ENTOMOLOGY CIRCULAR NO. 62
JULY 1967

FLORIDA DEPARTMENT OF AGRICULTURE
DIVISION OF PLANT INDUSTRY

STEPHANITIS LACE BUGS OF THE UNITED STATES (HEMIPTERA: TINGIDAE) 1/

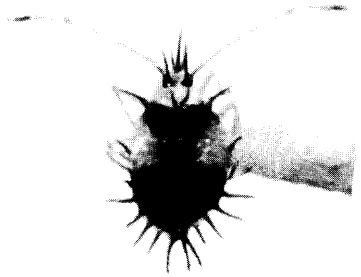
F. W. MEAD

INTRODUCTION: THERE ARE FOUR SPECIES OF STEPHANITIS LACE BUGS IN THE U.S.A. THE PRINCIPAL ONE IN FLORIDA AND MANY OF THE EASTERN STATES IS THE AZALEA LACE BUG, STEPHANITIS PYRIOIDES (SCOTT). THE FOUR SPECIES CONFINE THEIR ATTACKS TO PLANTS IN THE ERICACEAE (HEATH FAMILY), WITH THE MAIN HOSTS USUALLY AZALEAS AND RHODODENDRONS. LACE BUGS DISCOLOR THE LEAVES AND DEVITALIZE THE PLANTS, IMPAIRING SALES OF INFESTED NURSERY STOCK AND CAUSING CONCERN TO THOSE HAVING DAMAGED LANDSCAPE PLANTS. WITH THE EXCEPTION OF STEPHANITIS BLATCHLEYI DRAKE, THERE IS MUCH LITERATURE ON THE U.S. SPECIES OF STEPHANITIS. THE WORKS OF BAILEY (1951A,B; 1960) AND DRAKE AND RUHOFF (1965) SUMMARIZE MOST OF THE AVAILABLE INFORMATION WHICH MUST BE LARGELY OMITTED HERE BECAUSE OF SPACE LIMITATIONS. S. PYRIOIDES HAS BEEN AN OCCASIONAL SERIOUS PEST OF AZALEAS IN FLORIDA SINCE 1933, BUT OTHER SOUTHERN STATES WERE NOT LISTED IN THE RANGE OF THIS SPECIES IN THE DRAKE & RUHOFF CATALOG. IN RECENT YEARS, THE USDA COOPERATIVE ECONOMIC INSECT REPORT (C.E.I.R.) HAS PUBLISHED SEVERAL REPORTS OF S. PYRIOIDES CAUSING DAMAGE TO AZALEAS IN ALABAMA, GEORGIA, AND NORTH CAROLINA.

TYPE OF DAMAGE: STEPHANITIS NYMPHS AND ADULTS CAUSE SIMILAR INJURY TO THEIR HOSTS BY PIERCING THE LEAVES AND DESTROYING THE MESOPHYLL. THIS RESULTS IN A SPOTTED OR MOTTLED GRAYISH DISCOLORATION ON THE UPPER SURFACE OF THE LEAVES WITH THE LOWER DISFIGURED BY THE BLACKISH OR BROWNISH EXCREMENT, CAST NYMPHAL SKINS, AND BROWNISH SHIELDS OVER THE EGGS WHICH ARE INSERTED IN THE LEAF TISSUE.

FIG. 1. AZALEA LACE BUG DAMAGE TO AZALEA.

FIG. 2. DAMAGE TO UNDERSIDE OF AZALEA LEAF.



HOSTS: S. PYRIOIDES IS PRIMARILY A PEST OF AZALEAS, ATTACKING EVERGREEN AND DECIDUOUS TYPES AS WELL AS HARDY AND GREENHOUSE VARIETIES. S. RHODODENDRI HAS BEEN REPORTED ON MANY SPECIES OF RHODODENDRON, BUT IN THE U.S. IT IS PRIMARILY A PEST OF R. MAXIMUM AND ITS VARIETIES AND OF KALMIA LATIFOLIA AND K. ANGUSTIFOLIA. S. TAKEYAI IN THE U.S. HAS BEEN REPORTED MOSTLY ON PIERIS (=ANDROMEDA) JAPONICA. ANDROMEDA IS RESTRICTED TO THE SPECIES GLAUCOPHYLLA AND POLIFOLIA, BUT FORMERLY INCLUDED SEVERAL SPECIES WHICH ARE NOW SCATTERED IN AT LEAST 8 DIFFERENT GENERA, INCLUDING PIERIS, LYONIA, LEUCOTHOE, ETC. THE FLORIDA STATE COLLECTION OF ARTHROPODS HAS TWO SERIES OF S. TAKEYAI IN ITS COLLECTION. ONE SERIES IS FROM CRANFORD, N.J., 22-VI-1956, R.P. ESSER, COLLR.; LEUCOTHOE EDITORUM, THE HOST. THE OTHER SERIES IS FROM WESTCHESTER, PA., 3-IX-1966, H.M. NICHOLS, COLLR.; "ANDROMEDA" THE HOST. THIS IS THE FIRST PENNSYLVANIA RECORD KNOWN TO THE WRITER. THE HOST OF S. BLATCHLEYI IS UNKNOWN.

DISTRIBUTION: IN THE U.S., STEPHANITIS RANGES PRIMARILY ALONG THE STATES OF THE ATLANTIC SEABOARD. ONLY S. RHODODENDRI IS ESTABLISHED IN THE FAR WEST (ORE., WASH.). ELSEWHERE THIS SPECIES EXTENDS FROM ME. TO N. GA.; AND HAS BEEN COLLECTED IN MICH., OHIO, AND W. VA. THREE SPECIMENS FROM ROYSTON, GA., 4-X-48, ARE IN THE FLA. ST. COLLN. OF ARTHROPODS. THIS SEEMS TO BE THE FIRST REPORT FOR GA. THE WRITER AGREES WITH BLATCHLEY (1926) THAT HEIDEMANN'S LISTING OF S. RHODODENDRI FOR FLA. MAY BE ERRONEOUS. HEIDEMANN DID NOT BASE HIS ORIGINAL DESCRIPTION ON MATERIAL THAT INCLUDED FLA. SPECIMENS, BUT MENTIONED FLA. IN THE RANGE OF THE SPECIES WITHOUT GIVING A SPECIFIC LOCALITY. POSSIBLY HE MISTOOK BLATCHLEYI FOR RHODODENDRI. S. BLATCHLEYI IS KNOWN FROM FLA. IN THE COUNTIES OF ALACHUA, HILLSBOROUGH, PINELLAS, AND POLK. S. PYRIOIDES IS LISTED BY DRAKE & RUHOFF (1965) FROM N.Y., CONN., MASS., R.I., N.J., PA., D.C., FLA., AND MO. C.E.I.R. ADDS MD., N.C., GA., ALA., AND DELA. IN FLA. THE RECORDS ARE CONFINED TO 13 SCATTERED COUNTIES IN THE PENINSULA. THE ONLY RECORD SOUTH OF LAKE OKEECHOBEE IS THAT OF 11 ADULTS TAKEN FROM FROM AZALEA AT MIAMI IN 1938. THE FIRST FLORIDA RECORD OF S. PYRIOIDES APPEARS TO BE FROM PINESCASTLE, ORANGE COUNTY, JAN. 27, 1933. S. TAKEYAI IS LISTED IN THE DRAKE & RUHOFF CATALOG FOR CONN. AND N.J. C.E.I.R. ADDS DELA. AND R.I. THE FLA. ST. COLLN. OF ARTHROPODS HAS 7 ADULTS OF TAKEYAI FROM WESTCHESTER, PA., WHICH SEEMS TO BE THE FIRST RECORD OF TAKEYAI FOR PENNSYLVANIA. THE REPORT BY WHITE (1933) THAT LACE BUGS WERE ON PIERIS JAPONICA AND P. FLORIBUNDA IN N.J. SUGGESTS THAT MUSEUM SPECIMENS OF LACE BUGS FROM THIS AREA SHOULD BE RE-EXAMINED TO SEE IF ANY WERE MISIDENTIFIED AND ARE IN FACT S. TAKEYAI.

1/ CONTRIBUTION NO. 111, ENTOMOLOGY SECTION

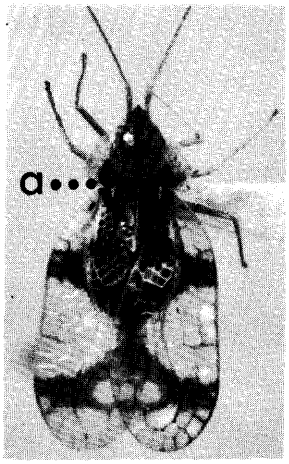


FIG. 4.
S. PYRIOIDES

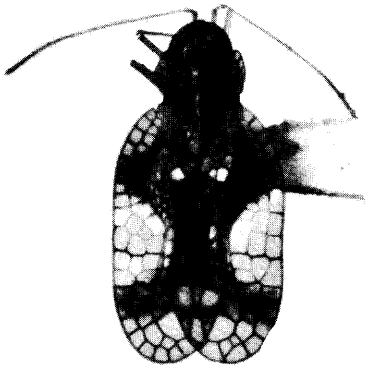


FIG. 5.
S. TAKEYAI

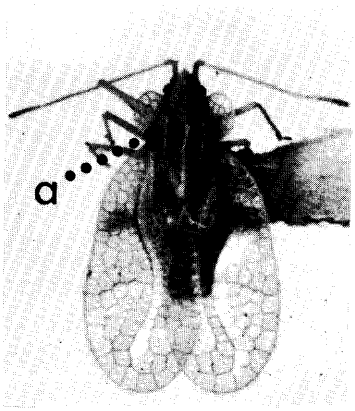


FIG. 6.
S. RHODODENDRI

FIG. 7
S. BLATCHLEYI

KEY TO ADULTS OF STEPHANITIS IN THE U.S.A.:

1. HYPOCOSTAL RIDGE BISERIATE; LATERAL CARINAE OF PRONOTUM ENTIRE (FIG. 6A); HOOD COMPRESSED THROUGHOUT ITS LENGTH; MEDIAN CARINA SLIGHTLY HIGHER THAN HOOD; PARANOTA FLARING; APICAL THIRD OF ELYTRA WITH BROWN BAND PRESENT OR ABSENT, USUALLY ABSENT (FIG. 6,7)----------2

1'. HYPOCOSTAL RIDGE UNISERIATE; LATERAL CARINAE OF PRONOTUM ABBREVIATED (FIG. 4A); HOOD COMPRESSED IN FRONT, BULBOUS BEHIND; MEDIAN CARINA DISTINCTLY LOWER THAN HOOD; PARANOTA ALMOST VERTICAL; APICAL THIRD OF ELYTRA WITH A BROWN BAND (FIG. 4,5)----------3

2(1). SMALLER, LENGTH 2.5 TO 2.9 MM, WIDTH ELYTRA 1.5 TO 1.7 MM; APICAL THIRD TO FOURTH OF ELYTRA WITH A BROWN BAND, SOMETIMES RATHER WEAK; RATIO HOOD WIDTH TO LENGTH 3.7:10 TO 4.4:10; (FIG. 7)----------BLATCHLEYI DRAKE

2'. LARGER, LENGTH 3.1 TO 3.8 MM, WIDTH ELYTRA 2.1 TO 2.5 MM; APICAL THIRD TO FOURTH OF ELYTRA WITHOUT BROWN BAND; RATIO HOOD WIDTH TO LENGTH 4.0:10 TO 5.9:10; (FIG. 6)-RHODODENDRI HORVATH

3(1'). HOOD MUCH WIDER THAN DISTANCE BETWEEN LATERAL CARINAE; LATERAL CARINAE APPROXIMATELY 3/4THS LENGTH 1ST ANTENNAL SEGMENT; HOOD WITH VEINS DARK BROWN, MEMBRANE SMOKY BROWN; HOOD TWICE AS HIGH AS MEDIAN CARINA; MARKINGS GENERALLY DARK BROWN; (FIG. 5)----------TAKEYAI DRAKE & MAA

3'. HOOD ONLY SLIGHTLY WIDER THAN DISTANCE BETWEEN LATERAL CARINAE; LATERAL CARINAE APPROXIMATELY 1/2 LENGTH 1ST ANTENNAL SEGMENT; HOOD WITH VEINS STRAMINEOUS TO LIGHT BROWN, MEMBRANE MILKY HYALINE, OCCASIONALLY VEINS MEDIUM BROWN AND MEMBRANE FUMEUS; HOOD BUT SLIGHTLY HIGHER THAN MEDIAN CARINA; MARKINGS GENERALLY MEDIUM BROWN; (FIG. 4)----------PYRIOIDES (SCOTT)

LIFE HISTORY: THE LIFE CYCLE IS ABOUT 1 MONTH. IN MOST OF THE STATES THERE ARE 2 TO 3 GENERATIONS PER YEAR, DEPENDING UPON THE SPECIES AND LOCALITY. THE USUAL MODE OF OVERWINTERING IS IN THE EGG STAGE IN THE LEAVES OF EVERGREEN PLANTS. ADULTS AND NYMPHS OF S. PYRIOIDES HAVE BEEN COLLECTED DURING ALL SEASONS IN CENTRAL FLORIDA, BUT FALL AND WINTER RECORDS IN NORTH FLORIDA ARE SCARCE. FIRST REPORTS OF ACTIVITY IN NORTH FLORIDA USUALLY COME IN MARCH. S. BLATCHLEYI HAS BEEN COLLECTED IN JAN., FEB., MAR., APR., AND AUG. IN FLORIDA. S. RHODODENDRI IS NOTABLE IN HAVING ONLY 4 NYMPHAL INSTARS INSTEAD OF THE USUAL 5.

REGULATORY ASPECTS: S. PYRIOIDES IS NATIVE TO JAPAN AND HAS BEEN SPREAD AROUND THE WORLD ON SHIPMENTS OF AZALEA NURSERY STOCK. S. TAKEYAI IS ANOTHER JAPANESE SPECIES PRESUMABLY INTRODUCED ON NURSERY STOCK. BAILEY (1951A) FIRST REPORTED TAKEYAI IN THE U.S., BUT HIS RESEARCH INDICATED THAT THIS SPECIES WAS IN CONN. SOMETIME BEFORE 1945. ALTHOUGH S. RHODODENDRI HAS BEEN REPORTED FOR EUROPE, S. AFRICA, AND NEW ZEALAND, IT IS NOW BELIEVED INDIGINOUS TO THE NORTHEASTERN U.S. AND SOUTHERN CANADA RATHER THAN EUROPE AS WAS PREVIOUSLY BELIEVED. DRAKE & RUHOFF NOTED THAT SINCE SPECIES SUCH AS S. RHODODENDRI AND PYRIOIDES OVERWINTER IN THE EGG STAGE, THE ERICACEOUS HOSTS WITH PERSISTENT LEAVES SERVE AS INSIDIOUS CONVEYORS OF THE EGGS IN PLANT SHIPMENTS.

CONTROL: THREE MATERIALS ARE SUGGESTED FOR LACE BUGS IN THE LATEST (1967) USDA INSECTICIDE GUIDE: DIMETHOATE, 2 TSP. OF 23.4 EC (EMULSIFIABLE CONCENTRATE) PER GALLON OF WATER; LINDANE 2% DUST, OR 2 TSP. OF 20% EC PER GAL. OF WATER; MALATHION 4% DUST, OR 2 TSP. OF 57% EC PER GAL. OF WATER. ON AZALEAS, APPLY AT THE FIRST SIGN OF LACE BUG ACTIVITY (MAY OR JUNE VIC. NEW YORK) AND REPEAT AT MONTHLY INTERVALS. DIRECT MATERIALS AT THE UNDERSIDES OF THE LEAVES WHERE THE NYMPHS AND ADULTS ARE FOUND.

LITERATURE CITED:

BAILEY, N.S. 1951A. AN ASIATIC TINGID NEW TO NORTH AMERICA (HETEROPTERA). PSYCHE 57(4):143-145.
1951B. THE TINGOIDEA OF NEW ENGLAND AND THEIR BIOLOGY. ENT. AMER. 31:1-140, 6 FIG.
1960. ADDITIONS TO THE BIOECOLOGY OF THE NEW ENGLAND TINGIDAE AND PIESMIDAE (HETEROPTERA). PSYCHE 66(4): 63-69.
BLATCHLEY, W.S. 1926. HETEROPTERA OR TRUE BUGS OF EASTERN NORTH AMERICA, WITH ESPECIAL REFERENCES TO THE FAUNAS OF INDIANA AND FLORIDA. NATURE PUBL. CO., INDIANAPOLIS, 1116 P., 215 TEXT FIG., 12 PLS.
DRAKE, C.J. AND F.A. RUHOFF. 1965. LACEBUGS OF THE WORLD, A CATALOG (HEMIPTERA:TINGIDAE). BULL. 243, U.S. NAT. MUS., 634 P., 6 TEXT FIG., 56 PLS.
WHITE, R.P. 1933. THE INSECTS AND DISEASES OF RHODODENDRON AND AZALEA. J. ECON. ENT. 26(3):631-640, 1 PL.