

Stilobezzia (Acanthohelea) curvistyla (Diptera: Ceratopogonidae), new association of sexes and redescription of male

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***Stilobezzia (Acanthohelea) curvistyla* (Diptera: Ceratopogonidae), nueva asociación de sexos y redescrición del macho**

RESUMEN. El estudio del material tipo, y de ejemplares de *Stilobezzia (Acanthohelea) curvistyla* y de *Stilobezzia (A.) megatheca*, colectados recientemente, demostró una incorrecta asociación de sexos en ambas especies. El alotipo hembra de *S. (A.) megatheca* pertenece a *Stilobezzia (A.) curvistyla*. Se realiza la correcta asociación de sexos de *S. (A.) curvistyla*, se redescrive el macho de esta especie, se expande su diagnosis y se amplía su distribución geográfica.

PALABRAS CLAVE. Jejenes. Patagonia. Taxonomía.

ABSTRACT. Study of the type material, new specimens of *Stilobezzia (Acanthohelea) curvistyla* and recently collected *Stilobezzia (A.) megatheca* showed an erroneous association of sexes in both species. The female allotype of *S. (A.) megatheca* belongs to *Stilobezzia (A.) curvistyla*. The right association of sexes is provided, the male of *S. (A.) curvistyla* is redescrbed, the species diagnosis is expanded and its geographic distribution is extended.

KEY WORDS. Predaceous midges. Patagonia. Taxonomy.

The genus *Stilobezzia* Kieffer is a cosmopolitan genus, occurring in all zoogeographical regions except Antarctica. Adult females are important predators on other small insects, and the immature stages are found in a wide variety of aquatic and semiaquatic habitats. *Stilobezzia* includes four subgenera: *Acanthohelea* Kieffer, *Debenhamia* Wirth & Grogan, *Eukraiohelea* Ingram & Macfie and *Stilobezzia* Kieffer. Currently, the cosmopolitan *Stilobezzia (Acanthohelea)* is represented in the Neotropical Region by 37 species (Cazorla & Spinelli, 2015) and it is the only subgenus occurring in Patagonia.

During the study of conspecific male and female specimens reared in laboratory from pupae recently collected together in Argentinean Patagonia, the male of *Stilobezzia (Acanthohelea) megatheca* Cazorla & Spinelli (2015) was recognized. However, the female emerged did not match with those designed as female allotype

and paratypes in the original designation. Afterwards, all the patagonian species were revised concluding that the females recently described and assigned to *S. (A.) megatheca* belonged in fact to *Stilobezzia (Acanthohelea) curvistyla*, described by Cazorla & Spinelli (2007) on the basis of 12 males and only two females. The high coincidence observed between the holotype of *Stilobezzia (A.) curvistyla* and the females assigned to *Stilobezzia (A.) megatheca* by Cazorla & Spinelli (2015) in samples of same localities, show that they are the opposite sexes of the same species.

In the present work, a new association of sexes of *Stilobezzia (A.) curvistyla* is proposed, its male is redescrbed, the most important diagnostic characters of male and female are illustrated and the geographic distribution is extended to the island of Chiloé, in southern Chile.

Slide mounted specimens were examined and measured with a compound microscope.

Photographs were taken with a digital camera Leica ICC50 HD (full HD 1080 P) software LAS EZ (Leica application suite) through a Leica DM500 microscope. Photographs were edited in Corel DRAW X3. Terms of structures follow those in the Manual of Central America Diptera (Brown *et al.*, 2009).

The type material and additional specimens of *S. (A.) curvistyla*, and type material of *S. (A.) me-gatheca* revised are deposited in the collection of the Museo de La Plata, Argentina (MLP). Other studied specimens belong to the Canadian National Collection of Insects, Ottawa (CNCI), and were collected during 1984-1985 by J. Antony Downes in northern Argentinean and Chilean Patagonia. Downes' personal collection numbers are presented after locality and other data (e.g., JAD 1651/3).

Stilobezzia (Acanthohelea) curvistyla
Cazorla & Spinelli
(Figs. 1-10)

Stilobezzia (Acanthohelea) curvistyla Cazorla & Spinelli, 2007: 182 (male, female, Argentina); Cazorla & Spinelli, 2015: 158 (in key); Borkent, 2015: 135 (in online World catalogue).

Diagnosis. The only Patagonian species of *Stilobezzia (Acanthohelea)* in which males have the gonostylus abruptly curved and the gonocoxite has a conspicuous protuberance on proximal inner margin; females have two large, greatly elongated flask-shaped spermathecae and sternite 8 with a U-shaped posteromedian excavation (Figs. 9-10).

Redescription of male. Head (Fig. 1). Dark brown. Antennal flagellum dark brown; plume dark brown, moderately developed; antennal ratio 0.98-1.21 (1.10, $n = 13$). Palpus brown; segment 3 slightly shorter than segment 5; palpal ratio 2.63-3.75 (2.95, $n = 21$).

Thorax. Scutum dark brown, humeral pits yellowish; scutellum yellowish with 6 large setae; postscutellum dark brown. Legs brown, hind legs darker; hind femur, hind tibia with basal paler ring; hind tibial comb with 7 spines; prothoracic tarsal ratio 1.60-1.91 (1.79, $n = 22$); mesothoracic tarsal ratio 1.95-2.22 (2.11, $n = 19$); metathoracic tarsal ratio 1.82-2.75 (2.00, $n = 22$). Wing (Fig. 2) length 1.28-1.68 (1.39, $n = 21$) mm, width 0.58-0.67 (0.62, $n = 21$) mm,

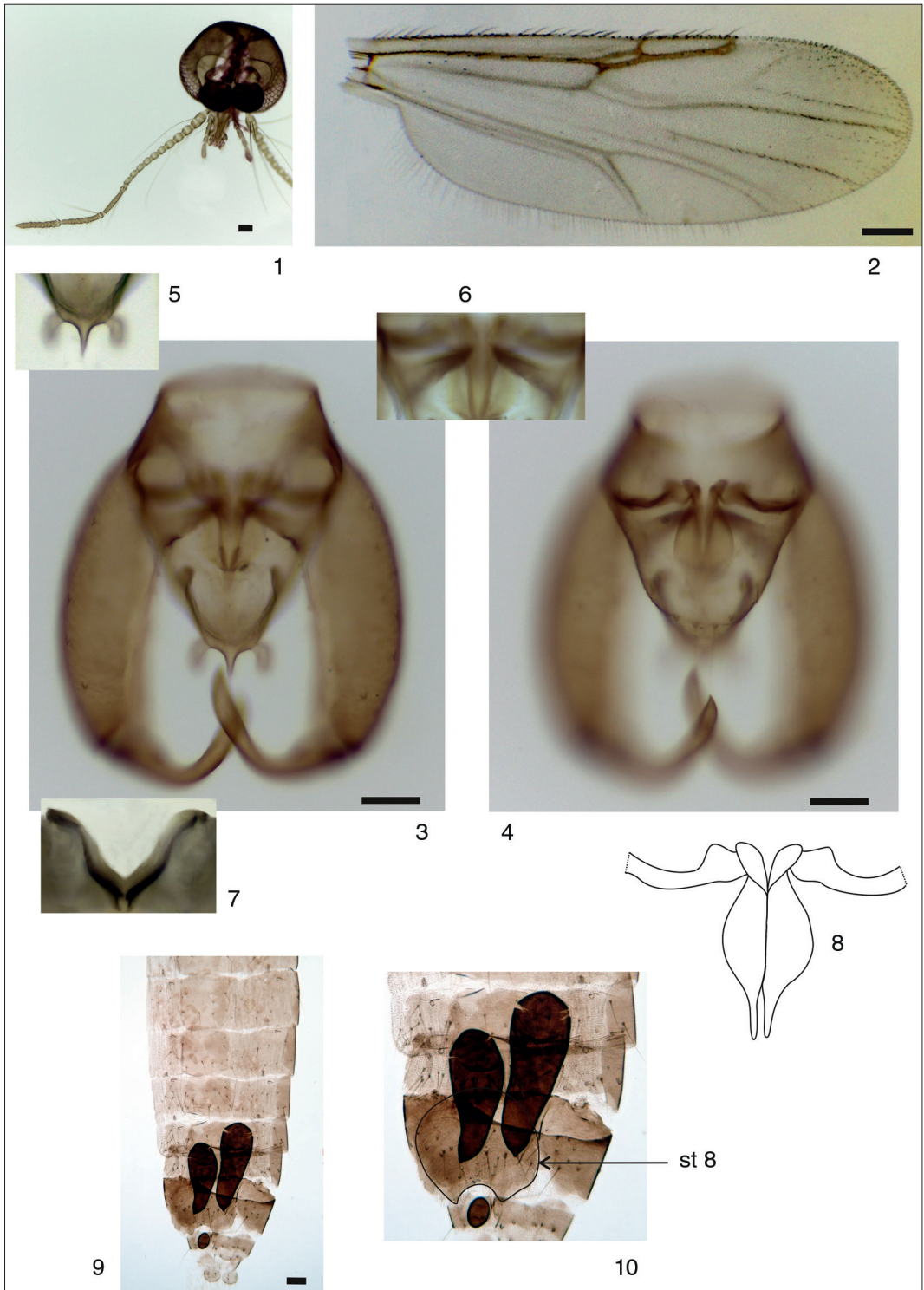
costal ratio 0.64-0.71 (0.65, $n = 22$); membrane slightly infuscated; second radial cell 2.00-2.86 (2.47, $n = 10$) X longer than first; cubital fork distal to base of r-m cross vein; macrotrichia on costa, R_1 , R_3 , M_1 , M_2 abundant on cells r_3 , m_1 , few on basal margin of m_2 . Halter pale.

Abdomen. Dark brown. Genitalia (Figs. 3-8) large: tergite 9 extending 0.75 of gonocoxite length, posterior margin rounded with conspicuous mesal pointed projection (Fig. 5); sternite 9 five X broader than long, with broad, shallow, posteromedian excavation; cerci slender, well separated, subparallel. Gonocoxite three X longer than greatest breadth, inner margin with stout, anteromesal projection (Fig. 6); gonostylus abruptly curved, forming a 90° angle, tip pointed. Parameres (Fig. 8) with basal portion slender, folded, articulated to basal curved gonocoxal apodemes; each with stem swollen, except distal portion abruptly narrowed to pointed tip. Aedeagus (Fig. 7) 0.70 X length of basal breadth, composed of two sclerotized, slightly curved sclerites, each slightly swollen distally, with a mesal notch on tip.

Distribution. In subantarctic forest of Argentina (Neuquén, Río Negro and Chubut provinces) and Chile (Valdivia, Osorno, Llanquihué and Chiloé provinces).

Type material. Holotype male, **ARGENTINA. Chubut:** Parque Nacional Los Alerces, margen E lago Futalaufquen, 20-I-1998, sweep net, G. Spinelli. Paratypes, 9 males, as follows: same data as holotype, 1 male (MLP); **Neuquén:** arroyo Quechuquina, 16-XI-1994, sweep net, Spinelli col., 2 males (MLP); **Río Negro:** lago Gutiérrez, I-2003, light trap, Liotta col., 1 male (MLP); **CHILE. Llanquihue:** Las Cascadas, 13 km N Ensenada, Valdivian rain forest, 1/2-XII-1994, Malaise trap, Quate col., 6 males (4 in MLP, one in CNCI, one in BMNH); same data except Yerbas Buenas, 1/6-XII-1994, 150 m, light trap, 1 male.

Other material studied. ARGENTINA. Chubut: same data as holotype, 1 female; **Neuquén:** lago Lolog, 24-XI-1984, sweep net, Downes col., 1 female (JAD 1651/3/15) (CNCI); Parque Nacional Nahuel Huapi, mallin La Heladera, 41° 00' 6.4" S, 71° 49' 40.3" W, 878 m, 7-I to 4-II- 2007, Malaise trap, Garré and Montes de Oca col., 4 males (MLP); same data except 41° 00' 56" S,



Figs. 1-10. *Stilobezzia curvistyla* Cazorla & Spinelli. 1-8, male, 9-10 female. 1, head; 2, wing; 3, genitalia, in dorsal view; 4, genitalia, in ventral view; 5, detail of distal projection of tergite 9; 6, detail of the protuberance on proximal inner margin of gonocoxite; 7, aedeagus; 8, scheme of parameres; 9, female abdomen showing spermathecae, 10, detail of sternite (st) 8. Scale bar = 0.05 mm.

71° 49' 45.4"W, 15-XII- 2006 to 7-I-2007, Garré, Montes de Oca and Massaferro col., 1 male (MLP); laguna Mercedes, 40° 52' 43.4" S, 71° 34' 41" W, 899 m, 3/21-I-2008, Malaise trap, Garré and Montes de Oca col., 1 male, 1 female (MLP); Parque Nacional Nahuel Huapi, arroyo Blanco, 40° 39' 3.4" S, 71° 24' 45.8" W, 822 m, 12-XII- 2007 to 3-I-2008, Malaise trap, Garré and Montes de Oca col., 1 male (MLP); Villa La Angostura, 11/15-I-2004, light trap, Spinelli col., 1 female (MLP); **Río Negro:** Parque Nacional Nahuel Huapi, Estación Biológica, 41° 01' 34.4" S, 71° 48' 55.7" W, 764 m, 15-I to 7-II- 2007, Malaise trap, Garré and Montes de Oca col., 1 male (MLP); Parque Nacional Nahuel Huapi, río Manso superior, 41° 14' 28.4" S, 71° 44' 12.6" W, 837 m, 07-II to 2-III- 2007, Malaise trap, Garré and Montes de Oca col., 1 male (MLP); **CHILE. Llanquihue:** Las Cascadas, 13 km N Ensenada, Valdivian rain forest, 1/2-XII-1994, Malaise trap, Quate col., 3 females; same data except 4-XII-1994, 2 females; Ensenada, 11-XII-1984, sweep net, Downes col., 1 female (JAD1695/1/4) (CNCI); **Valdivia:** Fundo San Martín, 15-XI-1984, sweep net, Downes col., 2 males, 2 females (JAD1669/2/2; 1669/1/5; 1670/2/4; 1670/3/6) (CNCI); Lago Chapo, I-1983, sweep net, Newton and Thayer col., 2 females (JAD1591/9/1,3); Anticura, I-1983, sweep net, Newton and Thayer col., 2 females (JAD1591/9/1,3); Parque Nacional Puyehue, way to Anticura, 9-XII-1984, sweep net, Downes col., 1 female (JAD1664/4/6); Parque Nacional Puyehue, I-1983, sweep net, Newton and Thayer col., 2 females (JAD1591/4/3,4); **Osorno:** Petrohue, 10-XI-1984, sweep net, Downes col., 1 male (JAD1694/3/1) (CNCI); Ensenada, 11-XII-1984, sweep net, Downes col., 2 males, 1 female (JAD1695/5/2,3,5) (CNCI); road to Los Ulmos, 29-XII-1984, sweep net, Downes col., 5 females (JAD 1685/2/12,13,14,37,38) (CNCI); Pucatrihue, 1-XII-1992, sweep net, Spinelli col., 1 female; same data except 30-XI-1992, 1 female (MLP); **Chiloé:** Ancud, 1-I-1985, sweep net, Downes col., 1 female (JAD 1688/3/15) (CNCI); Huillinco, 2-I-1985, sweep net, Downes col., 3 females (JAD 1689/2/3,4,5) (CNCI); same data except 3-I-1985, Downes col., 1 female, (JAD 1690/4/48) (CNCI); same data except 4-I-1985, 1 female, (JAD 1691/2/44) (CNCI).

Comments. Males and females of *Stilobezzia* (A.) *curvistyla* were collected at the same locality and date in laguna Mercedes in the Nahuel Huapi National Park, Argentina, and in Fundo San Martín, Valdivia and Ensenada, Osorno, in southern Chile. They were associated by the pigmentation of thorax and legs and by the number of scutellar setae.

The smaller size of the spermathecae of the female reared in laboratory together with the male of *S. (A.) megatheca*, clearly indicates that the female previously assigned to this species by Cazorla & Spinelli (2015) was wrongly associated with the holotype male of this species.

The identity of the remaining females wrongly associated by Cazorla & Spinelli (2007) to *S. (A.) curvistyla* is still uncertain.

Immature stages of *Stilobezzia* (A.) *megatheca* as well as the adult female will be fully described in a further contribution.

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