Entomology Circular No. 198
January ~~1978~~ 1979

Fla. Dept. Agric. and Consumer Services
Division of Plant Industry

KEY TO THE GENERA OF CIXIIDAE IN FLORIDA

(HOMOPTERA: FULGOROIDEA)[1]

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INTRODUCTION: Planthoppers in the family Cixiidae traditionally have been of interest only to taxonomists and ecologists, but recent research shows that these planthoppers are potential vectors of plant pathogens. Notes and a key are presented here as aids for the identification of the Florida fauna.

ECONOMIC IMPORTANCE: Cixiid planthoppers apparently do not cause economic damage to plants when they suck juices, but a few species in the world have been incriminated as disease vectors. Carter (1973) listed the following diseases: Potato witch's broom and tomato big bud which are apparently caused by mycoplasma-like organisms vectored by species of Hyalesthes, a cixiid genus found primarily in Europe; in New Zealand a species of Oliarus (Cixiidae) is the vector of the mycoplasma-like pathogen that causes yellow leaf of Phormium. Phormium is a fiber plant in the Liliaceae; specimens have been imported from New Zealand to Florida. The cixiid genus of most interest in Florida and much of the Caribbean-Gulf area is Haplaxius. Research in Jamaica for 20 years, and more recently in Florida at the University of Florida Agriculture Research Center in Fort Lauderdale, indicates that Haplaxius crudus Van Duzee is a prime suspect vector of the mycoplasma-like pathogen that causes lethal yellowing of palms, a very serious disease which, in Florida alone, has killed many thousands of valuable palm trees. Data relative to this insect-disease association are summarized by Reinert (1977).

BIONOMICS: Cixiid planthoppers are poorly understood, mostly because their general lack of economic importance has directed research interest elsewhere and because their development occurs underground and in rotten logs where they are seldom seen. Nymphs occur in waxy cells or nests adjacent to plant roots. Adults emerge from underground and most are more active at night; some are commonly collected in blacklight traps. They are associated with such diverse plant groups as pines, ferns, lichens, monocots, and dicots, but most are found in grassy situations. Reinert (1977) reported H. crudus breeding on palm roots and several species of turfgrasses in southern Florida. Tsai et al. (1976) reared H. crudus on the runners of St. Augustine grass, Stenotaphrum secundatum (Walter) Kuntze, grown in nutrient solution in the laboratory.

CAPSULE COMMENTS ON CIXIID GENERA IN FLORIDA:

1. Monorachis: One species in Florida; rare; forewings abbreviated, brownish; somewhat beetle-like; length 3-4 mm.
2. Nymphocixia: One species in Florida; uncommon to rare; Neotropical affinities; usually collected on mangrove; forewings ornate; length 5 mm.
3. Pintalia: Few Florida species, total unknown; reported under Ciocixius in Metcalf (1923) and Cotyleceps in Dozier (1928); uncommon; forewings brown; dorsum often contrasting yellowish brown; length 5-7 mm.
4. Bothriocera: Several species in peninsular Florida; revision needed; forewings heavily marked with brown; frons produced at sides to resemble 2 small blunt horns from above; appearance fly-like; associated with ferns; length 4-5 mm.

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5. Oecleus: Three species in Florida (Kramer, 1977); often around pines; length 4-6 mm.
6. Oliarus: Ten species in Florida; habitats diverse, including tidal-flat grasses & pine flatwoods; length 3-8 mm.
7. Haplaxius: Several species in Florida; but perhaps only 1 associated with south Florida palms; being revised by J. P. Kramer, USDA, Washington, D.C.; fresh specimens usually pale green, wings plain; breed on grass roots; length 3½-5 mm.

REFERENCES CITED:

Carter, W. 1973 (2nd edit.). Insects in relation to plant disease. John Wiley & Sons, New York, New York, 759p.

Dozier, H. L. 1928. The Fulgoridae or plant-hoppers of Mississippi, including those of possible occurrence. Mississippi Agric. Exp. Sta. Tech. Bull. 14:1-152; 35 fig.

Kramer, J. P. 1977. Taxonomic study of the planthopper genus Oecleus in the United States (Homoptera: Fulgoroidea: Cixiidae). Trans. American Ent. Soc. 103:379-449; 160 fig.

Metcalf, Z. P. 1923. A key to the Fulgoridae of Eastern North America with descriptions of new species. J. Elisha Mitchell Sci. Soc. 28(3-4):139-230; pl. 39-70; 116 fig.

Reinert, J. A. 1977. Field biology and control of Haplaxius crudus on St. Augustinegrass and Christmas palm. J. Econ. Ent. 70(1):54-56.

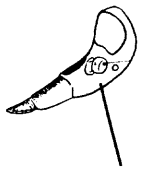
Tsai, J. H., J. L. Woodiel, & O. H. Kirsch. 1976. Rearing techniques for Haplaxius crudus (Homoptera: Cixiidae). Florida Ent. 59(1):41-43; 2 fig.

PICTORIAL KEY TO CIXIID GENERA IN FLORIDA

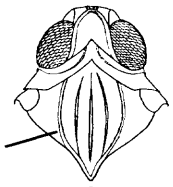
Antennae in front of eyes, sunk in ear-like cavities

Bothriocera

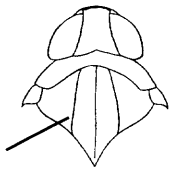
Antennae below eyes, not sunk in ear-like cavities



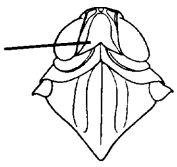
Mesonotum with 5 carinae, intermediate pair sometimes indistinct



Mesonotum with 3 carinae

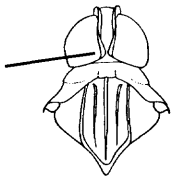


Vertex comparatively broad and shallow, not narrowed at base



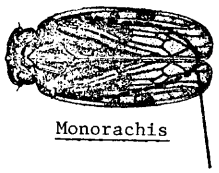
Oliarus

Vertex very narrow and trough-like, narrowed at base



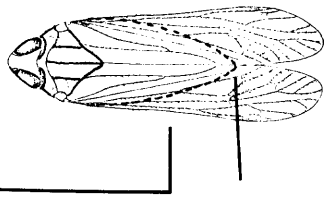
Oecleus

Forewings shortened, barely surpassing tip of abdomen



Monorachis

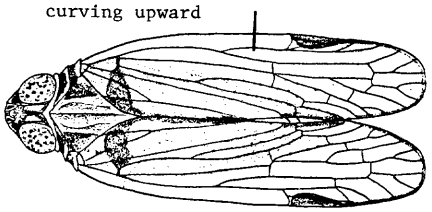
Forewings long, surpassing tip of abdomen by 1/4-1/3 their length



1-3 spines present on each hind tibia between base and cluster of spines at apex

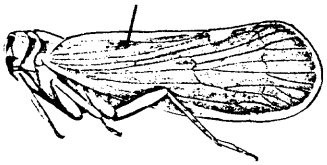
No spines on hind tibia (except for apical cluster)

Forewings broadly sloping; mostly clear, occasionally partially embrowned, spotted; ovipositor short, flat, not curving upward



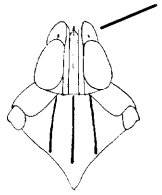
Oliarus

Forewings deeply sloping, nearly vertical, heavily embrowned and/or banded; ovipositor long, tubular, curving upward



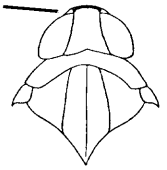
Pintalia

Vertex without transverse carina near juncture with frons; lateral carinae of vertex foliaceous; forewings ornate; spot near apex



Nymphocixia

Vertex with at least 1 transverse carina near juncture with frons; lateral carinae of vertex low, little above eye level; forewings clear



Haplaxius

(Illustrations adapted from various sources)