

## SCIENTIFIC COMMUNICATION

## New records of Simuliidae (Diptera, Nematocera) in the State of São Paulo, Brazil

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**ABSTRACT.** Adult and immature Simuliidae were studied in 31 streams of 8 regions of the State of São Paulo. Among the 25 species collected, seven are new records for the State of São Paulo, and one of them, *Simulium shewellianum* Coscarón, 1985 for Brazil as well.

**KEYWORDS.** Black fly; new records; Simuliidae; stream insects.

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The black flies (Diptera, Nematocera, Simuliidae) are distributed worldwide, except in Antarctica, in some deserts and on islands without running water (CROSSKEY 1990). According to CROSSKEY (2002), 1787 species are recognized; in Brazil 87 species have been reported, of which 83 belong to the genus *Simulium* Latreille, 1802 and four to the genus *Lutzsimulium* d'Andretta & d'Andretta, 1947 (CROSSKEY & HOWARD 1997; CROSSKEY 1999, 2002). In the State of São Paulo there are 42 species recorded (CROSSKEY & HOWARD 1997; CROSSKEY 2002).

This study is part of the "Biologia e Ecologia de Insetos, Moluscos e Crustáceos de água doce do Estado de São Paulo" project of the BIOTA/FAPESP program, which has as its goal the surveying of biodiversity of the São Paulo State.

The black fly fauna was surveyed in 31 streams in eight regions, including a park in the metropolitan area of São Paulo City, the center-west region, the north and south coastal region, and the mountain region of Serra da Mantiqueira and Serra do Mar. The sampling was realized in two campaigns: the dry season of 2001 (June - September) and the rain season of 2002 (January -April).

The larvae and pupae of black flies were collected manually

or with a Surber collector and fixed in 70% ethanol. Some pupae were reared to adults, and then stored in 70% ethanol; also, female adults biting humans during the sampling period were collected and stored in 70% ethanol. The specimens were deposited in the Museu de Zoologia da Universidade de São Paulo. Some additional specimens were deposited in the collection of Laboratório de Entomologia Aquática da Universidade Federal de São Carlos.

Twenty-five species of black flies were collected during this study: *Simulium anamariae* Vulcano, 1962; *S. botulibranchium* Lutz, 1910; *S. brachycladum* Lutz & Pinto, 1932; *S. clavibranchium* Lutz, 1910; *S. dinelli* (Joan, 1912); *S. distinctum* Lutz, 1910; *S. empascae*, Py-Daniel & Moreira, 1988; *S. friedlanderi*, Py-Daniel, 1987; *S. inaequale* Paterson & Shannon, 1927; *S. incrustatum* Lutz, 1910; *S. lutzianum* Pinto, 1931; *S. nigrimanum* Macquart, 1838; *S. noguerai* d'Andretta & Dolores Gonzalez, 1964; *S. perflavum* Roubaud, 1906; *S. pertinax* Kollar, 1832; *S. riograndense* Py-Daniel, Souza & Caldas, 1988; *S. spinibranchium* Lutz, 1910; *S. subclavibranchium* Lutz, 1910; *S. subnigrum* Lutz, 1910; *S. subpallidum* Lutz, 1910; *S. shewellianum* Coscarón, 1985; *S. travassosi* d'Andretta & d'Andretta, 1947; *S. (Psaroniocompsa)*

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**Table I.** New records of Simuliidae (Diptera: Nematocera) in the State of São Paulo, Brazil.

Species	Region	Stream's coordinates/ Vegetation	Substrate
<i>S. riograndense</i> , Py-Daniel, Souza & Caldas, 1988.	Fazenda Canchim – EMBRAPA-CPPSE (São Carlos)	21°56'12" S, 47°54'15" W Semideciduous Forest	Rocks
<i>S. friedlanderi</i> Py-Daniel, 1987.	Fazenda Canchim – EMBRAPA-CPPSE (São Carlos)	21°56'12" S, 47°54'15" W Semideciduous Forest	Rocks
<i>S. empascae</i> Py-Daniel & Moreira, 1988.	Parque Estadual do Jaraguá (São Paulo metropolis)	23°27'59" S, 46°45'58" W Atlantic Forest	Rocks
<i>S. dinelli</i> Joan, 1912.	Parque Estadual da Serra do Mar – Núcleo Cubatão Cananéia	23°54'08" S, 46°28'23" W 24°53'23" S, 47°58'54" W Atlantic Forest	Rocks and vegetation
<i>S. shewellianum</i> * Coscarón, 1985.	Cananéia	24°53'03" S, 47°51'22" W Atlantic Forest	Vegetation
<i>S. lutzianum</i> Pinto, 1932.	Parque Estadual Intervalas (Guapiara)	24°20'20" S, 48°26'03" W Atlantic Forest	Vegetation
<i>S. (Psaroniocompsa)</i> sp.	Parque Estadual Intervalas (Guapiara)	24°20'20" S, 48°26'03" W Atlantic Forest	Female biting human

\* New record in Brazil.

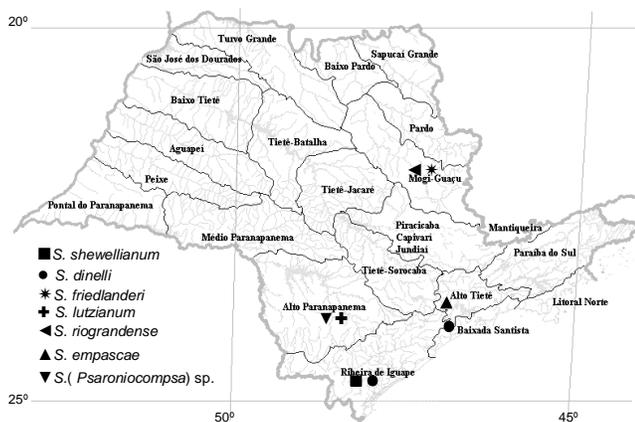
**sp.**, in the amazonicum group; *Lutzsimulium pernigrum* (Lutz, 1910); *L. hirticosta* (Lutz, 1910). Seven species are recorded for the first time for the state and one is a new record for Brazil (Table I, Figure 1). All the species were collected in the dry and wet season, except *S. (Psaroniocompsa)* **sp.** that was collected only in the dry season.

The larvae and pupae of *Simulium riograndense* and *S. friedlanderi* were collected in a stream located in a semideciduous forest area with complete canopy cover. Both were found attached to rocks located in small waterfalls. *Simulium empascae* was found on rocks in a stream with a

steep slope and partial canopy cover. *Simulium dinelli* were collected at two coastal locations (Cubatão and Cananéia) in semi-polluted streams with intermediate slope and riparian vegetation absent. *Simulium shewellianum*, a new record for Brazil, was collected at the base of the Serra do Mar mountains (Cananéia county) in a stream with a gentle slope, a streambed composed of sand and decomposed vegetation in an area with complete canopy cover. Larvae and pupae were collected on submerged tree branches and stems. *Simulium lutzianum* was collected in the Rio das Mortes in an area with riparian vegetation and partial canopy cover. The immatures were found attached to streamside vegetation that was in contact with the water surface. *Simulium (Psaroniocompsa)* **sp.** was collected in the Rio das Mortes biting humans during fieldwork. Only one adult female was collected, and its scutum pattern is similar to those of the *Simulium oyapockense* species complex; in the *amazonicum* group (CROSSKEY & HOWARD 1997), identification to species was not possible, since other life stages were not collected, especially the male adult. *Simulium oyapockense s.l.* was recently discovered in Argentina (COSCARÓN & COSCARÓN-ARIAS 2000).

Although this study has limited to low order streams and concentrated in some regions of the state of São Paulo the results represent more than 50% of the known black fly fauna of this state. Furthermore, the seven new records increase to 49 species reported for the state of São Paulo and 88 to Brazil.

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**Fig. 1.** Map of the State of São Paulo indicating the region of the new black fly species (Diptera: Simuliidae) records (modified from Biota 1999).

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