ENTOMOLOGY CIRCULAR No. 112
SEPTEMBER 1971

FLORIDA DEPT. AGR. & CONSUMER SERVICES
DIVISION OF PLANT INDUSTRY

A FIELD KEY FOR SEPARATING LARVAE OF FOUR SPECIES OF CITRUS WEEVILS IN FLORIDA (COLEOPTERA: CURCULIONIDAE)[1]

J. B. BEAVERS[2] AND R. E. WOODRUFF[3]

INTRODUCTION: THE "SUGAR-CANE ROOT-STALK BORER WEEVIL" (DIAPREPES ABBREVIATUS (L.)) WAS FIRST FOUND IN THE U. S. AT APOPKA, FLORIDA, IN 1964, ALTHOUGH NO SIGNIFICANT POPULATION WAS DISCOVERED UNTIL 1968 (WOODRUFF, 1964, 1968). SINCE THIS SPECIES IS A SERIOUS PEST OF CITRUS AND SUGARCANE IN THE WEST INDIES, THE INFESTED AREA AND A BUFFER TO THE EXTENT OF 6500 ACRES AROUND APOPKA, FLORIDA, WERE PLACED UNDER QUARANTINE. SURVEYS FOR THIS SPECIES HAVE BEEN HANDICAPPED BY THE DIFFICULTY OF ACCURATELY DISTINGUISHING LARVAE FROM THOSE OF OTHER WEEVIL LARVAE COMMONLY FOUND ON CITRUS ROOTS. OTHER SPECIES LIKELY TO BE ENCOUNTERED IN SURVEYS ARE: FULLER'S ROSE WEEVIL, PANTOMORUS CERVINUS BOH. (=GODMANI (CROTCH)) AND THE CITRUS ROOT WEEVILS, PACHNAEUS OPALUS (OLIV.) AND P. LITUS (GERM.).

DESCRIPTION: VAN EMDEN (1952) PROVIDED DESCRIPTIONS OF THE GENERA INVOLVED (ALTHOUGH THE IDENTITY OF PACHNAEUS LITUS IS QUESTIONABLE), BUT HE INCLUDED TOO MUCH TECHNICAL MORPHOLOGY FOR FIELD USE. THE LARVAE ARE ALL SUPERFICIALLY SIMILAR, BUT THE HEAD CAPSULES APPEAR TO PRESENT DIAGNOSTIC CHARACTERS WHICH CAN BE SEEN WITH A HAND LENS. THE FOLLOWING DRAWINGS WERE MADE FROM SPECIMENS REARED AT THE USDA CITRUS ROOT WEEVIL LABORATORY AT APOPKA, FLORIDA. THE MATURE LARVAE WERE REARED FROM EGGS DEPOSITED BY KNOWN ADULTS, EXCEPT IN THE CASE OF PACHNAEUS OPALUS (OLIV.). HOWEVER, P. LITUS (GERM.) IS NOT KNOWN TO OCCUR IN THE APOPKA AREA WHERE THE P. OPALUS LARVAE WERE COLLECTED. THE CHARACTERS USED FOR P. LITUS MUST BE USED WITH CAUTION SINCE THESE ARE BASED ON ONLY TWO LARVAE. ADDITIONAL REARED MATERIAL WILL BE NECESSARY TO ASSESS THE VALIDITY OF THESE CHARACTERS AND THE VARIABILITY INVOLVED.

FIELD KEY TO 4 SPECIES OF CITRUS WEEVILS (MATURE LARVAE)

1. HEAD CAPSULE WITH A DEFINITE FRONTAL SUTURE JOINING EPICRANIAL SUTURE (LIKE AN INVERTED Y); COLOR PATTERN USUALLY NOTICEABLE ON UPPER PORTION, WITH TWO VERTICAL, LIGHT-COLORED "QUOTATION MARKS" (FIG. 1)..... DIAPREPES ABBREVIATUS (L.).

1'. HEAD CAPSURE WITHOUT COMPLETED FRONTAL SUTURE (WHEN PRESENT, NOT JOINING EPICRANIAL SUTURE); NO COLOR PATTERN NOTICEABLE ON THE UPPER PORTION (FIG. 2-4)..... 2

2.(1'). HEAD CAPSULE SMALLER (APPROX. 1.75MM WIDE); 8 SETAE PRESENT (DES 3, 5, FS4, 5) IN A BAND NEAR THE CLYPEUS, BUT NONE ON THE UPPER PART OF THE HEAD; NO DARK AREA (FRONS) ABOVE MANDIBLE (FIG. 2)..... PANTOMORUS CERVINUS BOH.

2'. HEAD CAPSULE LARGER (APPROX 2.5MM WIDE); 14 SETAE PRESENT (DES 1-5, FS4, 5) AND SCATTERED OVER FRONT OF HEAD; DARK AREA (FRONS) ABOVE MANDIBLES IN A BAND (FIG. 3-4); PACHNAEUS..... 3.

3.(2'). DARKENED AREA OF THE FRONS IRREGULAR IN SHAPE, EXTENDING IN THE MIDDLE NEARLY TO THE EPICRANIAL SUTURE (FIG. 3); IN FLORIDA, CONFINED TO SOUTHERN ONE-THIRD OF PENINSULA..... PACHNAEUS LITUS (GERM.)

3'. DARKENED AREA OF THE FRONS NEARLY RECTANGULAR IN SHAPE, ONLY SLIGHTLY EXTENDED CENTRALLY TOWARD EPICRANIAL SUTURE (FIG. 4); GENERALLY DISTRIBUTED IN FLORIDA..... P. OPALUS (OLIV.)

REFERENCES:

ANDERSON, W. H. 1947. A TERMINOLOGY FOR THE ANATOMICAL CHARACTERS USEFUL IN THE TAXONOMY OF WEEVIL LARVAE. PROC. ENT. SOC. WASH. 49(5):123-132; 11 FIG.

VAN EMDEN, F. I. 1952. ON THE TAXONOMY OF RHYNCHOPHORA LARVAE: ADELOGNATHA AND ALOPHINAE (INSECTA: COLEOPTERA). PROC. ZOOL. SOC. LONDON 122(3):651-795; 153 FIG.

WOODRUFF, R. E. 1964. A PUERTO RICAN WEEVIL NEW TO THE UNITED STATES (COLEOPTERA: CURCULIONIDAE). FLA. DEPT. AGR., DIV. PLANT IND., ENT. CIRC. 30:1-2; 1 FIG.

WOODRUFF, R. E. 1968. THE PRESENT STATUS OF A WEST INDIAN WEEVIL (DIAPREPES ABBREVIATA (L.)) IN FLORIDA (COLEOPTERA: CURCULIONIDAE). FLA. DEPT. AGR., DIV. PLANT IND., ENT. CIRC. 77:1-4; 7 FIG.

---

[1] CONTRIBUTION NO. 214, BUREAU OF ENTOMOLOGY, DIV. PLANT IND., FLORIDA DEPT. AGR.

[2] USDA, ARS, ERD, HUMID AREAS CITRUS INSECTS INVESTIGATIONS, ORLANDO, FL 32803.

[3] FLA. DEPT. AGR., DIV. PLANT IND., P.O. BOX 1269, GAINESVILLE, FL 32601.

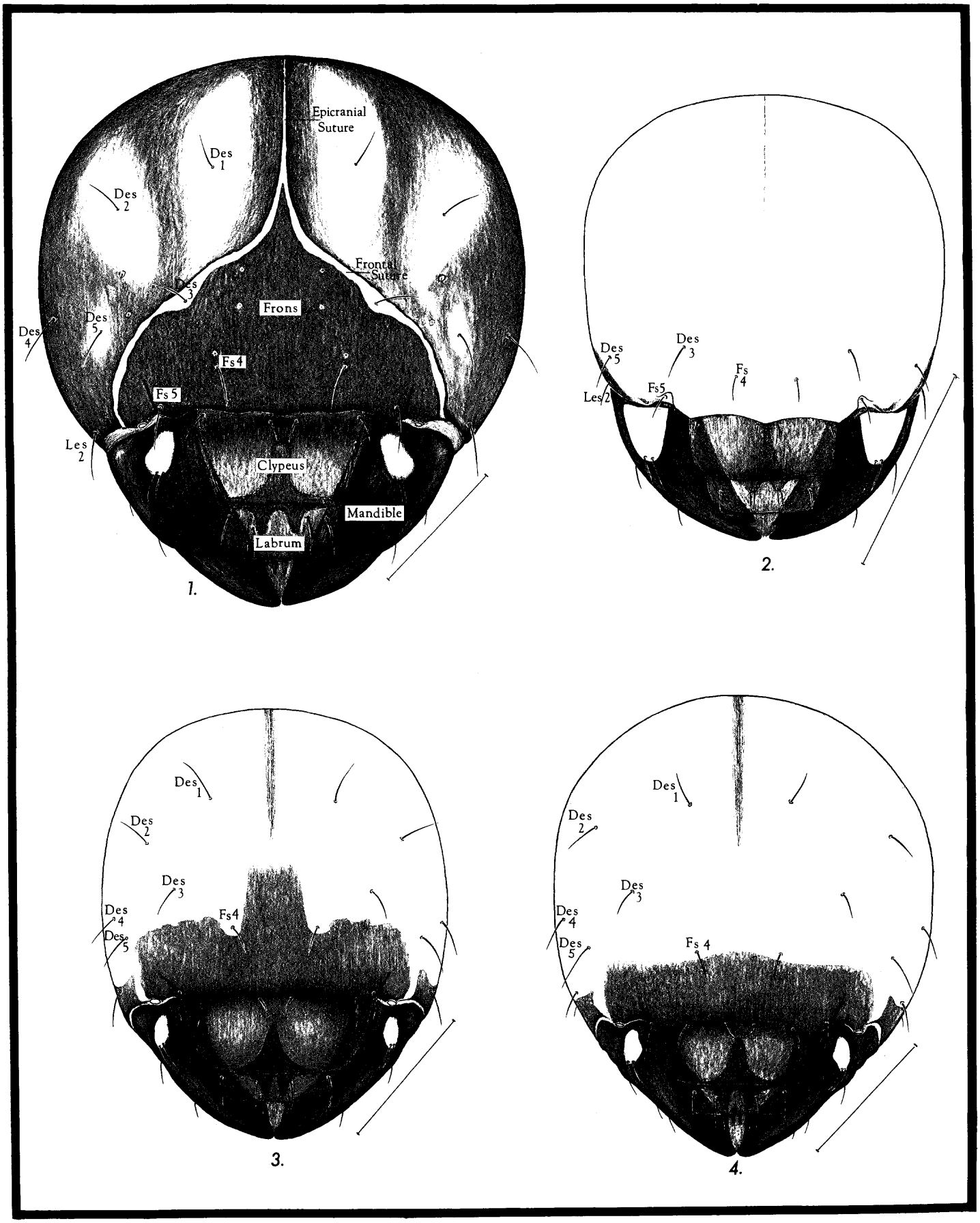

FIG. 1-4. HEAD CAPSULES OF MATURE LARVAE: 1) DIAPREPES ABBREVIATUS (L.); 2) PANTOMORUS CERVINUS BOH.; 3) PACHNAEUS LITUS (GERM); 4) PACHANEUS OPALUS (OLIV.).

SCALE LINE EQUALS 1 MM. SETAE ARE INDICATED AS FOLLOWS: DES 1-5 = DORSAL EPICRANIAL SETAE; FS 1-4 = FRONTAL SETAE; LES 1-2 = LATERAL EPICRANIAL SETAE.