

## SCIENTIFIC NOTE

## Hosts and Parasitoids of Fruit Flies (Diptera: Tephritoidea) in the State of Tocantins, Brazil

DARCY A. BOMFIM<sup>1</sup>, MANOEL A. UCHÔA-FERNANDES<sup>2</sup> AND MARCOS A.L. BRAGANÇA<sup>1</sup><sup>1</sup>Curso de Ciências Biológicas, Univ. Federal do Tocantins, Rua 3, qd. 17 s/n, Jardim dos Ipês, 77500-000 Porto Nacional, TO<sup>2</sup>Univ. Federal da Grande Dourados, Rod. Dourados-Itahum, km 12, Dourados, MS*Neotropical Entomology* 36(6):984-986 (2007)

## Hospedeiros e Parasitóides de Moscas-das-Frutas (Diptera: Tephritoidea) de Tocantins

RESUMO - Moscas-das-frutas foram obtidas de larvas criadas em frutos de 13 espécies de frutíferas, naturalmente infestadas, de janeiro a outubro de 2005. Coletaram-se 1.753 fêmeas de 11 espécies: *Anastrepha coronilli* Carrejo & González, *A. fraterculus* (Wied.), *A. mucronota* Stone, *A. obliqua* (Macquart), *A. sororcula* Zucchi, *A. striata* Schiner, *A. turpiniae* Stone, *A. zenildae* Zucchi, *Anastrepha* sp., *Ceratitis capitata* (Wied.) e *Neosilba* sp. Foram coletadas também seis espécies de parasitóides associados às larvas de *Anastrepha*: *Asobara anastrephae* (Muesebeck), *Doryctobracon areolatus* (Szépligeti), *Doryctobracon* sp., *Opius bellus* Gahan, *Opius* sp. e *Utetes anastrephae* (Viereck).

PALAVRAS-CHAVE: *Anastrepha*, *Ceratitis capitata*, *Neosilba*, Braconidae, fruto hospedeiro, Região Norte

ABSTRACT - Fruit flies were obtained from 13 species of naturally infested fruits in the central region of Tocantins State, from January to October 2005. A total of 1,753 female flies were collected that belong to 11 species: *Anastrepha coronilli* Carrejo & González, *A. fraterculus* (Wied.), *A. mucronota* Stone, *A. obliqua* (Macquart), *A. sororcula* Zucchi, *A. striata* Schiner, *A. turpiniae* Stone, *A. zenildae* Zucchi, *Anastrepha* sp., *Ceratitis capitata* (Wied.) and *Neosilba* sp. Also six species of parasitoids were associated to *Anastrepha* larvae: *Asobara anastrephae* (Muesebeck), *Doryctobracon areolatus* (Szépligeti), *Doryctobracon* sp., *Opius bellus* Gahan, *Opius* sp. and *Utetes anastrephae* (Viereck).

KEY WORDS: *Anastrepha*, *Ceratitis capitata*, *Neosilba*, Braconidae, host fruit, Northern Region

The objective of this paper was to report the occurrence of fruit flies, their parasitoids and host fruits in the state of Tocantins, Brazil. Fruit samples were sampled in five counties of the central region of the State: Porto Nacional, Palmas, Monte do Carmo, Brejinho de Nazaré, and Lagoa da Confusão, from January to October 2005. The fruits were collected at random in native forest, "cerrado" areas, and domestic and commercial orchards. Fruits were either picked ripe from the plant, or taken from the ground if they were firm or apparently firm.

Fruit samples were taken to an insect-rearing room (photoperiod 12h, temperature from 21°C to 30°C and RH from 73% to 92%) at the Universidade Federal do Tocantins (UFT), in Porto Nacional, TO. The fruits were placed on wooden racks covered with 9 mm diameter plastic mesh in order to collect the frugivorous larvae. The flies and parasitoids were obtained according to the methodology developed by Uchôa-Fernandes & Zucchi (1999) and fixed in alcohol 70%. As *fraterculus* complex is formed by several cryptic species (Hernández-Ortiz *et al.* 2004, Selivon *et al.* 2005), the name *A. fraterculus* is being used herein in its *sensu lato*.

Voucher specimens of fruit fly are deposited at collectoin of Museu da Biodiversidade, Faculdade de Ciências Biológicas e Ambientais, Universidade Federal da Grande Dourados (UFGD), Dourados, MS, and the parasitoids, at a collection of entomology in the Escola Superior de Agricultura Luiz de Queiroz, Universidade de São Paulo, Piracicaba-SP.

Thirteen fruit species were infested by 11 species of fruit flies that hosted six parasitoid species (Table 1). *Anastrepha obliqua* (Macquart) infested more hosts (six species) than other fruit fly species. *Psidium guajava* L. (guava) was infested by the largest number of fruit fly species (eight species), followed by *Psidium guineense* Sw. ("araçá"), with six species. *Anacardium occidentale* L. (cashew fruit) and *Mangifera indica* L. (mango) were infested only by *A. obliqua*. Red mombim (*Spondias purpurea* L.) hosted most of the parasitoids species (four species) and *Ceratitis capitata* (Wied.) was found only in star fruit (*Averrhoa carambola* L.).

Most *Anastrepha* species were collected from Myrtaceae fruits, followed by the Anacardiaceae and Oxalidaceae. Only one fruit fly species was collected from *Salacia elliptica* (Mart.) ("bacupari"), *Mauritia flexuosa* L. ("buriti"), *Eugenia*

Table 1. Fruit fly species and their hosts, parasitoids, and counties of occurrence in the State of Tocantins, Brazil (January to October 2005).

Host	Fly ♀♀ (n)	Fly	Parasitoid	Parasitoid (n)	County
<b>Anacardiaceae</b>					
<i>Anacardium occidentale</i>	34	<i>A. obliqua</i>			PN
<i>Mangifera indica</i>	105	<i>A. obliqua</i>	<i>Asobara anastrephae</i>	12	P N, MC
			<i>Doryctobracon areolatus</i>	1	PN
			<i>Opius</i> sp.	1	PN
<i>Spondias lutea</i>	24	<i>Anastrepha</i> spp.	<i>A. anastrephae</i> <sup>1</sup>	24	PN
			<i>A. obliqua</i>		
			<i>A. striata</i>	1	
<i>Spondias purpurea</i>	802	<i>Anastrepha</i> spp.	<i>A. anastrephae</i> <sup>1</sup>	372	BN, PN
			<i>Opius bellus</i> <sup>1</sup>	4	BN, PN
			<i>Opius</i> sp. <sup>1</sup>	2	BN
			<i>Utetes anastrephae</i> <sup>1</sup>	3	BN
	1	<i>A. obliqua</i>			
	1	<i>A. sororcula</i>			
<b>Hippocrateaceae</b>					
<i>Salacia elliptica</i>	12	<i>A. mucronota</i>			LC
<b>Myrtaceae</b>					
<i>Psidium guajava</i>	140	<i>Anastrepha</i> spp.	<i>A. anastrephae</i> <sup>1</sup>	6	PN, PL, MC
			<i>Anastrepha</i> sp.		PN
			<i>A. fraterculus</i>	52	PN, P, MC
			<i>A. obliqua</i>	15	PN, MC
			<i>A. sororcula</i>	179	PN, PL, MC
			<i>A. striata</i>	35	PN, MC
			<i>A. turpiniae</i>	38	PN, PL, MC
			<i>A. zenildae</i>	140	PN, MC
			<i>Neosilba</i> sp.	1	PN
			<i>Psidium guineense</i>	30	<i>Anastrepha</i> sp.
<i>A. fraterculus</i>	7	PN			
<i>A. sororcula</i>	30	PN			
<i>A. striata</i>	14	PN			
<i>A. turpiniae</i>	8	PN			
	5	<i>A. zenildae</i>		PN	
<i>Eugenia jambos</i>	1	<i>A. fraterculus</i>		PN	
<b>Melastomataceae</b>					
<i>Bellucia grossularioides</i>	54	<i>A. coronilli</i>	<i>D. areolatus</i>	3	PL
			<i>Doryctobracon</i> sp.	1	PL

Continue

Table 1. Continuation.

Host	Fly ♀♀ (n)	Fly	Parasitoid	Parasitoid (n)	County
Malpighiaceae					
<i>Malpighia emarginata</i>	3	<i>Neosilba</i> sp.			PN
Oxalidaceae					
<i>Averrhoa carambola</i>	18	<i>A. obliqua</i>			PN, PL, MC
	1	<i>A. sororcula</i>			PN
	140	<i>C. capitata</i>			PN
<i>Citrus reticulata</i>	1	<i>Neosilba</i> sp.			PN
Palmae					
<i>Mauritia flexuosa</i>	15	<i>Neosilba</i> sp.			PN
Totals	1,753			429	

<sup>1</sup>Indefinite host fly species.

BN = Brejinho de Nazaré; PL = Palmas; PN = Porto Nacional; LC = Lagoa da Confusão; MC = Monte do Carmo

*jambos* L., *Bellucia grossularioides* (L.) (“goiaba-de-anta”), *Malpighia emarginata* D.C. (barbados cherry), and *Citrus reticulata* L. (tangerine) (Table 1). *Anastrepha mucronota* Stone was obtained only from bacupari. This is the first host record to *A. mucronota* in Brazil. *Anastrepha coronilli* Carrejo & González, were reared only from “goiaba-de-anta” and *C. capitata* only from star fruit.

A new host for *A. triata* Schiner in Brazil was recorded, the hog plum (*Spondias lutea* L.). The first hosts of *Anastrepha sororcula* Zucchi, and *Anastrepha turpinae* Stone, in the Brazilian Northern region are recorded herein (Table 1). The lonchaeid (*Neosilba* sp.) were obtained from: *M. flexuosa* L. (“buriti”), guava, *M. emarginata* and *C. reticulata* (tangerine) fruits.

Six species of parasitoids (Braconidae) were collected (Table 1). *Doryctobracon areolatus* (Szépligeti) and *Doryctobracon* sp. parasitized *A. coronilli* larvae, which developed in fruits of *Bellucia grossularioides*. From *A. obliqua* larvae in infested mango emerged *Asobara anastrephae* (Muesebeck), *D. areolatus* and *Opius* sp. We were not able to associate the species of parasitoids with the host fruit fly larvae in *S. purpurea*, *S. lutea* and *P. guajava* (Table 1), because more than one fly species emerged per fruit sampled.

### Acknowledgments

We thank Cláudia Fidelis Marinho for parasitoid identification and Roberto Antonio Zucchi (ESALQ/USP)

for his significant contribution to the manuscript; CAPES (Coordenação de Aperfeiçoamento do Pessoal de Nível Superior) for the Master’s Program scholarship awarded to the first autor; and FUNDECT (Fundação de Apoio ao Desenvolvimento do Ensino, Ciência e Tecnologia do Estado de Mato Grosso do Sul) for the financial support.

### References

- Hernandez-Ortiz, V., J.A. Gomez-Anaya., A. Sanchez., B.A. McPherson & M. Aluja. 2004. Morphometric analysis of Mexican and South American populations of the *Anastrepha fraterculus* complex (Diptera: Tephritidae) and recognition of a distinct Mexican morphotype. *Bull. Entomol. Res.* 94: 487-499.
- Selivon, D., A.L.P. Perondini & J.S. Morgante. 2005. A genetic-morphological characterization of two cryptic species of the *Anastrepha fraterculus* complex (Diptera: Tephritidae). *Ann. Entomol. Soc. Am.* 98: 367-381.
- Uchôa-Fernandes, M.A. & R.A. Zucchi. 1999. Metodología de colecta de Tephritidae y Lonchaeidae frugívoros (Diptera: Tephritoidea) y sus parasitoides (Hymenoptera). *An. Soc. Entomol. Bras.* 28: 601-610.

Received 09/X/06. Accepted 04/IX/07.