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TALISIA OLIVAEFORMIS (SAPINDACEAE) AND ZUELANIA GUIDONIA (FLACOURTIACEAE): NEW HOST RECORDS FOR ANASTREPHA SPP. (DIPTERA: TEPHRITIDAE) IN MÉXICO

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The genus *Anastrepha* (Diptera: Tephritidae) includes the principal pests of many fruit crops in the New World (Foote et al. 1993). Host associations have been recorded from 44% of the described species, but new wild hosts frequently are found (Aluja et al. 2003). In the Mexican state of Campeche, 10 species of *Anastrepha* are known (Hernández-Ortiz 1992; Hernández-Ortiz et al. 2002; Tucuch-Cauich et al. 2008). Most records were obtained from label data on specimens deposited in entomological collections or from monitoring systems with McPhail traps (baited with liquid protein), and little information has been generated from wild host fruits in the region. We now report new records of fruit flies reared from 2 wild host fruits of cultural and economic importance in the Mexican state of Campeche.

Fruits of *Talisia olivaeformis* (H. B. K.) Radlk (Sapindaceae), known locally as guaya, fayum, guayo, or cotoperis, are green, 2-3 cm in diameter, spherical, with thick pericarp, orange-yellow flesh, and with a single seed (Pulido-Salas 1993). The edible fruits are a source of alternative income to inhabitants in the Campeche region (Zarate-Hoyos 1998) and its timber has economic potential (Pulido-Salas 1993).

The permetrina, paragua, tamay, or volador, *Zuelania guidonia* (Sw.) Britton & Millsp. (Flacourtiaceae) is a component of traditional Mayan gardens (Ford 2008) with spherical fruit 5 cm in diameter that ripen at the end of the dry season (Enquist & Sullivan 2001).

Ripe fruits samples were collected on 27 May (4.1 kg of *T. olivaeformis*) and 8 Jul 2009 (1 kg of *Z. guidonia*) in La Victoria, Campeche (18°29.251'N; 90°55.304'W; 42.6 elev.). The fruits were transported to the laboratory of the Escuela Superior de Ciencias Agropecuarias (Universidad Autónoma de Campeche, UAC) and dissected for extraction of larvae. These larvae were placed individually in plastic cups for rearing (3 × 2 cm), with agrolite (Polietilenos del Sur©, Morelos, México) as a substrate for pupation. The cham-

bers were maintained under ambient conditions (32°C ± 2, RH 95% ± 5).

Fruit flies began to emerge from *T. olivaeformis* on 12 Jun, with parasitoids emerging on 22 Jun. Specimens emerged from *Z. guidonia* on 24 Jul. Adult flies were preserved in 70% alcohol for subsequent identification with the keys of Foote et al. (1993) and the parasitoids with those of Guimaraes et al. (2005) and Wharton (1997). Voucher specimens (insects and plants) were deposited in the entomological collection and herbariums of the Escuela Superior de Ciencias Agropecuarias (UAC) and Universidad Autónoma de Yucatán (UADY).

Talisia olivaeformis yielded 168 pupae, of which 81 were *Anastrepha fraterculus* (Wiedemann) (47 females and 34 males), 6 were *Anastrepha ludens* (Loew) (3 females and 3 males), and 5 were *Doryctobracon areolatus* Szepligeti (5 females), a braconid parasitoid previously recorded from these *Anastrepha* species (López et al. 1999). *Zuelania guidonia* yielded 81 pupae: 31 were *A. fraterculus* (16 females and 15 males), 1 was *Anastrepha striata* Schiner (male) and 2 were *Odontosema albinerve* Kieffer (= *Odontosema anastrephae*, sensu Kieffer), a figitid parasitoid associated with these tephritid species (López et al. 1999).

Fruits of *T. olivaeformis* were recorded as a host for *Anastrepha* spp. in Venezuela by Guagliumi (1966), but the species were not determined; thus, the *Anastrepha* records presented here are the first identified *Anastrepha* species reported for this host plant.

Previously *Anastrepha zuelaniae* Stone was the only fruit fly known to be associated with *Z. guidonia* (Bush 1962; Norrbom & Kim 1988; Foote et al. 1993), but our data show that *A. fraterculus* and *A. striata* can complete their development in this host, as well as *A. zuelaniae*. The increase in the number of fruit fly species that attack wild hosts may be a preference for small wild fruits compared with larger fruit with

commercial value (Aluja et al. 2000) or competition for oviposition sites (Sivinski et al. 2004). Further study is needed to determine whether associations found here are occasional records or if the host resources are used by the tephritids regularly.

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SUMMARY

New host records of *Anastrepha* spp. (Diptera: Tephritidae) reared from 2 wild fruit species collected in Campeche, Mexico, are provided. *Anastrepha fraterculus* (Wiedemann) and *A. ludens* (Loew) were reared from *Talisia olivaeformis* (H. B. K.) Radlk., and *A. fraterculus* and *A. striata* Schiner from *Zuelania guidonia* (Sw.) Britton & Millsp. Specimens of the braconid larval parasitoid, *Doryctobracon areolatus* Szeplogi, were recovered from the *T. olivaeformis* fruits, and the eucoiline larval parasitoid *Odontosema albinerve* Kieffer was reared from *Z. guidonia*.

REFERENCES CITED

- ALUJA, M., PIÑERO, J., LÓPEZ, M., RUÍZ, C., ZÚÑIGA, A., PIEDRA, E., DÍAZ-FLEISCHER, F., AND SIVINSKI, J. 2000. New host plant and distribution records in Mexico for *Anastrepha* spp., *Toxotrypana curvicauda* Gerstaecker, *Rhagoletis zoqui* Bush, *Rhagoletis* sp., and *Hexachaeta* sp. (Diptera: Tephritidae). Proc. Entomol. Soc. Washington 102: 802-815.
- ALUJA, M., RULL, J., SIVINSKI, J., NORRBOM, A. L., WHARTON, R. A., MACÍAS-ORDÓÑEZ, R., DÍAZ-FLEISCHER, F., AND LÓPEZ, M. 2003. Fruit flies of the genus *Anastrepha* (Diptera: Tephritidae) and associated native parasitoids (Hymenoptera) in the tropical rainforest Biosphere Reserve of Montes Azules, Chiapas, Mexico. Environ. Entomol. 32: 1377-1385.
- BUSH, G. L. 1962. The cytotaxonomy of the larvae of some Mexican fruit flies in the genus *Anastrepha* (Tephritidae, Diptera). Psyche 69: 87-101.
- ENQUIST, B. J., AND SULLIVAN, J. J. 2001. Vegetative Key Descriptions of Tree Species of the Tropical Dry Forest of Upland Sector Santa Rosa, Area de Conservación Guanacaste, Costa Rica. Published by the authors. Tucson, USA. 68 pp.
- FOOTE, R. H., BLANC, F. L., AND NORRBOM, A. L. 1993. Handbook of the Fruit Flies (Diptera: Tephritidae) of America North of Mexico. Comstock Publishing Associates, Ithaca. xii + 571 pp.
- FORD, A. 2008. Dominant plants of the maya forest and gardens of El Pilar: implications for paleoenvironmental reconstructions. J. Ethnobiol. 28: 179-199.
- GUAGLIUMI, P. 1966. Insetti e aracnidi delle piante comuni del Venezuela segnalati nel periodo 1938-1963. Relaz. Monogr. Agr. Subtrop. Trop. (N.S.) 86: 392 pp.
- GUIMARAES, J. A., GALLARDO, F. E., AND DIAZ, N. B. 2005. Contribution to the systematics of *Odontosema* Kieffer (Hymenoptera: Cynipoidea: Figitidae). Trans. American Entomol. Soc. 131: 457-461.
- HERNÁNDEZ-ORTIZ, V. 1992. El género *Anastrepha* Schiner en México (Diptera. Tephritidae). Taxonomía, Distribución y sus Plantas Huéspedes. Instituto de Ecología Publ. 33. Xalapa, México. 162 pp.
- HERNÁNDEZ-ORTIZ, V., MANRIQUE-SAIDE, P., DELFÍN-GONZÁLEZ, H., AND NOVELO-RINCÓN, L. 2002. First report of *Anastrepha compressa* in Mexico and new records for other *Anastrepha* species in the Yucatan Peninsula (Diptera: Tephritidae). Florida Entomol. 85: 389-391.
- LÓPEZ, M., ALUJA, M., AND SIVINSKI, J. 1999. Hymenopterous larval-pupal and pupal parasitoids of *Anastrepha* flies (Diptera: Tephritidae) in Mexico. Biol. Control 15: 119-129.
- NORRBOM, A. L., AND KIM, K. C. 1988. A List of the Reported Host Plants of the Species of *Anastrepha* (Diptera: Tephritidae) U.S. Dep. Agric., APHIS, PPQ, APHIS 81-52.
- PULIDO-SALAS, M. T. 1993. Plantas útiles para consumo familiar en la región de la frontera Mexico-Belice. Caribbean J. Sci. 29: 235-249.
- SIVINSKI, J., ALUJA, M., PIÑERO, J., AND OJEDA, M. 2004. Novel analysis of spatial and temporal patterns of resource use in a group of tephritid flies of the genus *Anastrepha*. Ann. Entomol. Soc. America 97: 504-512.
- TUCUCH-CAUICH, F. M., CHI-QUE, G., AND ORONA-CASTRO, F. 2008. Dinámica poblacional de adultos de la mosca mexicana de la fruta *Anastrepha* sp. (Diptera: Tephritidae) en Campeche, México. Agric. Téc. México 34: 341-347.
- WHARTON, R. A. 1997. Generic relationships of opine Braconidae (Hymenoptera) parasitic on fruit-infesting Tephritidae (Diptera). Contrib. American Entomol. Inst. 30: 1-53.
- ZARATE-HOYOS, G. A. 1998. Markets and biodiversity in the Yucatan. Latin American Studies Association meeting. Palmer Home Hilton. Chicago, USA. September 24-26.