PRESENCE OF DIACHASMIMORPHA LONGICAUDATA (HYMENOPTERA: BRACONIDAE) IN A GUILD OF PARASITOIDS ATTACKING ANASTREPHA FRATERCULUS (DIPTERA: TEPHRITIDAE) IN NORTHWESTERN ARGENTINA

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PRESENCE OF *DIACHASMIMORPHA LONGICAUDATA* (HYMENOPTERA: BRACONIDAE) IN A GUILD OF PARASITOIDS ATTACKING *ANASTREPHA FRATERCULUS* (DIPTERA: TEPHRITIDAE) IN NORTHWESTERN ARGENTINA

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The braconid *Diachasmimorpha longicaudata* (Ashmead) is a fruit fly parasitoid native to the Indo-Pacific region, which has been widely disseminated into America via Hawaii (Ovruski et al. 2000). It was used in augmentative release programs against *Anastrepha suspensa* (Loew) in the United States of America (Florida state) (Sivinski et al. 1996), against *Anastrepha ludens* (Loew) and *Anastrepha obliqua* (Macquart) in Mexico (Montoya et al. 2000), and against *Anastrepha fraterculus* (Wiedemann) and *Ceratitis capitata* (Wiedemann) in Brazil (Carvalho 2005). In Mexico, this exotic parasitoid is currently a common parasitoid species of *Anastrepha* larvae, particularly in exotic commercial fruit in the state of Veracruz (Sivinski et al. 2000; Sivinski et al. 2001), and it is also being mass-reared on *A. ludens* larvae in the state of Chiapas (Cancino et al. 2002; Montoya & Cancino 2004). During 1961, *D. longicaudata* and the eulophid *Ceratoneuromyia indica* (Silvestri) were introduced into Argentina from Mexico and released in limited numbers in citrus-growing areas of the northwestern provinces of Jujuy, Salta, and Tucumán, and of the northeastern provinces of Misiones and Entre Rios (Ovruski et al. 1999). Although *D. longicaudata* was recovered immediately after release in Jujuy and Tucumán (Turica 1968), up to this time, there was no evidence of permanent establishment of this parasitoid species in any release sites of the northwestern Argentinean region. However, that *D. longicaudata* is permanently established on *A. fraterculus* has been documented in the northeastern province of Misiones (Schliserman et al. 2003). Similarly, the exotic *A. indica* was recently recorded on *A. fraterculus* in both Misiones and Jujuy provinces (Ovruski et al. 2006). Recent fruit fly parasitoid surveys made in Salta province (El Oculto locality) included specimens of *D. longicaudata*. Thus, *D. longicaudata* was recovered 40 years after its first release in the northwestern Argentinean region.

Between Nov and Dec 2001, 103 (= 4.3 kg, individual weight 37.5 ± 5.3 g) peaches (*Prunus persica* (L.) Batsch, Rosaceae) were collected in patches of disturbed wild vegetation with high diversity of exotic fruits in the locality of "El Oculto" (23°06'S, 64°24'W, 530 m above sea level). The collecting area is located in the northern-most extension of the Argentinean subtropical mountain rainforest (locally known as "Las Yungas forest") (Cabrera 1976). Climate is defined as temperate-hot humid with a summer rainy season (Dec through Mar), winter dry season, and annual rainfall varies from 259 to 1,947 mm. The temperature of the warmest month is >22°C with a mean annual temperature of 18°C.

The fruit samples consisted of fallen ripe fruit (80%) and ripe fruit still on the tree (20%). In the laboratory, all fruits in the sample were weighed and rinsed with a 20% solution of sodium benzoate, and each fruit was placed in a plastic glass (250 cm^3) with damp sand in the bottom as a pupation substrate for fly larvae. Pupae were removed weekly and the *A. fraterculus* and *C. capitata* pupae were separated by external pupal characters (White & Elson-Harris 1992). Then, pupae were placed in plastic vials containing sterilized humid sand until either a fruit fly or a parasitoid emerged. Fruit fly species were identified by L. Oroño based upon Zucchi's (2000) taxonomic key. Parasitoid specimens were identified to species by S. Ovruski with the keys from Wharton & Marsh (1978), Wharton & Gilstrap (1983), and Ovruski (2003) for Opiinae (Braconidae), and the taxonomic description by Wharton et al. (1998) for Eucoilinae (Figitidae). Voucher specimens were placed in the entomological collection of the Fundación Miguel Lillo (FML) (San Miguel de Tucumán, Argentina).

In total, 316 *C. capitata* and 25 *A. fraterculus* pupae were recovered from all infested peach fruits. From *C. capitata* pupae, 151 adult flies (47.8% emergence rate) and 25 *Aganaspis pelleranoi* (Brethes) (Hymenoptera: Figitidae) adult parasitoids (19 females and 6 males) were recovered. From *A. fraterculus* pupae, 8 adult flies (32.0% emergence rate) and 7 adult parasitoids (3 *D. longicaudata* females, 2 *Doryctobracon brasiliensis* (Szépligeti) (Hymenoptera: Braconidae) males, and 2 *A. pelleranoi* females) were obtained. Pupal viabilities (number of emerging adult flies and wasps) were 60.0% and 55.1% in *A. fraterculus* and *C. capitata*, respectively. Parasitism rates were 28.0% and 7.3% in *A. fraterculus* and *C. capitata*, respectively.

All wasp species identified are solitary, koinobiont larval-pupal endoparasitoids belonging to the fruit fly parasitoid guild number "2" defined by Ovruski et al. (2000). *Aganaspis pelleranoi* and

the braconid *Doryctobracon brasiliensis* are native species from the Neotropical region. *Aganaspis pelleranoi* accounted for more than 80% of all parasitoids recovered from *P. persica* we sampled. This eucoiline species and the braconid *Doryctobracon areolatus* (Szépligeti) (Hymenoptera: Braconidae) are the most abundant *A. fraterculus* parasitoid species in wild guava habitats from the northernmost to the southernmost portion of the Yungas forest in Argentina (Ovruski et al. 2004; Ovruski et al. 2005). Furthermore, *A. pelleranoi* would be better adapted to *C. capitata* larvae than any of the native braconid parasitoid common in Latin America (Ovruski et al. 2004). *Doryctobracon brasiliensis* was previously recorded from Las Yungas forest of the northwestern Argentina in association with *A. fraterculus* in several native and exotic host fruit species (Ovruski et al. 2004).

Even though *D. longicaudata* was recovered in smaller numbers, the data presented here and also those published by Schliserman et al. (2003) show the successful establishment of this exotic parasitoid in 2 different Argentinian biogeographical areas: Las Yungas forest in the northwestern region and Paranaense forest in the northeastern region.

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Summary

Specimens of *Diachasmimorpha longicaudata* (Ashmead), native to Indo-Pacific region, *Aganaspis pelleranoi* (Brethes) and *Doryctobracon brasiliensis* (Szépligeti), both native to Neotropical region, were recovered from *Anastrepha fraterculus* (Wiedemann) pupae collected from *Prunus persica* (L.) Batsch in the province of Salta. Thus, the braconid *D. longicaudata* was recovered 40 years after its first release in the northwestern Argentinean region.

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