



<http://dx.doi.org/10.11646/zootaxa.3745.1.8>

<http://zoobank.org/urn:lsid:zoobank.org:pub:823E626D-861A-44C3-A603-21BFA44656D2>

## New contributions to the knowledge of the immatures of *Stilobezzia punctulata* Lane and *Stilobezzia fiebrigi* Kieffer (Diptera: Ceratopogonidae)

CARLA G. CAZORLA<sup>1,3</sup>, FLORENTINA DIAZ<sup>1</sup>, PABLO I MARINO<sup>1</sup>,  
GUSTAVO R. SPINELLI<sup>1</sup> & MARÍA M. RONDEROS<sup>2</sup>

<sup>1</sup>División Entomología, Museo de La Plata, Paseo del Bosque s/n, 1900 La Plata, Argentina.

E-mail: [carlacazorla@fcnym.unlp.edu.ar](mailto:carlacazorla@fcnym.unlp.edu.ar); [mfldiaz@fcnym.unlp.edu.ar](mailto:mfldiaz@fcnym.unlp.edu.ar); [pmarino@fcnym.unlp.edu.ar](mailto:pmarino@fcnym.unlp.edu.ar); [spinelli@fcnym.unlp.edu.ar](mailto:spinelli@fcnym.unlp.edu.ar)

<sup>2</sup>División Entomología, Museo de La Plata, CCT-CEPAVE, Paseo del Bosque s/n, 1900 La Plata, Argentina.

E-mail: [ronderos@fcnym.unlp.edu.ar](mailto:ronderos@fcnym.unlp.edu.ar)

<sup>3</sup>Corresponding author

### Abstract

The fourth instar larva of *Stilobezzia punctulata* Lane is described for the first time and the one of *Stilobezzia fiebrigi* Kieffer is redescribed. They are illustrated and photomicrographed from material collected in different aquatic environments of the province of Corrientes, Argentina. Both species show features typical to carnivorous-predatory larva.

**Key words:** *Stilobezzia*, carnivorous, larvae, Corrientes, Argentina.

### Introduction

*Stilobezzia* Kieffer is a large and diverse genus of Ceratopogonidae, worldwide in distribution. The adult females are important predators on other small insects, and the immatures stages are found in a wide variety of aquatic and semiaquatic habitats, including streams, lakes and ponds margins, puddles, swamps, rice fields, rock pools, and tree holes (de Meillon & Wirth, 1991; Cazorla *et al.*, 2006).

There are at present 70 extant species of *Stilobezzia* inhabiting the Neotropical region (Borkent, 2012; Cazorla, 2013). However and despite the great importance of knowing the ontogeny, immatures of this genus have been poorly studied, the larvae of only 4 species and the pupae of 13 species have been described in this region (Borkent & Spinelli, 2007; Ronderos *et al.*, 2008a; Cazorla *et al.* 2012; Ronderos *et al.*, 2012).

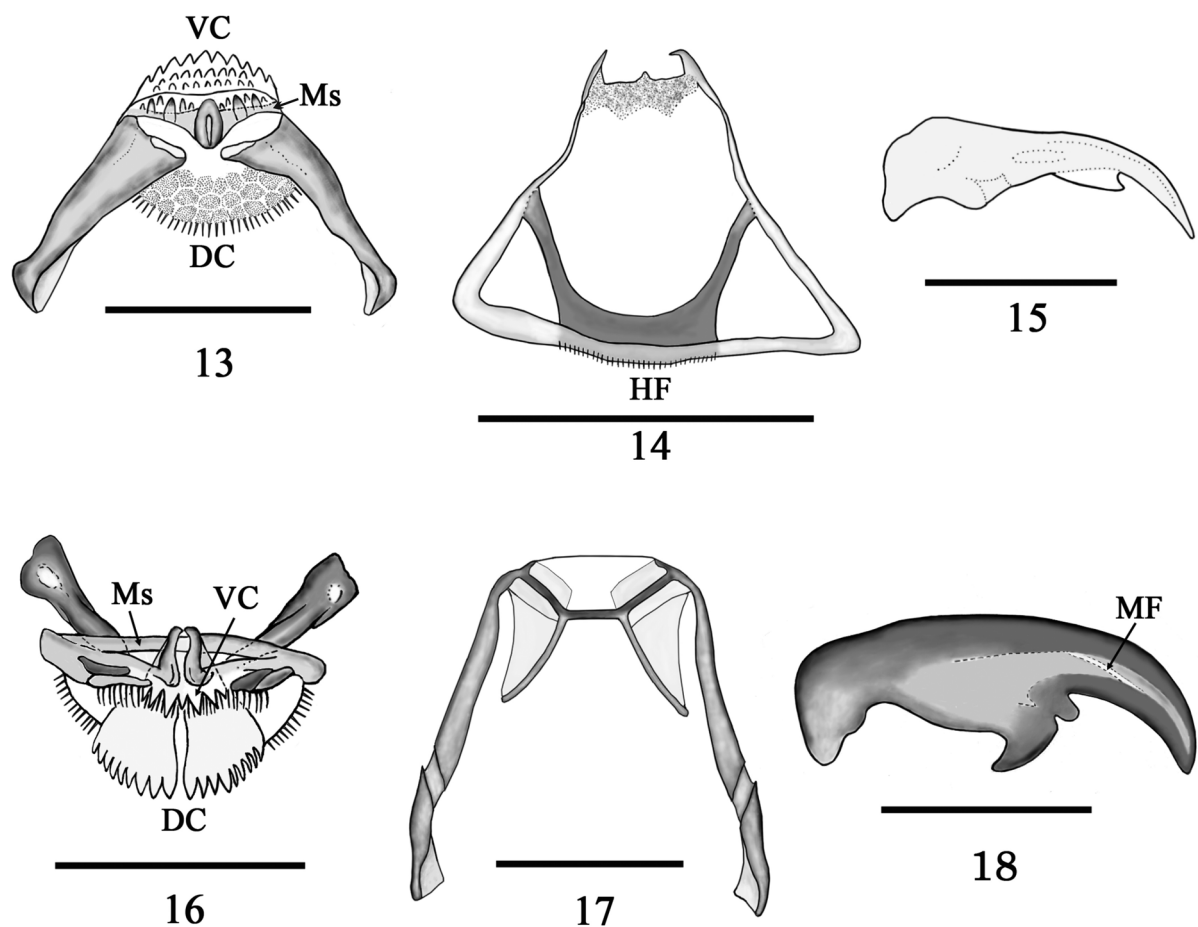
During recent entomological surveys carried out in the province of Corrientes, Argentina, larvae of *Stilobezzia fiebrigi* Kieffer and *Stilobezzia punctulata* Lane were collected. The adults and pupae of both species are well known (Cazorla & Marino, 2004; Cazorla *et al.*, 2006), but the fourth instar larva of *S. punctulata* remains undescribed and the one of *S. fiebrigi* was poorly described by Lane & Forattini (1956).

The purpose of this paper is to fully redescribe the fourth instar larva of *Stilobezzia fiebrigi* and to describe the fourth instar larva of *Stilobezzia punctulata*.

### Material and methods

Larvae of *Stilobezzia fiebrigi* were collected in a temporary muddy puddle and larvae of *Stilobezzia punctulata* were collected in a lagoon associated to hydrophytes. In both cases they were carried back to the laboratory with water and sediment from their natural environments. Fourth instar larvae were separated, reared and observed daily until adult emergence.

For observation with compound microscope, larval exuviae were slide-mounted in Canada balsam following the technique described by Borkent and Spinelli (2007). They were also examined with Scanning Electron



**FIGURES 13–18.** 13–15, *Stilobezzia fiebrigi*. 13, epipharynx, dorsal view; 14, hypopharynx, ventral view; 15, mandible, lateral view; 16–18, *Stilobezzia punctulata*. 16, epipharynx, dorsal view; 17, hypopharynx, ventral view; 18, mandible, lateral view. Scale: 0.05 mm.

**Material examined:** Argentina, Corrientes, Estación Biológica Corrientes (EBCo), 27°32'51.8" S, 58°40'44.8" W, 52 m, 26-XI-2010, P. Marino, 1 male with larval and pupal exuviae.

**Material examined by SEM:** same data, 2 larvae (instar IV).

### Acknowledgements

We are grateful to PIP 1724 and PIP 0381 of CONICET for the financial support during this investigation. Our gratitude to Nélica Caligaris for technical assistance.

### References

- Borkent, A. (2012) World species of biting midges (Diptera: Ceratopogonidae). 234 pp. Available from: <http://www.inhs.illinois.edu/files/8413/4219/9566/CeratopogonidaeCatalog.pdf> (accessed 29 November 2013)
- Borkent, A. & Spinelli, G.R. (2000) Catalog of the New World biting midges south of the United States of America (Diptera: Ceratopogonidae). *Contributions on Entomological International*, 4 (1), 1–107.
- Borkent, A. & Spinelli, G.R. (2007) Neotropical Ceratopogonidae (Diptera: Insecta). In: Adis, J., Arias, J.R., Rueda-Delgado, G. & Wantzen, K.M (Eds.), *Aquatic Biodiversity in Latin America (ABLA). Vol. 4*. Pensoft, Sofia-Moscow, pp. 1–198.
- Borkent, A. & Wirth, W.W. (1997) World species of biting midges (Diptera: Ceratopogonidae). *Bulletin of the American Museum of Natural History*, 233, 1–257.

- Cazorla, C.G. (2013) A new species of *Stilobezzia* (Diptera: Ceratopogonidae) from northern Argentina. *Acta Entomologica Musei Nationalis Pragae*, 53 (1), 323–327.
- Cazorla, C.G., Diaz, F. & Ronderos, M.M. (2006) Redescription of pupa and adult of *Stilobezzia fiebrigi* Kieffer 1917 (Diptera: Ceratopogonidae). *Transactions of the American Entomological Society*, 132, 111–119.
- Cazorla, C.G. & Marino, P.I. (2004) The pupa of *Stilobezzia punctulata* Lane from Peruvian Amazonia. (Diptera: Ceratopogonidae). *Amazoniana*, 18, 75–80.
- Cazorla, C.G., Ronderos, M.M., Spinelli, G.R., Torreias, S.R.S. & Ferreira-Keppler, R.L.A. (2012) A new species of *Stilobezzia* Kieffer from the Neotropical Region (Diptera: Ceratopogonidae). *Revista Brasileira de Entomologia*, 56 (4), 399–404. <http://dx.doi.org/10.1590/s0085-56262012000400002>
- De Meillon, B. & Wirth, W.W. (1991) The genera and subgenera (excluding *Culicoides*) of the Afrotropical Biting Midges (Diptera: Ceratopogonidae). *Annals of the Natal Museum*, 32, 27–147.
- Forattini, O.P. & Rabello, E.X. (1956) As forma imaturas de *Culicoides guayanensis* Floch e Abonnenc, 1942 e de algumas espécies de *Stilobezzia* (Diptera, Ceratopogonidae). *Revista Brasileira de Entomologia*, 56, 43–50.
- Hribar, L.J. (1993) Mouthpart morphology and feeding behavior of biting midges larvae (Diptera: Ceratopogonidae). In: Schaefer, C.W. & Leschen, R.A.B. (Eds.), *Functional Morphology of Insect Feeding*. Thomas Say Publications in Entomology: Proceedings Entomological Society of America. Lanham, MD, pp. 43–58.
- Kieffer, J.J. (1917) Chironomides d' Amérique conservés au Musée National Hongrois de Budapest. *Annales Historico-Naturales Musei Nationalis Hungarici*, 15, 292–364.
- Lane, J. (1947) Espécies Brasileiras de *Stilobezzia* (Diptera: Ceratopogonidae) e *Zigoneura stonei* nov. nom. (Diptera: Mycetophilidae). *Revista Brasileira de Entomologia*, 18, 197–214.
- Lane, J. & Forattini, O.P. (1956) Neotropical *Stilobezzia* Kieffer, 1911 I. Nine new Panamanian species (Diptera: Ceratopogonidae). *Revista Brasileira de Malariologia*, 8, 207–226.
- Lane & Forattini (1958) Neotropical *Stilobezzia* II. Fourteen new species, chiefly from Panama (Diptera: Ceratopogonidae). *Revista Brasileira de Entomologia*, 8, 203–224.
- Lane, J. & Forattini, O.P. (1961) Neotropical *Stilobezzia* Kieffer, 1911. III Key for the adults of this genus and description of one new species (Diptera: Ceratopogonidae). *Revista Brasileira de Entomologia*, 10, 83–94.
- Mullen, G.R. & Hribar, L.J. (1988) Biology and feeding behavior of Ceratopogonidae larvae (Diptera: Ceratopogonidae) in North America. *Bulletin of the Society of Vector Ecology*, 13, 60–81.
- Ronderos, M.M., Cazorla, C.G., Spinelli, G.R. & Carrasco, D.S. (2008a) Description of immature stages and adult diagnosis of *Stilobezzia coquilletti* Kieffer 1917 (Diptera: Ceratopogonidae). *Zootaxa*, 1958, 31–40.
- Ronderos, M.M., Diaz, F. & Sarmiento, P. (2008b) A new method using acid to clean and a technique for preparation of eggs of biting midges (Diptera: Ceratopogonidae) for Scanning Electron Microscope. *Transactions of the American Entomological Society*, 134 (3+4), 471–476. <http://dx.doi.org/10.3157/0002-8320-134.3.471>
- Ronderos, M.M., Spinelli, G.R. & Borkent, A. (2012) A peculiar new species of *Stilobezzia* Kieffer breeding in bamboo internodes in northeastern Argentina (Diptera: Ceratopogonidae). *Aquatic Insects: International Journal of Freshwater Entomology*, 34, 1–17. <http://dx.doi.org/10.1080/01650424.2012.718079>
- Ronderos, M.M., Spinelli, G.R. & Sarmiento, P. (2000) Preparation and Mounting of Biting Midges of the Genus *Culicoides* Latreille (Diptera: Ceratopogonidae) to be observed with a Scanning Electron Microscope. *Transactions of the American Entomological Society*, 126 (1), 125–132.
- Spinelli, G.R. (1983) Notas sobre Ceratopogonidae (Diptera, Nematocera) de la República Argentina. Una nueva especie del género *Alluaudomyia* Kieffer, redescrición de *Dasyhelea penthesileae* Macfie, y nuevas citas para el género *Stilobezzia* Kieffer. *Limnobiós*, 2, 403–411.
- Spinelli, G.R. & Wirth, W.W. (1993) Los Ceratopogonidae de la Argentina (Insecta: Diptera). In: de Castellanos, Z.A. (Ed.), *Fauna de agua dulce de la República Argentina, La Plata*, 38 (3), 1–121.
- Thomsen, L.C. (1937) Aquatic Diptera. Part V, Ceratopogonidae. *Memoirs of the Cornell University Agriculture Experimental Station*, 210, 57–80.
- Torreias, S.R.S., Ferreira-Keppler, R.L. & Ronderos, M.M. (2013) Biting midges (Ceratopogonidae: Diptera) present in aquatic macrophytes from wetlands of Marchantaria Island, Iranduba, Central Amazonia, Brazil. *Journal of Natural History*, 1–14. <http://dx.doi.org/10.1080/00222933.2013.791934>
- Wirth, W.W. (1974) Family Ceratopogonidae. In: Papavero, N. (Ed.), *A Catalog of the Diptera of the Americas south of the United States, Fasc. 14*. Museu de Zoologia, Universidade de Sao Paulo, pp. 89.