

GARDEN FLEAHOPPER, HALTICUS BRACTATUS (SAY) (HEMIPTERA:MIRIDAE)¹

F. W. MEAD

INTRODUCTION: THE GARDEN FLEAHOPPER IS A WIDELY DISTRIBUTED PLANT BUG THAT SPORADICALLY ATTACKS A VARIETY OF FORAGE, VEGETABLE, AND ORNAMENTAL CROPS. AT NUMEROUS TIMES OVER THE PAST 100 YEARS IT HAS CAUSED HEAVY DAMAGE TO CROPS IN THE UNITED STATES AND ALONG THE WEST COAST OF MEXICO, BUT PRESENT DAY COMMERCIAL GROWERS, USING MODERN INSECTICIDES, SELDOM HAVE TROUBLE WITH IT. IN FLORIDA IT IS NOW REGARDED ONLY AS AN OCCASIONAL PEST OF DOORYARD VEGETABLE AND FLOWER GARDENS.

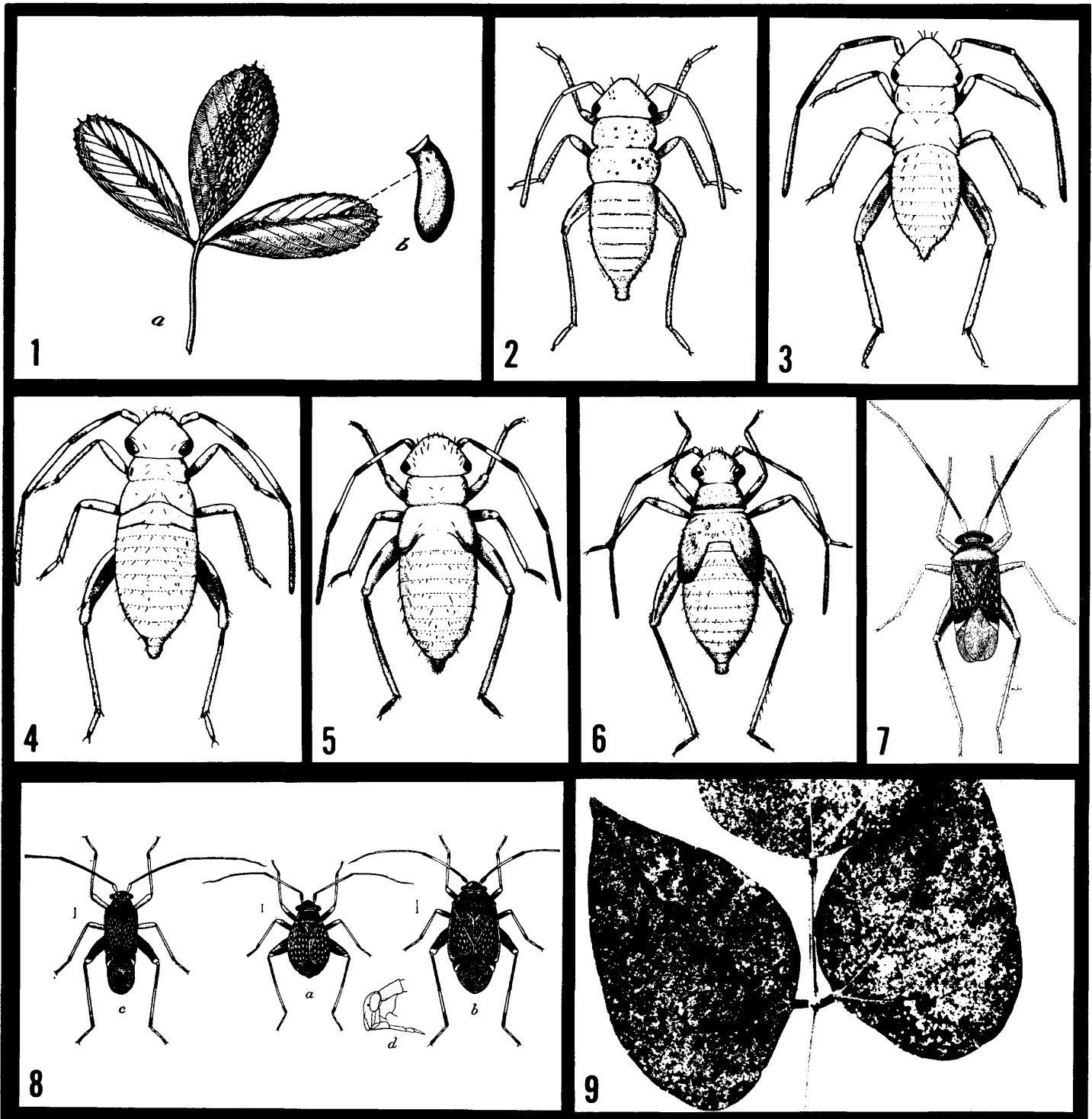


FIG. 1-9, HALTICUS BRACTATUS (SAY): 1) (A) EGGS IN ALFALFA LEAF; (B) EGG, 25X; 2) 1ST INSTAR, 55X; 3) 2ND INSTAR, 47X; 4) 3RD INSTAR, 40X; 5) 4TH INSTAR, 34X; 6) 5TH INSTAR, 20X; 7) MACROPTEROUS ♂, 11X; 8) (LINE INDICATES ACTUAL LENGTH) (A) BRACHYPTEROUS ♀, (B) MACROPTEROUS ♀, (C) MACROPTEROUS ♂, (D) HEAD OF ♂ IN LATERAL OUTLINE; 9) FEEDING INJURY TO COWPEA LEAF.

IDENTIFICATION: THE PRINCIPAL SYNONYMS ARE: H. UHLERI GIARD, H. CITRI (ASHMEAD), H. BRACTEATUS (SAY); FOR A COMPLETE LISTING SEE CARVALHO (1958:14-15). THE GARDEN FLEAHOPPER HAS THE GENERAL APPEARANCE OF A MINUTE BLACK BUG, FLEABEETLE, OR APHID. LONGWINGED (MACROPTEROUS) AND SHORTWINGED (BRACHYPTEROUS) FORMS EXIST FOR BOTH SEXES, BUT SHORTWINGED FORMS ARE UNCOMMON IN MALES, AND LONGWINGED FORMS ARE RARE AMONG FEMALES. THE FEMALES (FIG. 8A) ARE NOTED FOR THEIR RESEMBLANCE TO FLEABEETLES BUT THEY HAVE MUCH LONGER ANTENNAE (4 ELONGATE SEGMENTS WHICH TOGETHER EQUAL OR EXCEED BODY LENGTH, COMPARED TO NUMEROUS SHORT SEGMENTS LESS THAN HALF BODY LENGTH). BEETLES HAVE CHEWING MOUTHPARTS, WHEREAS THE FLEAHOPPER HAS PIERCING-SUCKING MOUTHPARTS. APHIDS HAVE WINGS THAT ARE ENTIRELY MEMBRANOUS, USUALLY HAVE A PAIR OF CORNICLES ON THE ABDOMEN, AND DO NOT JUMP. A FEW OTHER SPECIES OF MIRIDS RESEMBLE THE GARDEN FLEAHOPPER, INCLUDING 2 OTHER SPECIES OF HALTICUS RECORDED FOR THE CONTINENTAL U.S.A., BUT THE USE OF KEYS IN SUCH WORKS AS BLATCHLEY (1926) AND KNIGHT (1941) FACILITATES IDENTIFICATION. THESE OTHER SPECIES OF HALTICUS ARE RELATIVELY SCARCE AND NORTHERN IN DISTRIBUTION.

IN THE SOUTHERN U. S., THE MIRID MOST OFTEN MISTAKEN FOR THE GARDEN FLEAHOPPER IS SPANOGONICUS ALBOFASCIATUS (REUTER), OFTEN REFERRED TO AS A BLACK FLEAHOPPER. IT RESEMBLES THE LONGWINGED FORM OF H. BRACATUS BUT IS MORE ROBUST, HAS SHORTER ANTENNAE (APPROXIMATELY HALF BODY LENGTH COMPARED TO FULL BODY LENGTH FOR H. BRACATUS), AND HAS ALTERNATING PALE AND DARK AREAS ON THE ELYTRA, WHEREAS H. BRACATUS IS NEARLY SOLID BLACK. THE 2ND ANTENNAL SEGMENT OF S. ALBOFASCIATUS IS ONLY ABOUT HALF THE LENGTH OF THE SAME SEGMENT OF H. BRACATUS AND IS SWOLLEN, ESPECIALLY IN MALES, WHEREAS IN H. BRACATUS IT IS FILIFORM.

ANOTHER SOMEWHAT SIMILAR TRUE BUG, OFTEN ASSOCIATED WITH THE MIRIDS ABOVE, IS AN ANTHOCORID, ORIUS INSIDIOSUS (SAY). ORIUS LACKS THE ENLARGED HIND LEGS SUITED FOR JUMPING, ITS HEAD AND ANTENNAE ARE MUCH SMALLER, AND THE BEAK IS 3-SEGMENTED INSTEAD OF 4-SEGMENTED AS IN THE MIRIDS.

NYMPHS JUMP (SALTATORIAL), BUT THE FIRST STAGE IS LESS INCLINED TO JUMP THAN LATER STAGES. EGGS (FIG. 1) ARE WHITE (YELLOWISH NEAR HATCHING TIME), SOMEWHAT LIKE A CURVED SAC, ROUNDLY POINTED AT THE END, AND TRUNCATE AT THE CEPHALIC END. THE GREATEST LENGTH IS ABOUT 0.7 MM. THE EGGS ARE USUALLY INSERTED IN FEEDING PUNCTURES MADE ON HOST LEAVES AND STEMS. WHEN FULLY INSERTED, ONLY THE TRUNCATE END IS VISIBLE, APPEARING AS A WHITE AREA ON THE SURFACE OF THE HOST TISSUE, ALMOST RECTANGULAR IN SHAPE BUT WITH SIDES CURVED.

BIONOMICS: H. BRACATUS IS CONSIDERED A NATIVE INSECT THAT ATTACKS MANY KINDS OF WEEDS IN ADDITION TO A GREAT VARIETY OF CULTIVATED CROPS. LEGUMINOUS CROPS (E.G., ALFALFA, CLOVERS, PEAS, BEANS) ARE AMONG THE FAVORITE HOSTS. BEYER (1921) REPORTED CROP LOSSES AS HIGH AS 50 TO 60 PER CENT IN SOME ALFALFA FIELDS. THE USDA-COOPERATIVE ECONOMIC INSECT REPORT HAS LISTED POPULATIONS OF 100-200 FLEAHOPPERS PER SWEEP ON RED CLOVER IN MARYLAND (20:494, 1970) AND 60-80 PER SWEEP ON ALFALFA IN MISSOURI (20:353, 1970). ADDITIONAL FAVORITE HOSTS INCLUDE CUCURBITS, SOLANACEOUS AND COLE CROPS, MISCELLANEOUS VEGETABLES, ORNAMENTALS SUCH AS CHRYSANTHEMUM, GLADIOLUS, MARIGOLD, SALVIA, DAISY, GALLIARDIA, FERNS, SCHLEFFERA, PHILODENDRONS, MORNING-GLORY, SMILAX, ETC. IT ALSO CAN BE A PEST ON ORNAMENTALS AND VEGETABLES IN GREENHOUSES. AT SANFORD, FLORIDA, DURING EARLY FALL THE FLEAHOPPER WAS A CONSISTENT PROBLEM IN CELERY PLANT BEDS, UNTIL THE ADVENT OF SYNTHETIC INSECTICIDES.

BREEDING IS NEARLY CONTINUOUS AS LONG AS THE WEATHER REMAINS WARM. FIVE TO 6 GENERATIONS PER YEAR HAVE BEEN REPORTED IN SOUTH CAROLINA AND SEVERAL OTHER EASTERN STATES. METCALF AND FLINT (1962) STATED THAT THE AVERAGE TIME OF DEVELOPMENT FROM EGG TO ADULT RANGED FROM 41 DAYS AT 55° F. TO 11 DAYS AT 75° F. BOTH ADULTS AND EGGS HAVE BEEN REPORTED AS OVERWINTERING FORMS, BUT WINTER EGGS IN THE NORTHERN STATES, AND ADULTS IN THE "DEEP SOUTH" COMPRISE THE NORMAL OVERWINTERING PATTERN.

FEEDING ON HOST PLANT LEAVES RESULTS IN SMALL PALE SPOTS THAT SOMETIMES BECOME SO NUMEROUS AS TO COALESCE INTO LARGER DISCOLORED AREAS, EVENTUALLY RESULTING IN LEAF DEATH. FLEAHOPPER NYMPHS ARE GREENISH AND HARMONIZE WITH DISCOLORED LEAVES. BLACK DEPOSITS OF EXCREMENT INDICATE THAT FLEAHOPPERS ARE PRESENT. SMALL HOLES IN LEAVES ARE EVIDENCE OF FLEABEETLES OR OTHER SMALL, CHEWING INSECTS.

FILES IN THE FLORIDA STATE COLLECTION OF ARTHROPODS REVEAL THAT FLEAHOPPER ADULTS PROBABLY CAN BE FOUND ALL YEAR IN FLORIDA, BUT ACTIVITY IS GREATLY REDUCED IN WINTER. RECORDS RANGE FROM AS EARLY AS JANUARY 13 AT TAMPA TO AS LATE AS NOVEMBER 26 AT LOWELL, MARION COUNTY; THE PEAK NUMBER OF REPORTS OCCURRED IN MAY. SOME OF THE MORE COMPREHENSIVE WORKS ON ITS LIFE HISTORY INCLUDE THOSE OF CHITTENDEN (1899), BEYER (1921), AND CAGLE AND JACKSON (1947).

DISTRIBUTION: ARGENTINA TO ONTARIO AND QUEBEC, CANADA. IN THE UNITED STATES IT RANGES FROM NEW ENGLAND TO FLORIDA AND WEST TO COLORADO AND UTAH.

CONTROL: DESTROY OR CUT WEEDS IN VICINITY OF CROPS WHERE FLEAHOPPER POPULATIONS OFTEN BUILD UP. NO INSECTICIDE RECOMMENDATIONS ARE GIVEN BECAUSE SOME MATERIALS USED ON ORNAMENTALS ARE NOT CLEARED FOR USE ON VEGETABLES, OR RESIDUE PROBLEMS MAY BE INVOLVED. MOREOVER, SOME CHEMICALS AVAILABLE FOR COMMERCIAL USE ARE UNLAWFUL FOR HOME GARDENS. FORMULATIONS ACCEPTABLE FOR VEGETABLES MAY CAUSE PHYTOTOXICITY TO ORNAMENTALS. SOME FORMULATIONS ARE PHYTOTOXIC TO FLOWERS BUT NOT LEAVES AND THE REVERSE IS SOMETIMES TRUE, DEPENDING UPON THE HOST. CONSULT YOUR AGRICULTURAL COUNTY AGENT OR THE INSECT CONTROL GUIDE OF THE UNIVERSITY OF FLORIDA AGRICULTURAL EXTENSION SERVICE, IFAS, GAINESVILLE. THERE IS LITTLE SPECIFIC INFORMATION ON BIOLOGICAL CONTROL, BUT BEYER (1921) REPORTED THAT 6 SPECIES OF EGG PARASITES WERE REARED FROM FLEAHOPPER EGGS COLLECTED IN SOUTH CAROLINA ALFALFA FIELDS.

ACKNOWLEDGEMENTS: FIGURES 1-6 AND 9 AFTER BEYER (1921); FIG. 7 AFTER KNIGHT (1941); FIG. 8 AFTER CHITTENDEN (1899).

LITERATURE CITED:

- BEYER, A. H. 1921. GARDEN FLEA-HOPPER IN ALFALFA AND ITS CONTROL. U.S. DEPT. AGR. BULL. 964:1-27, 17 FIG., 8 TABLES.
BLATCHLEY, W. S. 1926. HETEROPTERA OR TRUE BUGS OF EASTERN NORTH AMERICA, WITH ESPECIAL REFERENCE TO THE FAUNAS OF INDIANA AND FLORIDA. NATURE PUB. CO., INDIANAPOLIS, IND. 1116 P., 215 TEXT FIG., 12 PL.
CAGLE, L. R., AND H. W. JACKSON. 1947. LIFE HISTORY OF THE GARDEN FLEAHOPPER. VIRGINIA AGR. EXP. STA. TECH. BULL. 107:1-27, 7 FIG., 11 TABLES.
CARVALHO, J. C. M. 1958. A CATALOGUE OF THE MIRIDAE OF THE WORLD. PART 3: SUBFAMILY ORTHOTYLINAE. ARQUIVOS DO MUSEU NACIONAL (BRASIL) 47:1-161.
CHITTENDEN, F. H. 1899. NOTES ON THE GARDEN FLEA-HOPPER, P. 57-62. IN F. H. CHITTENDEN, SOME INSECTS INJURIOUS TO GARDEN AND ORCHARD CROPS. U. S. DEPT. AGR., DIV. ENT. BULL. 19 (NEW SERIES):1-99.
KNIGHT, H. H. 1941. THE PLANT BUGS, OR MIRIDAE, OF ILLINOIS. ILLINOIS NAT. HIST. SURVEY BULL. 22 (ART. 1):1-234.
METCALF, C. L., AND W. P. FLINT. 1962. (4TH ED., REVISED BY R. L. METCALF). DESTRUCTIVE AND USEFUL INSECTS; THEIR HABITS AND CONTROL. MCGRAW-HILL BOOK CO., NEW YORK. 1087 P.