(L.), commonly known as the sugarcane rootstock borer weevil, was first found infesting citrus near Apopka, FL (Woodruff 1964). Later, a heavy infestation was discovered (Woodruff 1968) and the size of the infested area has increased yearly (Selhime and Beavers 1972).

Initial information on the life cycle of the pest was obtained by early workers in the West Indies. Jones (1915) reported that a life cycle of ca. 1 yr with an apparent overlapping of generations occurred in Puerto Rico. Wolcott (1936) indicated that the life cycle could be considerably <1 yr or even >2 years. Little is known about this potentially serious pest or its control. A study was therefore initiated in 1970 to determine the population dynamics of *D. abbreviatus* in Florida.

Methods and Materials.—An isolated nonproductive 50-acre grove of 'Hamlin' orange consisting of ca. 2400 trees that was within the quarantine area was exempted from insecticidal application in late 1969. Weekly collections of adult weevils were made from Sept. 15, 1970, to Oct. 30, 1970; sporadic collections were made during the rest of 1970. In 1971, collections were made every 2 wk from January until the 1st weevils were found May 5. Then, weekly collections were made throughout the remainder of the test period. Also, each tree in the grove (Lakeland and St. Lucie soil types) was assigned a row and tree number, and the number of adult weevils collected from each tree was recorded so as to establish the pattern of adult emergence. During 1972 and 1973, the sex of the collected weevils was recorded. Temperature and rainfall data were recorded weekly throughout the study.

Also, in 1971, collection data obtained from 1970 were used to select 16 trees, 4 each that had contained 0, 5, 10, and 12–20 adult weevils. Wooden frame cages (36×36×6 in.) covered by 1/8-in. mesh N and S quadrants of 2 trees and under the E and W quadrants of the other two. Each cage was examined weekly for emerged adult weevils from January through 1971.

The entire grove was fertilized yearly, and cover growth was controlled by discing or hand-cutting around the tree trunks as required to facilitate recovery of weevils that dropped to the ground during collections. However, the size of the grove decreased each year due to home construction. Also, several trees were removed during larval surveys. The test plot was bordered on the north and south sides by woods, on the east by a combination of woods and pasture, and on the west by a clay road. A small citrus nursery was located ca. 1/4 mi from the SW corner, and a small citrus grove was ca. 3/4 mi from the north side. The survey site was well isolated from other citrus groves, which probably prohibited immigration and emigration of adult weevils.

Results and Discussion.—More adult weevils were collected from trees growing in Lakeland soil. These trees were generally more vigorous, producing more new growth which the adults prefer to feed on than the trees in St. Lucie soil. The numbers of adult *D. abbreviatus* collected are reported as monthly totals (Fig. 1). Emergence generally began increasing during April to June and was greatest during August to December. However, during the winter of 1970-71, adults ceased to emerge in December and were not found again until May 1971. Then during the next 2.5 yr, some adults were collected in all months except February and March 1973.

Wolcott (1934) indicated that temperature had little to do with rapidity of larval growth in Puerto Rico and that transformation to adult did not necessarily indicate immediate emergence. However, Barrow (1924) observed that in Puerto Rico, increased rainfall preceded major population peaks. Our observations agreed with those of Barrow; e.g., 6.5 in. of rainfall recorded in May 1971 preceded an increase in the collection of adults from 3 in May

[1] Coleoptera: Curculionidae.
[2] Received for publication July 3, 1975.

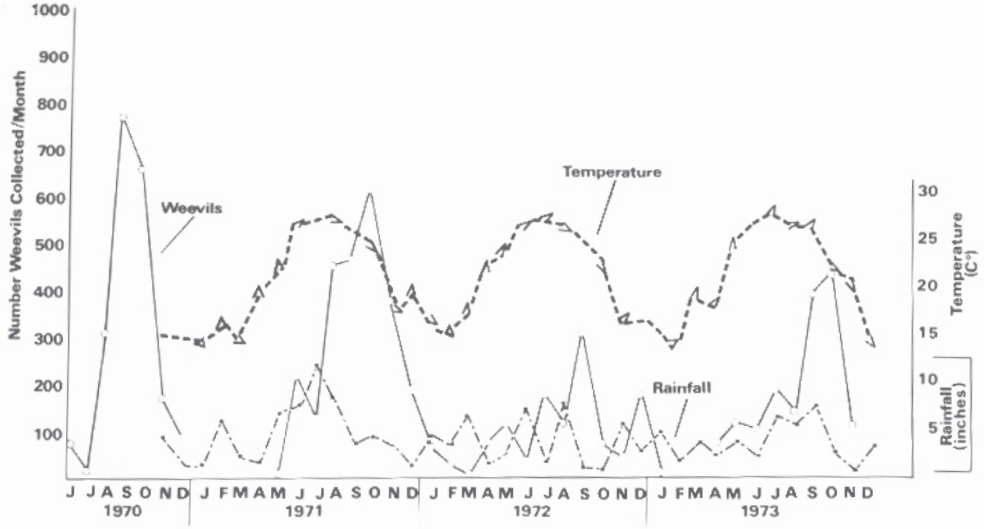

FIG. 1.—Monthly collection records of *D. abbreviatus* and the avg temperature and rainfall for 1970, Apopka, FL.

to 218 in June (Fig. 1), a pattern that occurred in other years (increased rainfall generally occurred during the months of higher temperatures). Since Wolcott (1934) reported that adults may remain in the pupal cell in the soil from 1–3 mo before emergence, increased moisture may therefore stimulate adult *D. abbreviatus* to emerge.

The ♂:♀ ratio of adults collected during 1972 and 1973 was 55.6:55.4 and 50.1:40.9, respectively.

Five ♀ and 2 ♂ were recorded from the ground cage test during 1971, 1 ♂ and 2 ♀ from the E quadrant, 1 ♀ from the W, and 1 ♂ and 2 ♀ from the North. There was no correlation between the previous year's population density and adult emergence. Adults were recovered during each month from June through November.

Our data show that adult *D. abbreviatus* can be found on citrus throughout the year within the presently infested area of Florida. Also, in developmental studies of this weevil, Beavers and Selhime (1975b) recovered pupae 98–175 days and 102–238 days after infestation of neonate larvae onto potted citrus seedlings in laboratory and screenhouse tests, respectively. Wolcott (1934) also reported the presence of egg masses each month of the year in Puerto Rico, as have Beavers and Selhime (1975a) in Florida.

An overlapping of generations of *D. abbreviatus* thus occurs in Florida. As a result, an adequate control of adults and an effective soil barrier will be necessary to prevent reinfestation of the soil by neonate larvae throughout the year.

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