on the latter date were reared to adulthood on Z. pumila fronds. Both adult and larval E. atala were found also at each of 5 additional widely separated locations between Coral Gables and Florida City, including near Perrine, Goulds, Homestead, and the Redlands area during September 1983. All locations were either pineland (Pinus elliottii Englem.) or mixed hardwood-pine areas. Up to 11 larvae were found on a single Z. pumila plant. On 5 July 1984 a mating pair of E. atala butterflies were observed at Castello Hammock on a leaf of a guava tree (Psidium guajava L.) at 7:00 p.m. (DEST). Adult Florida atalas at the research station also suffered no apparent ill effects of a freeze on 25 December 1983 (—1.7°C), since 34 were counted during one sighting on 18 January 1984.

Voucher specimens were deposited with the U. S. National Museum Collection, Washington, D.C. and the Florida State Collection of Arthropods, Gainesville, Florida. I thank C. Dowling for assistance in plant identification and R. Renfro for help in searching for E. atala.

REFERENCES CITED


ENDOPARASITIC BRACONID (HYMENOPTERA: BRACONIDAE) ATTACKS LITTLE LEAF NOTCHER, ARTIPUS FLORIDANUS HORN (COLEOPTERA: CURCULIONIDAE), IN FLORIDA

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The little leaf notcher, Artipus floridanus Horn, was first reported in Florida as adults feeding on lime tree foliage in the Keys in 1970. It is now distributed along the Florida east coast as far north as Merritt Island and 25 genera of plants serve as hosts (Rowan 1976). Larvae feed on roots of citrus trees and the combined foliar feeding of adults and root destruction by larvae have killed one-year-old trees.
In tests evaluating candidate insecticides and biologicals as soil treatments to control the little leaf notcher, ground traps were placed on treated soil to collect emerging adult weevils. Traps were checked weekly and adult survivors placed in petri dish holding cages and held for 2 weeks to determine any delayed mortality. Fresh citrus foliage was provided every 3 days during the holding period.

In 1978, 5 cases of parasitism of A. floridanus by the braconid wasp Microtonus sp. were recorded in February and March from 2 locations in Indian River County (Shulock Grove No. 1 on Clemans Avenue and Kennedy's Vincent Grove on Orchid Isle). Single parasite larvae emerged from adult weevils, constructed cocoons, and pupated during the 2-week holding period. At Wabasso in Indian River County, 2280 adult weevils were collected in ground traps from December 1982 to September 1983 at the Richard Brown Grove. Single larvae emerged from each of 70 parasitized adult weevils in the population of 898 weevils collected during the January to April interval: emerging from hosts 15.7 ± 5.7 days after the adult weevils were collected. Twenty-eight larvae spun cocoons from which and equal number (12) of male and female wasps emerged in an average of 10.2 ± 2.8 days. These specimens were identified by Research Entomologist Paul M. Marsh of the Systematic Entomological Laboratory, HIBIII, USDA as members of an undescribed species of Microtonus. Four pupae succumbed to fungal attack within the cocoons.

Forty-two larvae did not spin cocoons but, within 24 h after exiting the weevil host, exhibited 2 bilateral, pigmented areas beneath the integument on the dorso-lateral surface of the 2nd and 3rd body segments. These spots became well defined and differentiated into compound eyes of a developing hymenopterous hyperparasite within the body of the Microtonus larva. Simultaneously with appearance of eyespots, a dark material was extruded from the posterior of the doomed Microtonus larva and anchored the larval body to the substrate where it served as a pupal chamber for the hyperparasite. The extruded material may have been the evacuated contents of the hyperparasite's digestive tract. Although pupation was often completed by the hyperparasite, none emerged.

Microtonus sp. parasitized 7.8% of the weevil population trapped during the January-April interval of the 10-month test. The parasite was not found in any other months. It is hoped that the effectiveness of this parasite as a biological control agent can be fully evaluated in the future.


REFERENCES CITED