

THE FRINGETREE LACE BUG, LEPTOYPHA MUTICA (SAY)(HEMIPTERA:TINGIDAE)<sup>1/</sup>

F. W. MEAD<sup>2/</sup>

INTRODUCTION: IN NORTHERN FLORIDA THE FRINGETREE LACE BUG, LEPTOYPHA MUTICA (SAY), IS AN UNCOMMON BUT LOCALLY ABUNDANT PEST OF FRINGETREE, CHIONANTHUS VIRGINICUS L. THE FRINGETREE (OFTEN CALLED OLD-MAN'S-BEARD TREE) IS A FAVORITE OF HOME GARDENS AND IS STOCKED BY SOME NURSERIES. A HEAVY LACE BUG INFESTATION CAN INJURE NEARLY EVERY LEAF ON A TREE; MODERATE INJURY IS CHARACTERIZED BY MOTTLED LEAVES (FIG. 4) WHILE SEVERELY INJURED LEAVES ARE UNIFORMLY YELLOWISH BROWN AND WITHERED. THIS LACE BUG IS WIDELY DISTRIBUTED IN THE EASTERN HALF OF THE UNITED STATES AND HAS BEEN REPORTED NUMEROUS TIMES ON ASH (FRAXINUS SPP.) AS WELL AS FRINGETREE.

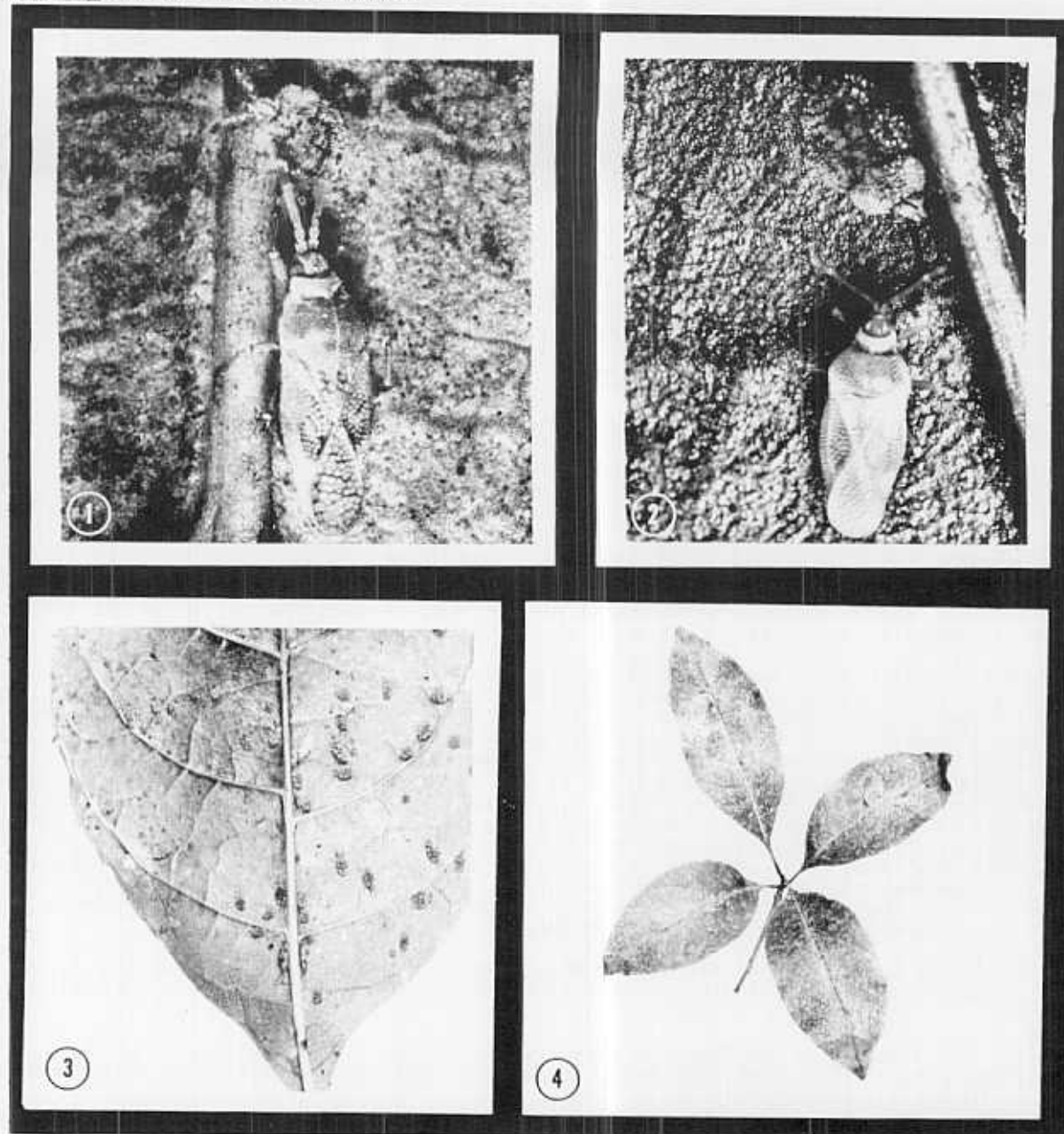


FIG. 1-3. FRINGETREE LACE BUG, LEPTOYPHA MUTICA (SAY). FIG. 1-2. CLOSEUP OF NYMPHS AND ADULTS; FIG. 3. MOSTLY NYMPHS, SOME ADULTS ON UNDER SIDE OF FRINGETREE LEAF; FIG. 4. DORSAL VIEW OF FRINGETREE LEAVES SHOWING MODERATE INJURY FROM LACE BUG FEEDING.

<sup>1/</sup> CONTRIBUTION No. 351, BUREAU OF ENTOMOLOGY.

<sup>2/</sup> TAXONOMIC ENTOMOLOGIST, DIV. PLANT IND., P. O. BOX 1269, GAINESVILLE, FL 32602.

## IDENTIFICATION:

**FIELD:** THIS IS THE ONLY LACE BUG KNOWN TO BREED ON FRINGETREE.

**ADULT:** ELONGATE, LENGTH 2.7-3.0 MM, WIDTH 0.9-1.0 MM; COLOR REDDISH BROWN, OCCASIONALLY LIGHT OR DARK BROWN; EACH FOREWING (HEMELYTRON) WITH VARIABLE BLACKISH SPOT AT MID-AREA AND USUALLY WITH BLACK EDGINGS TO SOME VEINS OF MEMBRANE; PRONOTUM HUMPED BUT WITHOUT INFLATED HOOD AND PARANOTA (LATERAL EXPANSIONS) CHARACTERISTIC OF MANY LACE BUG SPECIES; PRONOTUM WITH ONLY 1 DORSAL RIDGE (FIG. 1 & 2).

**NYMPH:** OBLONG, FLAT, TAWNY, MOST OF DORSAL SURFACE COVERED WITH SHORT, WHITE, ALMOST GRANULATE SETAE; LATERAL MARGINS OF THORAX AND ABDOMEN WITH SHORT STOUT SPINES, HEAD WITH A PAIR OF SPINES; WING PADS ON LAST 2 INSTARS ONLY, PAD APICES DARKER; MATURE NYMPHS ABOUT 1.8 MM LONG, 1.2 MM WIDE (FIG. 1 - 3).

**EGG:** LENGTH ABOUT 0.3 MM, SOMEWHAT FLASKSHAPED, SMOOTH, WHITISH, USUALLY INSERTED IN VENTRAL MIDRIB IN SMALL CLUSTERS, THEREBY THICKENING THE RIB AT THAT POINT.

**LABORATORY:** FOR DETAILED DESCRIPTION OF EGG, ALL 5 INSTARS, AND ADULT, CONSULT DICKERSON & WEISS (1916). FOR DESCRIPTIONS AND KEY TO ADULTS OF EASTERN U. S. SPECIES USE BLATCHLEY (1926). TO KEY THE GENERA USE EITHER BLATCHLEY (1926) OR HURD (1946). ONLY 2 EASTERN SPECIES OF LEPTOYPHA, MUTICA AND ILICIS DRAKE, HAVE THE COSTAL MARGIN OF THE HEMELYTRON NOT FLATTENED BUT VERY NARROW, DEFLEXED, AND REPLACED BY SUBCOSTAL MARGIN ALONG BASAL THIRD. THE OTHER SPECIES HAVE THE MARGIN FLATTENED AND REFLEXED, AND DISTINCT FOR ITS WHOLE LENGTH. ALTOGETHER, 5 SPECIES OF LEPTOYPHA HAVE BEEN REPORTED FROM FLORIDA. L. MUTICA AND ILICIS APPEAR TO BE VERY CLOSE, TRADITIONALLY BEING SEPARATED ON DIFFERENCES IN TOTAL LENGTH AND IN LENGTH OF THE 3RD ANTENNAL SEGMENT. IN FLORIDA STATE COLLECTION OF ARTHROPODS SPECIMENS, BLATCHLEY'S 1ST TO 3RD ANTENNAL SEGMENT RATIO IN HIS KEY DOES NOT WORK. MALES AND FEMALES OF THE GAINESVILLE ASH FEEDING SPECIMENS (L. ILICIS ?) HAVE THE 3RD ANTENNAL SEGMENT 3.1 TO 5.0 TIMES AS LONG AS THE BASAL SEGMENT, INSTEAD OF LESS THAN 3 TIMES AS CALLED FOR IN ORDER TO KEY THE SPECIES OUT TO ILICIS. MALES AND FEMALES OF GAINESVILLE FRINGETREE FEEDING SPECIMENS (L. MUTICA) HAVE THE 3RD ANTENNAL SEGMENT 2.74 TO 4.4 TIMES AS LONG AS THE BASAL SEGMENT. THE BLATCHLEY KEY REQUIRES THAT THE 3RD SEGMENT BE NEARLY 4 TIMES AS LONG AS BASAL SEGMENT. ALLOWING FOR SOME ERROR, THESE MEASUREMENTS OBVIOUSLY OVERLAP BROADLY AND RENDER THE CHARACTER OF LITTLE VALUE FOR KEY PURPOSES. THE EXISTING DESCRIPTIONS AND KEYS DO NOT LIST ANTENNAL LENGTHS AND SEGMENT RATIOS FOR BOTH SEXES OF THE SPECIES INVOLVED. THIS IS UNFORTUNATE BECAUSE FEMALES IN ALL THE FSCA SPECIMENS EXAMINED CONSISTENTLY HAD SHORTER 3RD ANTENNAL SEGMENTS THAN THE CORRESPONDING MALES. FUTURE WORKERS MUST TAKE INTO ACCOUNT THIS SEXUAL DIMORPHISM IN PREPARING DESCRIPTIONS AND KEYS TO PREVENT THE CONFUSION THAT NOW EXISTS. CONCERNING BODY LENGTH AND WIDTH, DIFFERENCES BETWEEN SEXES WAS SLIGHT IN THE SPECIMENS MEASURED. FEMALES OF L. MUTICA TEND TO BE SLIGHTLY LONGER AND WIDER THAN THE MALES BUT THERE WAS SOME OVERLAP; GAINESVILLE SPECIMENS FROM FRINGETREE IN BOTH SEXES WERE CONSISTENTLY LONGER AND WIDER THAN SPECIMENS FROM ASH. MALES AND FEMALES OF L. MUTICA FELL IN A RANGE OF 2.65 TO 3.07 MM, MOSTLY 2.8 TO 2.9 MM IN LENGTH, AND MOSTLY 0.9-1.0 MM WIDE AT THE THORAX. SPECIMENS FROM ASH RANGED FROM 2.37 TO 2.57 MM, IN LENGTH AND 0.78-0.85 MM IN WIDTH. THE LATTER SPECIMENS WERE DETERMINED BY A LOCAL AUTHORITY 40 YEARS AGO TO BE L. MUTICA. THREE EXAMPLES OF THIS COLLECTION FROM FRAXINUS WERE SEEN BY DR. HUSSEY AND CALLED L. ILICIS. THESE SPECIMENS MEASURED 2.32-2.38 MM IN LENGTH. IF ALL OF THE ASH SPECIMENS ARE ILICIS, THEN SIZE DIFFERENCE IS A DISTINGUISHING CHARACTERISTIC, BUT MEASUREMENTS MUST BE MADE CAREFULLY. BAILEY (1951) REPORTED THAT R. I. SAILER HAD NOTICED SOME CONSTANT DIFFERENCES IN SPECIMENS (FROM CHIONANTHUS) OF L. MUTICA FROM PLUMMERS ISLAND, NEAR WASHINGTON, D. C. AND FROM CLIFTON, VIRGINIA.

IT IS OBVIOUS THAT THERE IS A PROBLEM CONCERNING THE EXACT TAXONOMIC STATUS OF L. MUTICA AND L. ILICIS. AN INDEPTH STUDY IS NEEDED TO UNDERSTAND THIS COMPLEX, INCLUDING BIOLOGICAL WORK, ESPECIALLY ACCEPTANCE AND/OR INFLUENCE OF HOSTS.

**DISTRIBUTION:** L. MUTICA HAS BEEN REPORTED FROM MAINE, QUEBEC, AND ONTARIO, WESTWARD TO NORTH DAKOTA, SOUTHWARD TO FLORIDA AND TEXAS, AND EVEN SOCORRO ISLAND, MEXICO. CONSULT DRAKE AND RUHOFF (1965) FOR ITEMIZED STATES. IN FLORIDA, SPECIMENS FROM ALACHUA, JACKSON, AND SUWANNEE COUNTIES ARE IN THE STATE COLLECTION. THE FRINGETREE OCCURS NATURALLY IN THE NORTHERN AND CENTRAL AREAS OF FLORIDA AND AS FAR SOUTH AS MANATEE COUNTY, SO THE LACE BUG HAS THE POTENTIAL TO RANGE APPROXIMATELY 150 MILES FARTHER SOUTH THAN NOW KNOWN.

**LIFE HISTORY:** BARBER AND WEISS (1922) SUGGESTED THAT L. MUTICA HAD 2 BROODS PER YEAR AND OVERWINTERED IN THE ADULT STAGE. MCATEE (1917) REPORTED THAT L. MUTICA OVERWINTERED AMONG OLD LEAVES IN THE WASHINGTON, D. C. AREA, AND THAT NYMPHS HAD BEEN SEEN FROM JULY TO SEPTEMBER. DRAKE (1918) REPORTED SPECIMENS COLLECTED ON ADELIA ACUMINATA (NOW FORESTIERA ACUMINATA (MICH.) POIR) IN TEXAS AND STATED THAT HEIDEMANN GOT A LONG SERIES AT A LIGHT IN MARYLAND. F. ACUMINATA IS CALLED SWAMP PRIVET AND IS FOUND IN THE MOIST RIVER BOTTOMS OF NORTHERN FLORIDA. MCATEE (1923) REPORTED THAT L. MUTICA APPEARED AS EARLY AS APRIL 11 AND AS LATE AS OCTOBER 12 AT PLUMMER'S ISLAND. BAILEY (1951) SUMMARIZED NEW ENGLAND RECORDS FROM JUNE 8 TO SEPTEMBER 30. HE FURTHER STATED THAT AS YET THERE WAS NO DEFINITE INFORMATION CONCERNING THE TIME NECESSARY FOR DEVELOPMENT. L. MUTICA HAS BEEN COLLECTED AS ADULTS FROM FRINGETREE IN FLORIDA ON APRIL 24, JULY 12, AUGUST 1 AND 28, SEPTEMBER 17, OCTOBER 13, AND NOVEMBER 3 (THE LATTER 3 MONTHS BY D. H. HABECK). NYMPHS WERE COLLECTED IN LATE AUGUST, MID-SEPTEMBER, OCTOBER 13, AND NOVEMBER 3. THERE ARE SEVERAL REPORTS IN THE LITERATURE THAT THE NYMPHS AND ADULTS REMAIN ON THE LOWER SURFACE OF LEAVES EXPOSED TO BRIGHT SUNLIGHT AND THAT THE BUGS HAVE BEEN OBSERVED ON THE UPPER SURFACE OF LEAVES IN SHADY SITUATIONS. THE LEAF SURFACE BECOMES UNSIGHTLY FROM BROWNISH EXCREMENT WHERE NYMPHS AND ADULTS FEED.

**CONTROL:** IF VALUABLE TREES BECOME INFESTED AND TREATMENTS ARE NEEDED, THE UNIVERSITY OF FLORIDA AGRICULTURAL EXTENSION SERVICE SUGGESTS THAT A SPRAY OF DIAZINON OR MALATHION BE USED. FOLLOW DIRECTIONS ON THE CONTAINER

## LITERATURE CITED:

- BAILEY, N. S. 1951. THE TINGOIDEA OF NEW ENGLAND AND THEIR BIOLOGY. ENT. AMER. 31:1-140.
- BARBER, H. G., AND H. B. WEISS. 1922. THE LACE BUGS OF NEW JERSEY. STATE OF NEW JERSEY DEPT. AGRIC., BUR. STATISTICS AND INSPECTION, CIRC. 54:3-15, 8 FIG.
- BLATCHLEY, W. S. 1926. HETEROPTERA OR TRUE BUGS OF EASTERN NORTH AMERICA, WITH ESPECIAL REFERENCE TO FAUNAS OF INDIANA AND FLORIDA. NATURE PUBL. CO., INDIANAPOLIS. 1116 P.
- DICKERSON, E. L., AND H. B. WEISS. 1916. NOTES ON LEPTOYPHA MUTICA SAY (HEMIP.). ENT. NEWS 27(7):308-310, 1 PL.
- DRAKE, C. J. 1918. NOTES ON NORTH AMERICAN TINGIDAE (HEM.-HET.). BULL. BROOKLYN ENT. SOC. 13(4):86-88.
- DRAKE, C. J., AND F. A. RUHOFF. 1965. LACEBUGS OF THE WORLD, A CATALOG (HEMIPTERA:TINGIDAE). U. S. NAT. MUS. BULL. 243:1-634.
- HURD, M. P. 1946. GENERIC CLASSIFICATION OF NORTH AMERICAN TINGOIDEA (HEMIPTERA-HETEROPTERA). IOWA STATE COLL. J. SCI. 20(4):429-493.
- MCATEE, W. L. 1917. KEY TO THE NORTHERN SPECIES OF LEPTOYPHA AND LEPTOSTYLA (HETEROPTERA TINGIDAE). BULL. BROOKLYN ENT. SOC. 12(3):55-64.
- MCATEE, W. L. 1923. TINGOIDEA OF THE VICINITY OF WASHINGTON, D. C. (HETEROPTERA). PROC. ENT. SOC. WASH. 25(7-8) 143-151.