

New record of *Pterotaenia fasciata* (Wiedemann) (Diptera, Ulidiidae) in Brazil, a probably mechanical vector of enteric bacteria

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ABSTRACT. New record of *Pterotaenia fasciata* (Wiedemann) (Diptera, Ulidiidae) in Brazil, a probably mechanical vector of enteric bacteria. *Pterotaenia fasciata* is commonly recorded in rural areas in Argentina, but during a Diptera survey study developed in a reservoir which retains storm water from polluted canals in an urban area of Taboão da Serra municipality, SP, Brazil, we could capture *P. fasciata* adults. Enteric bacteria *Escherichia coli* T. Escherich, 1885 and *Proteus* sp. were isolated from *P. fasciata* collected in traps inside the reservoir and around it. Fecal coliforms and *E. coli* were found in the water of the reservoir. These records suggest that a high abundance of this species at urban areas with inadequate sewage canals should reveal these muscoid dipterans as mechanical vectors of enteric bacteria.

KEYWORDS. Microbiology; Neotropical; Parasitology; Taxonomy; Urbanization.

RESUMO. Novo registro de *Pterotaenia fasciata* (Wiedemann) (Diptera, Ulidiidae) no Brasil, um provável vetor mecânico de enterobactérias. *Pterotaenia fasciata* é encontrada freqüentemente em áreas rurais na Argentina, mas durante um estudo de levantamento de Diptera em um reservatório de retenção de enchentes em uma área urbana do município de Taboão da Serra, SP, Brasil, foram capturados adultos de *P. fasciata*. As enterobactérias *Escherichia coli* T. Escherich, 1885 e *Proteus* sp. foram isoladas de *P. fasciata* coletada em armadilhas no reservatório e em seu entorno. Coliformes fecais e *E. coli* foram encontrados na água do reservatório. Esses registros sugerem que a alta abundância dessa espécie em áreas urbanas sem saneamento básico poderia indicar esses dípteros muscóides como vetores mecânicos de enterobactérias.

PALAVRAS-CHAVE. Microbiologia; Neotropical; Parasitologia; Taxonomia; Urbanização.

Wiedemann (1830) described *Pterotaenia fasciata*, as *Ortalis fasciata*, briefly diagnosing the species by its black ground colour, whitish stripes on thorax, five blackish stripes on wings and bright whitish abdomen.

Steyskal (1968) recognized *P. fasciata* in family Otitidae. Nevertheless, the Diptera Site (2006) includes this species among the family Ulidiidae. The type-locality of *P. fasciata* is the city of Montevideo in Uruguay and the geographical distribution of the species is recorded to Bolivia, Uruguay, Argentina and Chile (Steyskal, 1968).

In laboratory, Arce de Hamity (1989) inferred that life cycle of *P. fasciata* from egg to adult was 70±11 days. In this investigation, the adult life cycle (6±2 days) in laboratory differed from life cycle (42±8 days) of field collected adults, in Argentina. Immature stages breed in fruits and vegetal tissues decomposing its organic components, and then high abundance of *P. fasciata* in areas of land used to cultivate crops may be undesirable for a farmer.

According with Rey (2003), flies play a role as mechanical vectors in the transmission of pathogens to susceptible hosts.

The pathogens can be in fecal matter, biodegradable waste or others contaminated substrates where flies feed in and can carry these pathogens either on surface of its body or in its digestive system to another substrate which will be eaten by a susceptible host.

This communication aims to report the new record of *P. fasciata* in an urban environment, and also the first record of the species in Brazil.

The studied area was the TPI-4 reservoir which was constructed to retain storm water or rain runoff from canals that contain sewage in an urban area in Taboão da Serra, SP. TPI-4 structure has not been finished and its floor is covered by muddy soil. The TPI-4's maintenance was not done by municipal government between 2002 and 2004.

Traps for flies capture were used according with Ferreira (1978). Plastic traps with 50g of fresh fish inside were settled 1m of height above the floor. Ten traps were settled on the TPI-4 floor and five were settled on the peridomiciliary environment nearby TPI-4. The traps were collected 48 hours later when atmospheric temperature was 26°C degrees. Twenty-

one *P. fasciata* in TPI-4 and one nearby it were captured. Groups 1 and 2 formed each one by 7 specimens captured in TPI-4 were tested, respectively, with procedures of identification of the species and with a parasitological exam. Group 3 formed by 7 specimens captured in TPI-4 plus one specimen captured nearby it was tested with a microbiological exam.

The identification of the species was done by comparing the collected material with the specimens deposited in the Diptera collection of the Museu de Zoologia da Universidade de São Paulo.

At the parasitological laboratory, seven *P. fasciata* were anesthetized and each of them was put in a test tube with distilled water, and then these test tubes were set inside a centrifuge machine during two minutes with 1,500 revolutions per minute. The research for helminth eggs and protozoa cysts were carried out by means of optical microscopy analysis on the material precipitated inside the test-tube.

At the microbiological laboratory, eight *P. fasciata* were set on eight plates containing MacConckey agar medium for the isolation of enteric bacteria colonies. Lac + and Lac- colonies isolated were submitted to specific biochemistry tests (EPM medium, MILi and citrate agar) for the identification of the species.

Three samples of water were collected inside TPI-4 which had no drainage system working. 100 ml of water were analyzed from each sample by means of the method of filtration in membrane with porous of 0,45 µM, put on plate with mTec agar medium (Difco), specific for research of fecal coliforms and enteric bacteria *Escherichia coli* T. Escherich, 1885. The samples were diluted 1/1000.

From all the *P. fasciata* collected during this survey, 21 (96 %) were captured inside TPI-4. The high temperature (26° C) recorded has influenced fish decomposition that attracted the flies by chemical responses. It was a new record of *P. fasciata* in Brazil at an urbanized environment.

None helminth eggs and protozoa cysts were detected, but a larger sample must be necessary to really evaluate this data. *E. coli* and *Proteus* sp. were isolated from seven

specimens of *P. fasciata* collected inside TPI-4 and one specimen of this species nearby it. Fecal coliforms and *E. coli* were found in all samples of water analyzed. *E. coli* and *Proteus* sp. are members of the order Enterobacteriales, facultatively anaerobic, gram-negative rods. Although considered common inhabitants of the intestinal tract of humans and other animals, these bacteria may be a cause of urinary infections or even intestinal diseases (Nataro & Kaper, 1998; Trabulsi & Alterthum, 2004). Finally, those results indicate that TPI-4 retains contaminated water with enteric bacteria and *P. fasciata* may carry them, as mechanical vectors, from inside TPI-4 to the peridomiciliary environment.

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