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THE ESTABLISHMENT OF *DIACHASMIMORPHA LONGICAUDATA* (HYMENOPTERA: BRACONIDAE) IN MISIONES, NORTHEASTERN ARGENTINA

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Diachasmimorpha longicaudata originated from the Indo-Pacific region, has been widely disseminated into America via Hawaii, and can be considered successfully established in most of the importing countries, such as Colombia, Costa Rica, Guatemala, El Salvador, Mexico, Nicaragua, Trinidad, United States of America (Florida), Venezuela (Ovruski et al. 2000), and Brazil (Carvalho & Nascimento 2002). This exotic parasitoid species is the most widely employed parasitoid now in use for augmentative biocontrol programs against fruit flies in Latin America and the southern United States, primarily because it is easily mass-rearing and it adapts readily to different fruit fly species of economic importance such as *Anastrepha fraterculus*, *A. suspensa* (Loew), *A. ludens* (Loew), *A. obliqua* (Macquart), *A. striata* Schiner, *A. serpentina* (Wiedemann) and *Ceratitis capitata* (Sivinski 1996), (Ovruski et al. 2000). Interestingly, *D. longicaudata* is a common parasitoid species of *Anastrepha* larvae particularly in exotic commercial fruit in the state of Veracruz, México (López et al. 1999), and it may enter a dry season diapause (Aluja et al. 1998).

In 1961, Argentina's Ministry of Agriculture and Cattle, together with the National Institute of Agricultural Technology (INTA), introduced the braconid parasitoid of fruit flies *D. longicaudata* to the country from Mexico. This biological control program was a direct response to the establishment of the Mediterranean fruit fly, *Ceratitis capitata* (Wiedemann), in Argentina. However, the effort also hoped to control *A. fraterculus*, The South American fruit fly, in several citrus-growing areas where both tephritid species coexisted in wild and commercial fruit. *Diachasmimorpha longicaudata* was released in 100,000 in the 1960s in the northeastern provinces of Misiones (Montecarlo county) and Entre Ríos (Concordia county), in the northwestern provinces of Tucumán (San Miguel de Tucumán city) and Jujuy (Calilegua county) and the central province of Córdoba (Cruz del Eje and Yacanto counties) Turica (1968). New releases of *D. longicaudata* were made in citrus orchards in the Tucumán province in 1977 and 1986 (Ovruski & Fidalgo 1994). As noted by (Ovruski et

al. 1999), *D. longicaudata* was recovered immediately following release in all sites. However, until now, there was no evidence of permanent establishment in any release site.

Recent fruit fly parasitoid surveys made in Montecarlo county (Misiones province) included specimens of *D. longicaudata*. The first record of this species was in March 2000 attacking *A. fraterculus* larvae from *Feijoa sellowiana* L. (Myrtaceae), and it was subsequently found in February and March 2001 and April 2002 (all collection data are listed at the end of the paper), so that *D. longicaudata* was recovered approximately 40 years after its first release in Argentina. Thus this exotic parasitoid has become established in at least one province of Argentina, albeit in small numbers (≈1% parasitism).

Fruit flies and parasitoids were identified to species by the authors using Zucchi's (2000) and Wharton and Gilstrap's (1983) taxonomic keys, respectively. Voucher specimens were deposited in the Fundación Miguel Lillo (FML) entomological collection in San Miguel de Tucumán, Argentina.

Collection Data

Argentina, Misiones, Montecarlo, Chacra Laharrague, 21-03-00, ex. *Anastrepha fraterculus* on *Feijoa sellowiana*, 5 males, col.: O.R. De Coll, Ident.: S.M. Ovruski—P. Schliserman.

Argentina, Misiones, Montecarlo, Chacra Laharrague, 26-02-01, ex. *Anastrepha fraterculus* on *Feijoa sellowiana*, 1 female and 2 males, col.: O.R. De Coll, Ident.: S.M. Ovruski—P. Schliserman.

Argentina, Misiones, Montecarlo, Chacra Laharrague, 05-03-01, ex. *Anastrepha fraterculus* on *Feijoa sellowiana*, 2 males, col.: O.R. De Coll, Ident.: S.M. Ovruski—P. Schliserman.

Argentina, Misiones, Montecarlo, Chacra Laharrague, 08-04-02, ex. *Anastrepha fraterculus* on *Feijoa sellowiana*, 3 females and 1 male, col.: O.R. De Coll, Ident.: S.M. Ovruski—P. Schliserman.

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SUMMARY

The establishment of *Diachasmimorpha longicaudata* (Ashmead) on *Anastrepha fraterculus* (Wiedemann) in the northeastern province of Misiones, Argentina, is described.

REFERENCES CITED

- ALUJA, M., M. LÓPEZ, AND J. SIVINSKI. 1998. Ecological evidence for diapause in four native and one exotic species of larval-pupal fruit fly (Diptera: Tephritidae) parasitoids in tropical environments. *Ann. Entomol. Soc. Am.* 91(6): 821-833.
- CARVALHO, R. S., AND A. S. NASCIMENTO. 2002. Criação e utilização de *Diaschasmimorpha longicaudata* para controle biológico de moscas das frutas (Tephritidae), pp. 165-179. *In* J. R. Parra, P. S. M. Botelho, B. S. Correa-Ferreira, and J. M. S. Bento [ed.], *Controle Biológico no Brasil. Parasitóides e Depredadores*, Editora Manole Ltda., Barueri, SP, Brasil.
- LÓPEZ, M., M. ALUJA, AND J. SIVINSKI. 1999. Hymenopterous larval-pupal and pupal parasitoids of *Anastrepha* flies (Diptera: Tephritidae) in Mexico. *Biol. Control* 15: 119-129.
- OVRUSKI, S. M., AND P. FIDALGO. 1994. Use of parasitoids (Hym.) in the control of fruit flies (Dip.: Tephritidae) in Argentina: bibliographic review (1937-1991). *IOBC/WPRS Bulletin* 17(6): 84-92.
- OVRUSKI, S. M., J. L. CANCINO, P. FIDALGO, AND P. LIEDO. 1999. Nuevas perspectivas para la aplicación del control biológico contra moscas de la fruta (Diptera: Tephritidae) en Argentina. *Manejo Integr. Plagas, Costa Rica* 54: 1-12.
- OVRUSKI, S. M., M. ALUJA, J. SIVINSKI, AND R. A. WHARTON. 2000. Hymenopteran parasitoids on fruit-infesting tephritidae (Diptera) in Latin America and the southern United States: diversity, distribution, taxonomic status and their use in fruit fly biological control. *Int. Pest Management Reviews* 5: 81-107.
- SIVINSKI, J. M. 1996. The past and potential of biological control of fruit flies, pp. 369-375. *In* B. A. McPherson and G. J. Steck [ed.], *Fruit fly pests: a world assessment of their biology and management*, St. Lucie Press, Delray Beach, FL.
- TURICA, A. 1968. Lucha biológica como medio de control de las moscas de los frutos. *IDIA* 241: 29-38.
- WHARTON, R. A., AND F. E. GILSTRAP. 1983. Key to and status of Opiinae braconid (Hymenoptera: Braconidae) parasitoids used in Biological Control of *Ceratitis* and *Dacus* s. l. (Diptera: Tephritidae). *Ann. Entomol. Soc. Am.* 76: 721-741.
- ZUCCHI, R. A. 2000. Taxonomía, pp. 13-24. *In* A. Malavasi and R. A. Zucchi [ed.], *Moscas-das-frutas de Importância Econômica no Brasil. Conhecimento Básico e Aplicado*. Ribeirão Preto: Holos, Editora, Brasil.