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

AN ORCHID WEEVIL NEW TO THE UNITED STATES (COLEOPTERA: CURCULIONIDAE)[1]

ROBERT E. WOODRUFF

INTRODUCTION: ALTHOUGH ITS EXACT IDENTITY IS STILL PENDING, A SPECIES OF METAMASIUS ON ORCHIDS IS REPORTED FOR THE FIRST TIME IN FLORIDA. THE SMALL GREENHOUSE INFESTATION, FOUND ON ORCHIDS PRESUMABLY IMPORTED FROM ECUADOR FOUR MONTHS EARLIER, IS BELIEVED TO BE ERADICATED. THIS PRELIMINARY REPORT AND THE ILLUSTRATIONS ARE PREPARED TO ALERT THE NURSERY INDUSTRY AND PLANT REGULATORY PERSONNEL IN ORDER TO FACILITATE DETECTION OF THIS POTENTIAL PEST.

THE FIRST FLORIDA SPECIMENS WERE SUBMITTED FOR IDENTIFICATION TO THE DIVISION OF PLANT INDUSTRY BY A NURSERY OWNER AT NARANJA (DADE CO.) ON 13 DECEMBER 1972. SUBSEQUENT COLLECTIONS WERE MADE BY DPI INSPECTORS W. E. WYLES AND J. H. KNOWLES ON 19 DECEMBER 1972 AND BY ENTOMOLOGIST W. H. PIERCE ON 2 JANUARY 1973. A TOTAL OF FOUR ADULTS AND ONE LARVA HAS BEEN FOUND. THE NURSERY HAS BEEN TREATED BIWEEKLY SINCE 2 JANUARY 1973 WITH 25% LINDANE, AND NO ADDITIONAL WEEVILS HAVE BEEN FOUND. THE GROUP OF ORCHIDS THAT WERE INFESTED, AND OTHER SIMILAR SPECIES WERE VACUUM FUMIGATED WITH METHYL BROMIDE. THERE WERE 26 OTHER COLLECTORS WHO OBTAINED PLANTS FROM ECUADOR AT THE SAME TIME. ALL THESE COLLECTIONS HAVE SINCE BEEN INSPECTED WITH NEGATIVE RESULTS.

DESCRIPTION: (FIG. 1). LENGTH 11.5 - 12 MM; WIDTH 5.1 MM. THE BASE COLOR IS VELVETY BLACK, THE ELYTRAL BAND BEING CREAM COLORED WITH ORANGE-YELLOW BORDERS. IT IS A TYPICAL MEMBER OF THE GENUS METAMASIUS AND SUBFAMILY RHYNCHOPHORINAE. THE PYGIDIUM IS EXPOSED BEYOND THE ELYTRA AND THE ANTENNAE ARE INSERTED NEAR THE BASE OF THE BEAK. THE SEXES ARE EXTERNALLY SIMILAR. VARIATION WITHIN THE FOUR SPECIMENS IS SLIGHT, THE COLOR PATTERN NEARLY IDENTICAL IN EACH.

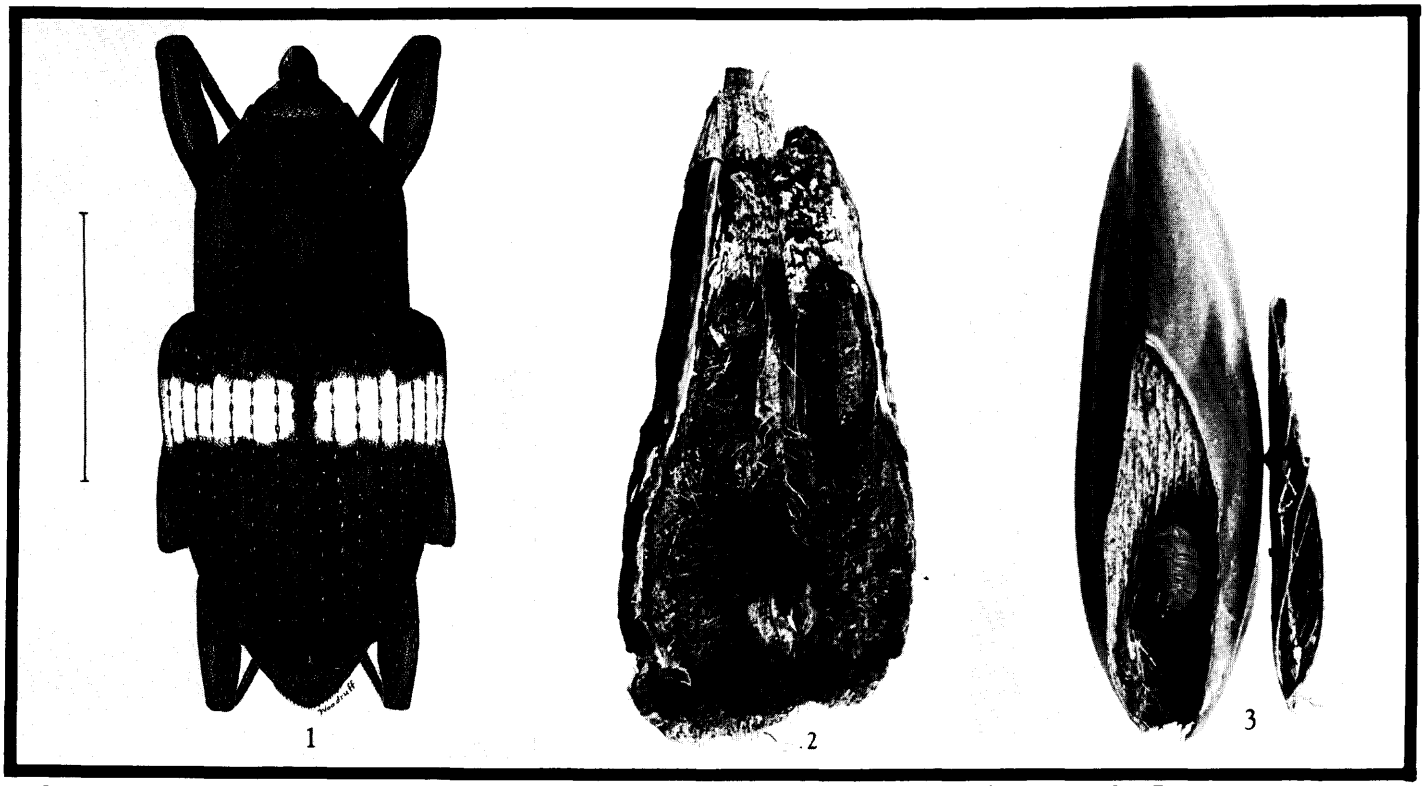

FIG. 1: ADULT FEMALE METAMASIUS SP. FROM NARANJA, FLA. (LINE = 5 MM). FIG. 2: EPIDENDRUM SP. PSEUDOBULB (LONGITUDINAL SECTION) SHOWING DAMAGE PRESUMABLY CAUSED BY THE LARVA OF THIS WEEVIL. FIG. 3: ONCIDIUM SP. PSEUDOBULB WITH WEEVIL LARVA IN SITU.

TAXONOMY: THE GENUS METAMASIUS CONTAINS OVER 100 SPECIES AND WAS RECENTLY REVISED BY VAURIE (1966-67). ONE SPECIMEN FROM FLORIDA WAS SENT TO VAURIE (CURRENTLY AT THE MUSEUM D'HISTOIRE NATURELLE, PARIS), ANOTHER WAS SENT TO ROSE ELLA WARNER (USDA, SYSTEMATIC ENT. LAB., WASHINGTON, D. C.), AND ANOTHER WAS EXAMINED BY C. W. O'BRIEN (LAB. OF AQUATIC ENT., FLORIDA A & M UNIV., TALLAHASSEE, FLA.). THEY ALL CONFIRMED MY IDENTIFICATION THAT THIS IS A MEMBER OF THE M. GRAPHIPTERUS SUBGROUP, NEAR M. AUROCINCTUS (CHAMPION) OR M. MONILIS VAURIE, AND POSSIBLY A NEW SPECIES.

FURTHER STUDY WILL BE NECESSARY BEFORE A CONCLUSION IS REACHED REGARDING THE TAXONOMIC POSITION OF THE FLORIDA SPECIMENS. PART OF THE PROBLEM REVOLVES AROUND THE PAUCITY OF SPECIMENS IN THIS GROUP AND THE RESULTANT DIFFICULTY OF INTERPRETING VARIATION, ESPECIALLY IN THE ELYTRAL COLOR PATTERN. THE FOUR FLORIDA SPECIMENS APPEAR TO BE IDENTICAL.

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[1]CONTRIBUTION NO. 254, BUREAU OF ENTOMOLOGY, P.O. BOX 1269, GAINESVILLE, FLA. 32601.

HOSTS AND BIOLOGY: THE GENUS METAMASIUS, ALTHOUGH OCCURRING ON NUMEROUS FAMILIES OF PLANTS, APPEARS TO HAVE CERTAIN GROUPS OF SPECIES THAT ARE HOST SPECIFIC (AT THE FAMILY LEVEL). SUCH GROUPS ARE KNOWN TO BE FOUND ON BROMELIACEAE, PALMACEAE, MUSACEAE, CACTACEAE, AND ORCHIDACEAE. CERTAIN SPECIES ARE FOUND ON SEVERAL PLANT FAMILIES (E.G., M. HEMIPTERUS (L.) ON BANANAS, BROMELIADS, SUGARCANE, AND PALMS).

THE GROUP OF THREE SPECIES TO WHICH THE RECENT INTRODUCTION BELONGS (M. GRAPHIPTERUS (CHAMPION)) IS APPARENTLY ASSOCIATED ONLY WITH ORCHIDS. VAURIE (1967) RECORDED THE THREE SPECIES WITH THEIR HOSTS AS FOLLOWS:

1) M. MONILIS VAURIE WAS INTERCEPTED WITH ORCHIDS, ALTHOUGH NO SPECIFIC GENUS OR SPECIES WAS RECORDED;
2) M. AUROCINCTUS (CHAMPION) WAS FOUND IN A PSEUDOBULB OF CYCNOCHES;
3) M. GRAPHIPTERUS (CHAMPION) HAS BEEN FOUND ON CATTLEYA, CYCNOCHES VENTRICOSUM, LYCASTE, ODONTOGLOSSUM, AND ONCIDIUM OBLONGATUM.

THE FLORIDA SPECIMENS WERE FOUND IN ONCIDIUM ONUSTUM ?, ONCIDIUM SP., NOTYLIA BARKERI ?, AND POSSIBLE DAMAGE ON EPIDENDRUM SP. (FIG. 2-3).

THE POTENTIAL DAMAGE IS PROBABLY SIMILAR TO THAT CAUSED BY GRAPHIPTERUS WHICH WERE FOUND IN NEW JERSEY GREENHOUSES IN 1914-17 (WEISS 1917:25-26):

> "IT FEEDS CHIEFLY ON SUCH PLANTS AS ONCIDIUM OBLONGATUM, LYCASTE, ODONTOGLOSSUM AND VARIOUS OTHER SPECIES HAVING LARGE SOFT PSEUDO-BULBS. THE ADULT, WHICH IS ABOUT 17 MM. LONG AND 7 MM. WIDE AND CHARACTERISTICALLY MARKED, GNAWS LARGE IRREGULAR DEPRESSIONS IN THE PSEUDO-BULBS AND ALSO FEEDS ON THE BASES OF THE LEAVES, USUALLY CUTTING THEM OFF MORE OR LESS COMPLETELY. SOMETIMES THEY FEED RATHER OPENLY ON THE LEAVES, BUT AS A RULE THEY CAN BE FOUND LURKING AT THE BASE OF THE PLANT. THE LARVA LIVES ON THE PSEUDO-BULB AND EXCAVATES QUITE A LARGE CAVITY, DESTROYING MUCH OF THE INTERIOR AND PAVING THE WAY FOR DECAY. PUPATION ALSO TAKES PLACE IN THE PSEUDO-BULB. THE BODY OF THE ADULT IS QUITE HARD, IT BEING ALMOST IMPOSSIBLE TO PIERCE IT WITH AN ORDINARY PIN UNLESS CONSIDERABLE FORCE IS EXERTED. THAT THEY CAN ENDURE LONG FASTS IS EVIDENT FROM THE TREATMENT, WHICH THEY SOMETIMES RECEIVE AT THE HANDS OF UNFEELING WORKMEN IN ORCHID HOUSES, WHO TIE STRINGS TO THEIR LEGS AND HANG THEM UP FOR WEEKS AT A TIME FINALLY TAKING THEM DOWN AND KILLING THEM IN DISGUST BECAUSE THEY PERSIST IN REMAINING ALIVE."

DISTRIBUTION: FLORIDA SPECIMENS ARE PRESENTLY KNOWN ONLY FROM ONE NURSERY AT NARANJA, DADE COUNTY, FLORIDA. IT IS BELIEVED THAT THE WEEVIL ORIGINATED IN EDUADOR (OR POSSIBLY BOLIVIA), ALTHOUGH OTHER ORCHIDS IN THE NURSERY HAD BEEN IMPORTED FROM SEVERAL CENTRAL AMERICAN COUNTRIES. THE KNOWN DISTRIBUTION OF THE GRAPHIPTERUS SUBGROUP IS AS FOLLOWS (VAURIE, 1967):

1) M. MONILIS IS KNOWN FROM THREE SPECIMENS: ONE FROM ECUADOR, ONE FROM PERU (INTERCEPTED AT SAN FRANCISCO), AND ONE FROM AN INTRODUCED PLANT AT THE NEW YORK BOTANICAL GARDENS;
2) M. AUROCINCTUS IS KNOWN FROM SIX SPECIMENS FROM: NICARAGUA, COSTA RICA, MEXICO, AND PANAMA;
3) M. GRAPHIPTERUS IS KNOWN FROM 17 SPECIMENS FROM: COLOMBIA, COSTA RICA, GUATEMALA, MEXICO, PANAMA, VENEZUELA, AND IN THE U.S. FROM GREENHOUSES IN SUMMIT, NEW JERSEY AND WASHINGTON, D. C.

CONTROL: THE FOLLOWING RECOMMENDATIONS ARE GENERAL ONES FOR ORCHID BEETLES AND WEEVILS (DEKLE AND KUITERT, 1968:24):

> LINDANE (25% WETTABLE POWDER) AT THE RATE OF 1 TABLESPOON PER GALLON OF WATER (OR 1 LB. PER 100 GAL.), OR DIAZINON (25% EMULSIFIABLE CONCENTRATE) AT THE RATE OF 2 TABLESPOONS PER GALLON OF WATER (OR 2 PINTS PER 100 GAL.). FOLLOW DIRECTIONS ON THE LABEL CAREFULLY.

REFERENCES:

BARBER, H. S. 1917. NOTES AND DESCRIPTIONS OF SOME ORCHID WEEVILS. PROC. ENT. SOC. WASHINGTON 19: 12-22; 1 PL.

DEKLE, G. W., & L. C. KUITERT. 1968. ORCHID INSECTS, RELATED PESTS, AND CONTROL. FLA. DEPT. AGR., DIV. PLANT IND. BULL. 8:1-28; 19 FIG.

MERRILL, G. B. 1940. INSECTS ATTACKING ORCHIDS. STATE PLANT BOARD OF FLORIDA. MIMEO. 13 P.

SWEZEY, O. H. 1945. INSECTS ASSOCIATED WITH ORCHIDS. PROC. HAWAIIAN ENT. SOC. 12(2):343-403; 10 FIG.

VAURIE, P. 1966. A REVISION OF THE NEOTROPICAL GENUS METAMASIUS (COLEOPTERA, CURCULIONIDAE, RHYNCHOPHORINAE). SPECIES GROUPS I AND II. BULL. AMER. MUS. NAT. HIST. 131(3):213-337; 119 FIG.

VAURIE, P. 1967. A REVISION OF THE NEOTROPICAL GENUS METAMASIUS. SPECIES GROUP III. IBID. 136(4): 177-268; 72 FIG.

WEISS, H. B. 1916. MISCELLANEOUS NOTES. EUCACTOPHAGUS GRAPHIPTERUS CHAMPION (COLEOP.) IN NEW JERSEY. JOUR. NEW YORK ENT. SOC. 24:93.

WEISS, H. B. 1917. SOME UNUSUAL ORCHID INSECTS (HEM., LEP., DIP., COL.). ENT. NEWS 28:24-29; 8 FIG.