

## Research Note

### RECOVERY OF *PLAESIUS JAVANUS ERICHSON* FROM PLANTAINS IN PUERTO RICO<sup>1,2</sup>

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Plantains and bananas (*Musa* spp.) are the primary source of dietary carbohydrates, vitamins, and minerals for more than 400 million people in tropical and subtropical regions worldwide (McNicholl, 1989). During 2005-2006 Puerto Rico produced 358 million plantain fruits with an estimated value of \$62,081 million (DAPR, 2007). Worldwide the banana root weevil (BRW), *Cosmopolites sordidus* (Germar), is the most damaging insect pest of banana and plantain (Gold et al., 1998; Ostmark, 1974). The weevil has been implicated in the decline and disappearance of highland banana in central Uganda (Gold et al., 1998) and western Tanzania (Bosch et al., 1995). In Puerto Rico, *C. sordidus* is considered the most important pest of plantains and bananas (Román et al., 1982; Inglés and Rodríguez, 1989), limiting the development of large-scale commercial Musaceae industry. Larval damage affects plant growth and development, reduces bunch weight and quality, and in heavy infestations, may cause the corm to snap at ground level before the bunch is ripe (Ndiege et al., 1991). Marketable yields may be reduced by 25 to 90% worldwide (Gorenz, 1963) and by up to 90% in the Caribbean basin (Román et al., 1982; Arleu and Neto, 1984).

Although several strategies have been employed with various degrees of success for management of *C. sordidus*, characteristically weevil control depends on insecticide use to reduce the adult population (Inglés and Rodríguez, 1989; Román et al., 1982). The development of Integrated Pest Management (IPM) programs depends on the understanding of the biology, behavior, population dynamics, and natural enemies of the pest. Mortality factors are important in the interpretation of the effects of control methods on pest populations and damage; therefore, knowledge of the presence of natural enemies is important in developing IPM programs.

In spite of the economic importance and lack of effective insecticides for control of *C. sordidus* (Inglés and Rodríguez, 1989; Román et al., 1982), little is known about its natural enemies in Puerto Rico. According to Ostmark (1974), only fifteen predators of the BRW have been reported worldwide. The use of predatory beetles, especially *Plaesius javanus* (Coleoptera: Histeridae) and *Dactylosternus hydrophiloides* (Coleoptera: Hydrophilidae), has not yielded promising results in the Pacific region (Ostmark, 1974; Waterhouse and Norris, 1987; Weddell, 1932). However, the introduction of these two

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predators was successful in controlling *C. sordidus* larvae in Fiji and Tahiti (Smith, 1982). From 1913 to 1964 the predatory beetle *P. javanus* was introduced into Fiji, Samoa, Jamaica, Australia, Uganda, Tahiti, and Puerto Rico (Cruz and Segarra, 1992; Hyasin and Gold, 1994; Wolcott, 1948). Wolcott (1948) reported that in captivity the adult histerids fed on both larvae and pupae. A release of *P. javanus* in the Adjuntas region was documented by Wolcott (1948). However, no recovery studies have been conducted to establish the presence of *P. javanus* in Puerto Rico since the initial release (Cruz and Segarra, 1992).

From April 1997 to April 1998, fifty plantain corms were collected from untreated plantain fields in Corozal and dissected to collect *C. sordidus* larvae. Corms were heavily infested by *C. sordidus* larvae, pupae, and adults. During the inspection of the corms, three adult *P. javanus* were collected and preserved in 70% alcohol. Two of the specimens were in the same corm. Specimens were identified at the *Museum of Entomology and Tropical Biodiversity* (METB) at the Agricultural Experiment Station, Río Piedras, Puerto Rico, by comparison with specimens in the METB. Revision of the specimens also revealed the recovery of additional accessions in 1991 (PR. Acc. Num. 76-91). To our knowledge this is the first report of *P. javanus* recovery from commercial Musaceae fields on the island. In spite of the predator's presence in commercial fields, little information is available on its effectiveness in controlling BRW larvae. Elsewhere, the effectiveness of this predator is not well known and suspected to be minimal (Waterhouse and Norris, 1987). In this study we examined fifty corms, and found only three specimens of *P. javanus*, thus suggesting that the predator is established on the island, but in low densities. Additional studies are needed to establish the distribution and abundance of *P. javanus* in other areas of the island where Musaceae are grown.

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