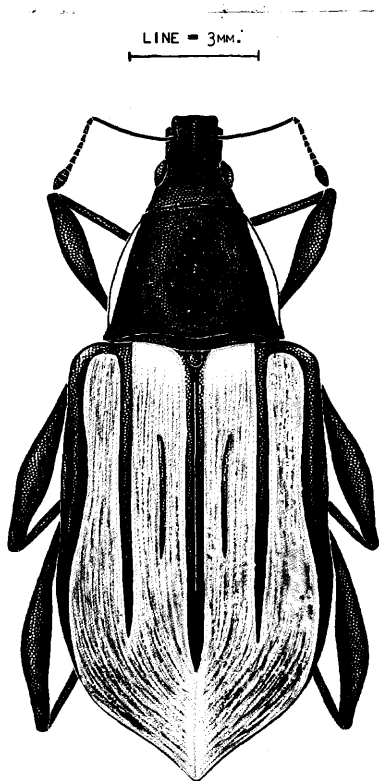


A PUERTO RICAN WEEVIL NEW TO THE UNITED STATES^{1/}
(COLEOPTERA: CURCULIONIDAE)
R. E. WOODRUFF

INTRODUCTION: A SINGLE ADULT MALE SPECIMEN OF DIAPREPES ABBREVIATA (L.)^{2/} WAS COLLECTED ON CITRUS AT A NURSERY IN APOPKA, FLORIDA ON SEPTEMBER 25, 1964 BY PLANT SPECIALIST C. J. MUSGROVE OF THE DIVISION OF PLANT INDUSTRY. SINCE THIS SPECIES IS A SERIOUS PEST OF CITRUS AND SUGARCANE IN PUERTO RICO, AND THIS REPRESENTED THE FIRST RECORD FOR THE UNITED STATES, A SURVEY WAS INITIATED IMMEDIATELY.

BIOLOGY: THIS WEEVIL IS ABUNDANT IN PUERTO RICO WHERE IT IS CALLED THE "SUGAR-CANE ROOT-STALK BORER WEEVIL" OR "VAQUITA." THE ADULTS FEED ON LEAVES (OFTEN DEFOLIATING THE PLANT) OF A WIDE VARIETY OF PLANTS (SEE HOSTS BELOW), AND THE LARVAE BORE IN THE ROOTS OR TUBERS OF MANY PLANTS. THE BIOLOGY IN PUERTO RICO HAS BEEN WELL STUDIED BY WOLCOTT (1936 & 1948). THE OVAL-ELONGATE EGGS ARE LAID IN CLUSTERS BETWEEN LEAVES WITH A STICKY, TRANSPARENT, PLASTIC FILM HOLDING THE OPPOSED LEAVES TOGETHER. THE AVERAGE NUMBER OF EGGS LAID BY ONE FEMALE IS ABOUT 5,000. THE EGGS HATCH FAIRLY UNIFORMLY IN SEVEN DAYS. THE LARVAE MIGRATE TO THE SOIL AND, AFTER A TIME OF WANDERING ABOUT, BORE WITHIN ROOTS AND TUBERS OF SUITABLE HOSTS WHERE THEY ARE OFTEN DIFFICULT TO DETECT. LARVAE ATTAIN FULL SIZE IN TWO TO FOUR MONTHS. THE GRUBS MAY HAVE AS FEW AS SIX LARVAL MOLTS BEFORE PUPATION BUT NORMALLY HAVE EIGHT OR MORE. THE SPECIES UNDERGOES DIAPAUSE WHICH MAY LAST FROM TWO TO THIRTEEN MONTHS. THE PUPAL PERIOD IS ABOUT TWO WEEKS. THE BEETLES HAVE BEEN RECORDED AS ATTRACTED TO LIGHTS BUT NOT IN ANY NUMBERS (WOLCOTT, 1936).



DISTRIBUTION: BLACKWELDER (1947) LISTS THE SPECIES FROM HISPANIOLA, MONA ISLAND (WEST INDIES), PUERTO RICO, VIEQUES (VIRGIN ISLANDS), GUADELOUPE, DOMINICA, MARTINIQUE, ST. LUCIA, MONTSERRAT (LEEWARD ISLANDS), ST. VINCENT, AND BARBADOS. IT WAS INTERCEPTED THREE TIMES IN PUERTO RICO ON PLANTS FROM HAITI DURING 1963 (MUMFORD, 1964). ADDITIONAL INTERCEPTIONS INCLUDE MIAMI (1945), ORLANDO (1946), AND NEW YORK (1949). A SURVEY OF THE VICINITY OF THE FIRST FLORIDA FIND IN AND AROUND APOPKA (ORANGE COUNTY) WAS UNSUCCESSFUL IN LOCATING ADDITIONAL SPECIMENS.

AT THE PRESENT TIME, THE EXTENT OR NATURE OF THE DISTRIBUTION IN FLORIDA IS UNKNOWN. THE REMOTE CHANCE OF FINDING AN ISOLATED INDIVIDUAL PROBABLY INDICATES THE SPECIES IS ESTABLISHED, BUT WITH A SMALL POPULATION. WOLCOTT (1936) STATED "...THE ADULT WEEVILS ARE ESSENTIALLY SOCIAL IN THEIR HABITS."

^{1/}CONTRIBUTION NO. 45, ENTOMOLOGY SECTION, DIV. PLANT IND., FLA. DEPT. AGR.

^{2/}I WISH TO THANK MRS. PATRICIA VAURIE, AMER. MUSEUM NAT. HIST., FOR CONFIRMATION OF MY DETERMINATION.

HOSTS: THE MOST IMPORTANT HOSTS ARE SUGARCANE AND CITRUS. IN ADDITION, LARVAE HAVE BEEN FOUND IN THE TUBERS OF "ÑAME" AND "YUCA" (MANIHOT ESCULENTA CRANTZ), IN SEED CORN JUST BEGINNING TO SPROUT, AND IN THE TAP ROOTS OF SEEDLINGS OF PEPPER, PAPAYA, AND MAHOGANY. WOLCOTT (1948) INDICATED "IT MAY BE PRESUMED THAT THEY FEED ON ANY KIND OF LIVE ROOTS OR TUBERS AVAILABLE, BY PREFERENCE CHOOSING THOSE OF SUFFICIENT SIZE THAT THEY MAY BORE WITHIN THEM...." HE ALSO (LOC. CIT.) RECORDED ADULTS ON LEAVES OF "...SUGAR-CANE, COTTON, COFFEE, AND ALL KINDS OF NATIVE AND IMPORTED VEGETABLES, AS WELL AS OF PRACTICALLY EVERY ENDEMIC AND FOREIGN TREE." NURSERY TREES AND NEW GROWTH ARE THE MOST READILY ATTACKED. THIS FEEDING MAY BE IN THE FORM OF TYPICAL NOTCHING OF THE LEAF MARGIN OR COMPLETE DEFOLIATION.

DESCRIPTION: THE ADULT WEEVIL IS ABOUT 1/2 INCH LONG, AND IS SLIGHTLY LARGER THAN OUR CITRUS ROOT WEEVIL. THE COLOR IS HIGHLY VARIABLE FROM LIGHT YELLOW, PALE GREEN, OR YELLOW OCHRE TO A DARK ORANGE-BROWN. THE NUMBER OF DENUDED BLACK LONGITUDINAL STRIPES ON EACH WING COVER VARIES FROM ONE TO THREE, AND THE LENGTH OF EACH IS HIGHLY VARIABLE. THE ACCOMPANYING FIGURE REPRESENTS ABOUT THE MAXIMUM IN COLORATION AND DENUDATION.

TAXONOMY: THE VARIABILITY ASSOCIATED WITH THIS SPECIES IS RESPONSIBLE FOR CONSIDERABLE CONFUSION IN THE TAXONOMIC STATUS OF THESE WEEVILS. PIERCE (1915), USING THE SPECIFIC NAME SPENGLERI L., LISTED SIX NAMED VARIETIES, WITH ABBREVIATUS L. AS ONE OF THESE. BLACKWELDER (1947) LISTED ABBREVIATA L. AS A SPECIES WITH THREE NAMED VARIETIES. HE ALSO LISTED 17 OTHER SPECIES OF DIAPREPES FROM THE WEST INDIES AND ONE SPECIES FROM NICARAGUA.

CONTROL: BIOLOGICAL CONTROL IS QUITE SUCCESSFUL IN PUERTO RICO (WOLCOTT, 1948). THE EGG PARASITE, TETRASTICHUS HAITIENSIS GAHAN, IS VERY EFFECTIVE IN MAY AND JUNE. THE GREEN MUSCARDINE FUNGUS, METARRHIZIUM ANISOPLIAE (METSCH.), IS LISTED AS TAKING A HEAVY TOLL. WOLCOTT (1948) INDICATED 2 LBS. OF LINDANE OR ALDRIN PER ACRE ARE NECESSARY FOR LARVAL CONTROL. ADULTS ARE READILY KILLED BY SPRAYING INFESTED HOST TREES WITH 1% CHLORDANE OR DDD.

REFERENCES:

- BLACKWELDER, R. E. 1947. CHECKLIST OF THE COLEOPTEROUS INSECTS OF MEXICO, CENTRAL AMERICA, THE WEST INDIES, AND SOUTH AMERICA. BULL. U. S. NAT. MUS. 185(5):803.
- HUTSON, J. C. 1917. SOME WEEVILS OF THE GENUS DIAPREPES IN THE WEST INDIES. AGR. NEWS (BRIDGETOWN, BARBADOS) 16(395):186.
- JONES, T. H. 1915. THE SUGAR CANE WEEVIL ROOT BORER (DIAPREPES SPENGLERI LINN.). INSULAR EXP. STA. (RIO PIEDRAS, PUERTO RICO) BULL. 14:1-9, 11 FIG.
- MUMFORD, BESSIE C. 1964. LIST OF INTERCEPTED PLANT PESTS, 1963. U.S.D.A., AGR. RES. SERV., PLANT QUARANTINE DIV. (NO NUMBER).
- PIERCE, W. D. 1915. SOME SUGAR-CANE ROOT-BORING WEEVILS OF THE WEST INDIES. JOUR. AGR. RES. 4(3): 255-267, 4 PL.
- WATSON, N. B. 1903. THE ROOT-BORER OF SUGAR-CANE (DIAPREPES ABBREVIATUS) WEST INDIAN BULL. 4(1): 37-47.
- WOLCOTT, G. N. 1922. VAQUITAS DE IMPORTANCIA ECONOMICA EN PUERTO RICO. EST. EXP. INSULAR (RIO PIEDRAS, PUERTO RICO) CIRC. 60:1-20, 20 FIG.
- _____. 1933. THE LARVAL PERIOD OF DIAPREPES ABBREVIATUS L. JOUR. DEPT. AGR. PUERTO RICO 17(3):257-264, 1 PL.
- _____. 1933. OTIORHYNCHIDS OVIPOSIT BETWEEN PAPER. JOUR. ECON. ENT. 26(6):1172-1173.
- _____. 1936. THE LIFE HISTORY OF "DIAPREPES ABBREVIATUS", AT RIO PIEDRAS, P. R. JOUR. AGR. UNIV. PUERTO RICO 20(4):883-914, 3 TAB., 5 FIG.