

THE RECOVERY AND APPARENT ESTABLISHMENT
OF *CIRROSPILUS INGENUUS* (HYMENOPTERA:
EULOPHIDAE) IN FLORIDA

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Cirrospilus ingenuus Gahan is an Asian parasitoid of the citrus leafminer, *Phyllocnistis citrella* Stainton (Lepidoptera: Gracillariidae). Its natural range includes China, India, Indonesia, Japan, Malaysia, Taiwan and Thailand (Schauff et al. 1998). It has commonly been treated under the name *C. quadristriatus* (Subba Rao & Ramamani). However this name was recently synonymized with *C. ingenuus* by G. Evans (as a personal communication in Ujiye and Adachi, 1995:96).

Citrus leafminer invaded Florida in 1993 (Heppner 1993), and has been the subject of biological control attempts since that time (Hoy & Nguyen 1997). In 1994, *C. ingenuus* was released in limited numbers in Florida as a biological control agent of the citrus leafminer (Hoy & Nguyen 1994, as *C. quadristriatus*). Up to this time, there have been no recoveries and there was no evidence of establishment of this species (Huy & Nguyen 1994, 1997). Although *C. ingenuus* is predominantly an ectoparasiti-

toid of citrus leafminer, Hoy & Nguyen (1997) reported that it was observed acting as a hyperparasitoid in Thailand (citing a personal communication from H. Browning). Subsequent to its initial release, laboratory tests were performed which confirmed that *C. ingenuus* could behave as a facultative parasitoid (Hoy & Nguyen 1997).

Recent field collections made in Homestead in southern Florida included specimens of *C. ingenuus*. The first record of this species was in November 1997, and they have been subsequently been found in January 1998. Collection data is listed at the end of the paper.

A total of 328 *C. ingenuus* were released in Florida (M. Hoy, pers. comm.), with the closest release sites to Homestead being Immokalee and Clewiston. Both of these sites are about 150 km north of Homestead, and each site received 40 *C. ingenuus* (M. Hoy, pers. comm.). These are the only documented releases of this parasitoid in Florida.

There are several possible explanations for the presence of *C. ingenuus* in southern Florida: the species could have been released in southern Florida without official knowledge; citrus infested with citrus leafminer and *C. ingenuus* could have been moved from central Florida to southern Florida; or this species became established in central Florida and has spread south. If its presence in southern Florida was the result of initial releases, it would appear that this species has now resided in Florida for over three years and is successfully established.

C. ingenuus has been released in many countries as a biological control agent of citrus leafminer, including Australia, Cyprus, Israel, Morocco, Oman, Syria, Tunisia, Turkey (Schauff et al., 1998).

The purpose of this note is to record of the presence of this species in southern Florida. Subsequent studies are planned to determine the extent of its impact.

Collection Data:

Florida, Dade Co., Homestead, November 1997, R.E. Duncan, ex. *Phyllocnistis citrella* on *Citrus latifolia*, 5 females, 17 males.

Florida, Dade Co., Homestead, January 15 1998, R.E. Duncan, ex. *Phyllocnistis citrella* on *Citrus latifolia*, 2 males.

Florida, Dade Co., Homestead, January 22 1998, R.E. Duncan, ex. *Phyllocnistis citrella* on *Citrus latifolia*, 3 females, 17 males.

Voucher specimens of these collections have been placed in the United States National Museum, Washington, Florida State Collection of Arthropods, Gainesville, and The Natural History Museum, London.

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