. modesta LANE, from southeastern Brazil, by virtue of the scutum uniformly dark brown and the wings without brown spot, but differs from this species by having legs dark brown (yellowish in modesta), abdominal segments 1-7 brown and 8-10 paler (all dark brown in modesta) and by the length of the first radial cells (minute in modesta). The male of S. modesta is unknown.

The pupa of S. merceri is also very similar to the one of S. bicolor, which was incompletely described by FORATTINI & RABELLO (1956), omitting any reference to the cephalothoracic tubercles and only briefly mentioning the tubercles of the fourth abdominal segment. However, the respiratory organ in S. bicolor lacks posterolateral tubercles and its distal portion is darker.

Silobezzia williamsi CAZORLA & SPINELLI, n.sp.

(Figs. 16-22)

Diagnosis. A yellowish brown species of the subgenus Silobezzia (Silobezzia) distinguished by the following combination of characters: third palp segment with shallow subapical pit; anterolateral areas of scutum brown; gonostylus stout, nearly straight; distal portion of parameres with subapical, inner, slightly sclerotized, posterolaterally directed process; aedeagal sclerites stout, recurved, extending from the level of distal half of gonocoxite.

Male. Similar to female with usual sexual differences. Wing length 1.35 (1.26-1.40, n = 4) mm; width 0.41(0.40-0.44, n = 4) mm; CR 0.75 (0.74-0.75, n = 4). Gonitilia (Fig. 16): tergite 9 tapering to blunt tip; sternite 9 with deep, rounded postmedial excavation. Gonocoxite stout, 1.34 x longer than greatest breadth; gonostylus slightly longer than gonocoxite, stout, nearly straight, extreme tip slightly recurved, blunt. Parameres (Fig. 17) separate, each with stout, bilobed apodeme, knob rounded, distal portion strongly sclerotized, contiguous proximally, slightly divergent distally with subapical inner, slightly sclerotized, posterolaterally directed process. Aedeagus (Fig. 18) represented by a pair of recurved sclerites, extending from level of distal half of gonocoxite, each with stout basal portion and a pair of outer, mesal, pointed teeth apex pointed.

Female. Head brown. Eyes bare, narrowly separated. Flagellum (Fig. 19) uniformly brown, AR 1.24 (1.24-1.25, n = 3). Palpus (Fig. 20) pale brown; third segment with shallower subapical pit; PR 3.16 (2.90-3.88, n = 4). Mandible with 7-8 (n = 4) teeth.

Thorax. Scutum yellowish brown, anterolateral areas brown; scutellum yellowish

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brown; prostcutellum brown on mid portion, sides yellowish brown. Pleura yellowish brown, subalar sclerites darkish. Legs yellowish brown, narrow apex of hind femur brown; tarsi yellowish brown; hind tibial comb with 7-8 spines (n = 4); tarsomere 1 of hindleg with two rows of palisade setae; claws large with sauc inner tooth, equal in all legs. Wing (Fig. 21) length 1.63 (1.58-1.70, n = 4) mm; width 0.56 (n = 4) mm; CR 0.81 (0.78-0.82, n = 4); hyaline, petiole of vein M as long as the length of crossvein r-m, first radial cell 3.5 x the length of second radial cell. Halter stem pale, knob dark.

Abdomen: segments 1-7 and 10 yellowish, 8-9 brown. Two ovoid spermatheca with sclerotized short necks (Fig. 22), slightly unequal, measuring 0.090 (n = 4) by 0.070 (n = 4) mm, and 0.080 (n = 4) by 0.056 (n = 4) mm; rudimentary third present.

Distribution

Known only from its type-locality.

Types: Holotype male, allotype female, Perú, Cuzco, PAGORENI, 15-II-2004, at light. Paratypes, 3 males, 4 females, same data as types.

Derivation of specific epithet. This species is named after Prof. Jorge WILLIAMS, herpetologist of the Museo de La Plata, in recognition of his valuable help collecting ceratopogonids in the Peruvian Amazon rain forest.

Taxonomic discussion

The male genitalia of S. williamsi is very similar to the one of S. simplex LANE & FORATTINI from Panama, especially in the shape of the analagl sclerites and parameres. However the analagl sclerites of S. simplex lack the outer sexual teeth and the parameres epandres are slender, less developed, and its posterior process is stouter, posteriorly directed. Sallolobesia simplex also shows many extragenital differences with respect to this new species, e.g., postscutellum blackish brown, very reduced first radial cell, petiole of vein M 3 times longer than crossvein r-m, apex of tibae brown, and abdominal tergites blackish.

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Figs. 1-6:
Stileleccia merceri, n.sp., adult. 1-2: male; 3-6: female. 1: genitalia; 2: parameres and aedeagus; 3: flagellum; 4: maxillary palp; 5: wing; 6: spermatoeca (scale bars: 0.05 mm).

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Figures 7-15:
Stylophora norvegica, n.sp., pupa. 7: anterodorsal setae (ad); 8: dorsolateral setae (dl); 9: dorsomedial seta (dm); 10: dorsal sensilla (d); 11: ventromedian setae (vm) and ventrolateral setae (vl); 12: respiratory organ; 13: sperculum and anteromarginal seta (am); 14: fourth abdominal segment with detail of dorsoproximal marginal tubercles (dpm), dorsal anteromarginal tubercles (dam), lateral posteromarginal tubercles (lpm), ventroproximal marginal tubercles (vpm), and lateral anteromarginal tubercles (lam); 15: anal segment (scale bar: 0.05 mm).

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Figs. 16–22:
Salobrama williamsi, n.sp., adult. 16–18: male. 16: genitalia; 17: parameres; 18: aedeagus;
19: flagellum; 20: maxillary palpus; 21: wing; 22: spermathecae (scale bar: 0.05 mm).

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