

Tabanids of an area infected by *Trypanossoma vivax* in the pantanal of Mato Grosso do Sul state, Brazil

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Summary

This study aimed to identify the tabanid species as well as their relative abundance and seasonality in the sub region of Miranda, a transition area from the Pantanal to the highland savanna (Cerrado). Tabanids were most abundant during the rainy seasons and population peaks were observed in October 2001, February/March and December 2002, generally associated with the beginning of the rainy season (October 2001 and December 2002) and temperature increasing.

Trypanosoma vivax (Trypanosomatidae) is a pathogenic trypanosome found in wild and domestic herbivores, mainly in cattle (*Bos taurus*, *Bos indicus*, and crossbreeds), in Africa and South America. Although in the African continent *T. vivax* is cyclically transmitted by tsetse flies (Diptera: Glossinidae), it is only mechanically transmitted by tabanids (Diptera: Tabanidae) in South America. Indeed, the role of tabanids as mechanical vectors of *T. vivax* should be considered important also in Africa, since transmission by an African species has been demonstrated (Desquesnes & Dia, 2003). The epidemiology of cattle trypanosomiasis in the Pantanal, which is widely spread in the region (Silva *et al.*, 1996), is considered to be tabanid dependent.

The Pantanal is composed by several sub regions and except for the studies conducted at the Nhecolândia sub region (Barros & Foil, 1999; Barros, 2001), tabanids from other areas are poorly known or virtually unknown. This study aimed to identify the tabanid species as well as their relative abundance and seasonality in the sub region of Miranda, a transition area from the Pantanal to the highland savanna (Cerrado).

Materials and Methods

From June 2001 to January 2003 tabanid captures were conducted at the Guaicurus Ltda. ranch (20° 6' S and 56° 48' W), located in the Miranda sub region of the Pantanal, state of Mato Grosso do Sul. The Pantanal is a seasonally flooded plain of about 140,000 km² located near the Bolivian border, with a rainy season generally occurring from October to April.

Tabanid captures were conducted using canopy (Hribar *et al.* 1991) and Nzi traps, three of each type. All traps were baited with the chemical attractant Octenol (Takken and Kline, 1989) and the canopy traps also had a visual target (40 cm diameter black beach ball suspended under the trap). The six traps were placed in open areas (native grass), about 10m of dense vegetation edges, and monthly captures were carried out

during a 7-day period. The insects were collected daily from traps and labeled. Identification of tabanid species was made with the aid of taxonomic keys.

During the study, climatic parameters such as temperature, relative humidity and rainfall data were obtained from a weather station located in the ranch.

Results and Discussion

During the 20 months of this study a total of 5,523 tabanids were caught, belonging to 36 species, 19 genera and 3 subfamilies. It was observed a predominance of *Tabanus* (12) species, followed by *Chrysops* (3), *Esenbeckia*, *Fidena*, *Leucotabanus*, and *Stipommisa* (2), and just one species of the genera *Acanthocera*, *Chlorotabanus*, *Cryptotylus*, *Diachlorus*, *Dichaelacera*, *Lepiselaga*, *Myiotabanus*, *Phaeotabanus*, *Phorcotabanus*, *Pityocera*, *Poeciloderas*, *Pseudacanthocera*, and *Selasoma*.

Most species captured in this study were previously reported in other studies conducted elsewhere in the Pantanal (Barros & Foil, 1999; Barros, 2001). Some exceptions were the species from the genera *Acanthocera*, *Fidena*, *Pityocera*, and *Stipommisa*, some of which associated with relatively higher altitudes, which occur in the study area.

Tabanids were most abundant during the rainy seasons and population peaks were observed in October 2001, February/March and December 2002, generally associated with the beginning of the rainy season (October 2001 and December 2002) and temperature increasing (Figure). Lower tabanid populations occurred during the drier months of both years. A general similar trend was observed by Barros (2001) in the Nhecolândia sub region, when tabanid peaks were observed in October, January and March.

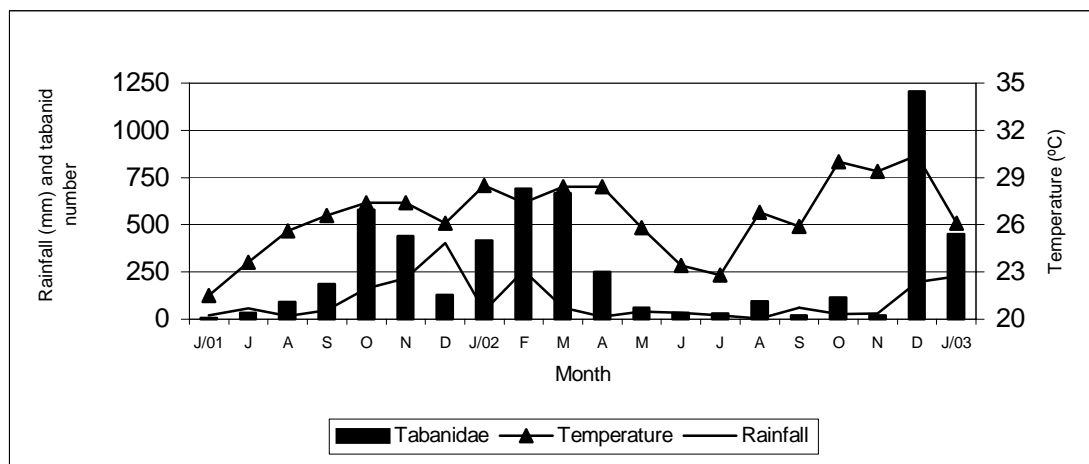


Figure: Seasonal fluctuation of tabanids caught in canopy and Nzi traps, from June 2001 to January 2003, at the Guaicurus ranch, Miranda sub region, Pantanal, Mato Grosso do Sul state, Brazil.

Tabanus occidentalis was the most abundant species representing 63.3% of the total caught, followed by *Lepiselaga crassipes* (8.1%) and *T. claripennis* (4.8%). In

both studies conducted at Nhecolândia, *T. importunus* was the most abundant species, followed by *T. occidentalis*, *T. claripennis*, and *L. crassipes* (Barros & Foil, 1999; Barros 2001).

Although species already known as mechanical vectors of *T. vivax*, such as *Cryptotylus unicolor* (Ferenc *et al.*, 1988), *T. importunus* (Raymond, 1990), and *T. nebulosus* (Otte & Abuabara, 1991) occurs in the region, their relatively low abundance did not exceed 3,6%. On the other hand, the high frequency and abundance (63.3%) of *T. occidentalis* may suggest an important role of this species in *T. vivax* transmission in some areas of the Pantanal, such as the Miranda sub region. Further studies are needed to evaluate the potential of *T. occidentalis* and other species as mechanical vectors of pathogens to cattle.

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Financial support: CNPq, Fundect, Embrapa, Fundapan. Logistic support: Guaicurus Ltda. Ranch.