FIRST REPORT OF *CERATITIS CAPITATA* (DIPTERA: TEPHRITIDAE) IN THE EASTERN AMAZON, PARÁ, BRAZIL

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The Brazilian Amazon, which comprises about 45% of the Brazilian territory, contains approximately 180 known native and exotic fruit species (Zucchi et al. 1996). The available data on fruit flies and their hosts are scarce when compared to the high diversity of the available host species that occur in the region (Silva et al. 1996).

Earlier surveys of fruit flies in the Brazilian Amazon reported several *Anastrepha* species reared from collected fruit or captured in traps, but no specimens of Mediterranean fruit fly, *Ceratitis capitata* (Wiedemann), were found (Malavasi et al. 1980, Silva 1993, Silva et al. 1996, Zucchi et al. 1996).

C. capitata is native to sub-Saharan Africa (White & Elson-Harris 1992) but a global process of colonization has been taking place throughout the last century. In Brazil, where its presence has been reported since the early 1900's (Ihering 1901), *C. capitata* is considered one of the major quarantine pests, preferentially infesting in-

troduced fruit species (Malavasi et al. 1980). Until the 1980's, this species was reported only from the southern and southeastern regions of the country, with the Recôncavo Baiano region, Bahia, as its northernmost limit (Malavasi et al. 1980, Nascimento & Zucchi 1981). However, more recently, it has been reported further north as far as São Luís, Maranhão, infesting tropical almond (*Terminalia catappa* L.) (Morgante 1991).

Until recently, this species had not been reported in the Amazon. According to Silva (1993), the Amazon region imports a large amount of fruit, without any quarantine restrictions, from the State of São Paulo where this pest has long been established. Therefore, he suggested that *C. capitata* may have been introduced into the region but had not become established due to unfavorable local climatic conditions, such as high local temperatures and humidity. Recently, Ronchi-Telles & Silva (1996) reported *C. capitata's* presence for the first time in the southern Amazon, Rondônia, infesting guava (*Psidium guajava* L.).

We collected fruits of nine different plant species from six families in two localities in Pará (Belém, 1°48'S; 48° 30'W, and Quatro Bocas' 2°30'S; 48°18'W) in February, 1997. The fruits were placed in containers with a layer of vermiculite as a pupation medium, and the pupae were held in plastic cups until emergence of adults. Voucher specimens were deposited at the Departamento de Entomologia, Escola Superior de Agricultura Luiz de Queiroz (ESALQ), Universidade de São Paulo, Piracicaba, SP, Brazil.

Table 1 shows the tephritid species and their hosts, as well as parasitoids and other flies reared from our collections.

The presence of medfly is reported for the first time in the eastern Amazon (Belém, Pará) infesting carambola (*Averrhoa carambola* L.) and Barbados cherry (*Malpighia glabra* L.). The presence of this species in Pará may be due to its spread from the neighboring State of Maranhão, where it was detected in the early 1990's, or to introductions from other regions. The role played by human mediated transportation in the dispersal of *C. capitata* should not be overlooked, since Belém is an important port in the Amazon basin.

It seems unlikely that the populations of southern and eastern Amazon (Ouro Preto D'Oeste, 10°42'49" S; 62°14'29" W, and Belém, 1°48'S; 48°30' W, respectively) are contiguous. Further studies, including extensive surveys in the Amazon and the use of genetic markers (Gasparich et al. 1997, Silva 1996) are necessary to resolve questions of colonization and genetic relationships among populations in this region.

Only two *Anastrepha* species were found in this study: *A. obliqua* (Macquart) and *A. striata* Schiner. All of the parasitoids were found associated with *Anastrepha* spp. and belong to the species *Doryctobracon areolatus* (Szépligeti) (Hymenoptera: Braconidae). The lonchaeid specimens that emerged from the collected fruit belong to the species *Neosilba pendula* (Bezzi). These species have been reported in the region in earlier studies (Malavasi et al. 1980, Silva 1993, Silva et al. 1996, Zucchi et al. 1996).

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SUMMARY

The occurrence of *Ceratitis capitata* (Wiedemann) (Diptera: Tephritidae) is reported in the eastern Amazon, State of Pará, for the first time. The specimens were ob-

TABLE 1. TEPHRITOIDS AND ASSOCIATED PARASITOIDS COLLECTED IN BELÉM AND QUATRO BOCAS, PARÁ, BRAZIL.

Host family	Host species	*Anastrepha* species	N	*C. capitata* N	Lonchaeidae N	Parasitoids N
Anacardiaceae	*Mangifera indica* L.	–		–	–	–
	Spondias mombin L.	–		–	–	–
Malpighiaceae	*Malpighia glabra* L.	*obliqua*	45F; 50M	1F	5M	1F
		striata	1F; 1M	–	–	–
Myrtaceae	*Eugenia stipitata* McVaugh	–		–	–	-–
	Psidium acutangulum DC.	*striata*	20F; 18M	–	–	4F
		obliqua	1M	–	–	–
	Psidium guajava L.	*striata*	1F	–	–	–
Oxalidaceae	*Averrhoa carambola* L.	–		20F; 26M	–	–
Passifloraceae	*Passiflora edulis* Sims	–		–	–	–
Sapotaceae	*Manilkara zapota* L.	–		–	–	-–

N = number of adults, M = males, F = females.

tained from infested carambola (*Averrhoa carambola* L.) and Barbados cherry (*Malpighia glabra* L.). Rearing of *Anastrepha* spp., a lonchaeid and a parasitoid is also reported.

References Cited

GASPARICH, G. E., J. G. SILVA, H -Y. HAN, B. A. MCPHERON, G. J. STECK, AND W. S. SHEPPARd. 1997. Population genetic structure of the mediterranean fruit fly (Diptera: Tephritidae) and implications for worldwide colonization patterns. the an. Entomol. Soc. America. 90(6): 790-797.

IHERING, H. VON. 1901. Laranjas bichadas. Rev. Agri., 6: 179.

MALAVASI, A., J. S. MORGANTE, AND R. A. ZUCCHI. 1980. Biologia de "moscas-das-frutas" (Diptera: Tephritidae). I: Lista de hospedeiros e ocorrência. Rev. Brasileira Biol., 40(1): 9-16.

MORGANTE, J. S. 1991. Moscas-das-frutas: (Tephritidae): características biológicas, detecção e controle. Brasília, Minist. Agric. Ref. Agr., SENIR, Bol. Tec., 19 pp.

NASCIMENTO, A. S. DO, AND R. A. ZUCCHI. 1981. Dinâmica populacional das moscas-das-frutas do gênero *Anastrepha* (Dip., Tephritidae) no Recôncavo Baiano. I - Levantamento das espécies. Pesq. Agropec. Brasileira, 16 (6): 763-767.

RONCHI-TELLES, B., AND N. M. DA SILVA. 1996. Primeiro registro de ocorrência da Mosca-do-Mediterrâneo (*Ceratitis capitata*) (Diptera: Tephritidae) na Amazônia Brasileira. An. Soc. Entomol. Brasil. 25(3): 569-570.

SILVA, N. M. DA. 1993. Levantamento e análise faunística de moscas-das-frutas (Diptera: Tephritidae) em quatro locais do Estado do Amazonas. PhD Dissertation. Escola Superior de Agricultura "Luiz de Queiroz" da Universidade de São Paulo, Piracicaba, S.P., Brazil. 152pp.

SILVA, N. M. DA, S. SILVEIRA NETO, AND R. A. ZUCCHI. 1996. The natural host plants of *Anastrepha* in the State of Amazonas, Brazil. pp. 353-357. *In*: B. A. McPheron and G. J. Steck (eds.). Fruit fly pests: a world assessment of their biology and management. St. Lucie Press, Delray Beach, Florida.

SILVA, J. G. 1996. Demografia e estrutura genética de *Ceratitis capitata* (Wiedemann) (Diptera, Tephritidae) e os processos de invasão e colonização no Brasil. PhD Dissertation. Departamento de Biologia, Instituto de Biociências, Universidade de São Paulo, São Paulo, S.P., Brazil, 115 pp.

WHITE, I. M., AND M. M. ELSON-HARRIS. 1992. Fruit flies of economic significance: their identification and bionomics. CAB International, Wallingford, UK.

ZUCCHI, R. A., N. M. DA SILVA, AND S. SILVEIRA NETO. 1996. *Anastrepha* species from the Brazilian Amazon: distribution, hosts and lectotype designations. pp. 259-264. *In*: B. A. McPheron and G. J. Steck (eds.). Fruit Fly Pests: a world assessment of their biology and management. St Lucie Press, Delray Beach, Florida.