

Annotated List of Leafhoppers (Homoptera: Cicadellidae) From Two Ohio Fens With a Description of a New *Chlorotettix*¹

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ABSTRACT. Leafhoppers from Springfield and Prairie Road Fens, Clark County, Ohio, were surveyed in 1986. Sixty-eight species, representing 14 subfamilies, were recorded from these two fens, including a new state record. In addition, a new species, previously confused with *Chlorotettix limosus* DeLong and Cartwright, is described.

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INTRODUCTION

Fens (alkaline bogs) in Ohio offer an unique assemblage of plant species that include grasses, herbs, and woody plants. In turn these plants support many unique, herbivorous insects. Shuey (1985) identified 15 species of butterflies that were restricted to wetland areas of Ohio, northeastern Indiana, and southern Michigan. In addition, he noted differences in butterfly species distributions among various Ohio fens. DeLong (1948) reported that wetland grass and sedge habitats in Illinois supported a number of unique leafhoppers. In northeastern Ohio, MacLean (1984) found a total of 35 leafhopper species occurring in one fen, Watercress Marsh, Columbiana County. He believed that most of the leafhoppers collected were inhabitants of this wetland area and were not simply migrants.

These studies indicate the potential for differences in leafhopper distributions among Ohio fens. This study was conducted in order to examine the leafhopper fauna in two additional western Ohio fens in the hope that a more complete understanding of Ohio fen leafhoppers may emerge.

The two fens selected for study, Springfield Fen and Prairie Road Fen, are located in Clark County, Ohio and are separated by approximately 8 km. Both sites are spring-fed and have a marly substrate. They were formed by a glacial outwash underlain by a buried river valley (Andreas 1985). *Carex* spp. are dominant; shrubby cinquefoil (*Potentilla fruticosa*), sunflowers (*Helianthus* sp.) and willows (*Salix* spp.) are interspersed throughout each fen.

Springfield Fen is an approximately 28-ha site located in Springfield Township. The site is surrounded by deciduous trees including oaks (*Quercus* spp.) and elms (*Ulmus* sp.). Prairie Road Fen (1.2-1.6ha) is located in Moorefield Township (Cusick and Troutman 1978). The fen has a road with patches of weeds and elms on its western border, farmland to the north, and dogwood (*Cornus* sp.) with patches of grasses to the east and south. Plants in this fen are typical of a prairie fen (Stuckey and Denney 1981). Important plants include big bluestem (*Andropogon gerardii*), little bluestem (*A. scoparius*), *Carex* spp., rushes (*Juncus* spp.), and goldenrod (*Solidago* sp.). Although Prairie Road Fen is smaller, its flora appears to be more diverse than the western portion of Springfield Fen in which this study was conducted.

MATERIAL AND METHODS

Leafhoppers were sampled weekly starting on 25 May 1986 and continuing through 21 September 1986. Both sites were sampled with sweepnet and yellow sticky traps. Sweeping was conducted weekly and approximately 100 sweeps were taken at each fen. The traps (12.7 × 20.3 cm; Olson Products Inc., Medina, Ohio) were placed on wooden stakes. Each trap consisted of two sticky traps. One trap was placed next to the ground and a second near the top of the vegetation. There were three stakes per site. The traps were collected weekly, and selected leafhoppers were removed with xylene and saved for later examination. Voucher specimens were deposited in the Collection of Insects and Spiders at The Ohio State University and in the author's personal collection.

RESULTS AND DISCUSSION

A total of 68 leafhopper species were recorded in this study, including one new state record and a new species of *Chlorotettix*. The complete list of species can be found in the Appendix. *Balclutha guajanae*, previously recorded from Georgia and Missouri (Blocker 1967 and pers. comm.), represents the northernmost record for this species. A new species of *Chlorotettix*, previously confused with *C. limosus* DeLong and Cartwright, is described below.

MacLean (1984) recorded 35 species from a fen in northeastern Ohio; however, only 13 of these species were found in the two Clark County fens studied. These species have a distribution throughout most of the eastern half of the United States. Excluding two species, *Dorydiella floridana* and *Neocoelidia tumidifrons*, most are thought to have a broad host range. *Draeculacephala portola* was the only species commonly collected in both studies.

Of the 65 leafhopper species, *Graphocephala coccinea* was the most commonly collected species by both sticky traps and sweeping. Other species that were commonly encountered in both the sticky traps and by sweeping included: *Agallia constricta*, *Gyponana* (*G.*) *conferta*, *Draeculacephala antica*, *D. mollipes*, *D. portola*, *Amphigonalia gothica*, *Empoasca* sp. (*fabae* complex), *Scaphytopius* (*Cloanthanus*) *acutus*, and *Cicadula melanogaster*.

Thirty-seven species were found in both Prairie Road Fen and Springfield Fen. Those species recorded in both fens indicate that they are either endemic to the fen habitat in western Ohio, or are associated with plants that are found in similar habitat types. However, 20 species were collected only from Prairie Road Fen. This is probably the result of greater plant diversity in the Prairie Road Fen compared with Springfield Fen.

Only 11 species were unique to Springfield Fen. Most of the unique records for Springfield Fen and Prairie Road

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Fen were known from one or two specimens, and were collected by sticky traps. Those which were known only from a single fen and in low numbers are probably not restricted to western Ohio fens and were possibly migrants to these areas.

Among those leafhoppers collected at both sites was a new species of *Chlorotettix* Van Duzee. The Ohio species of *Chlorotettix* were reviewed by Osborn (1928); DeLong (1948) illustrated the species known to occur in Illinois. Members of this genus are commonly collected in wet, lowland areas (DeLong 1948). Host plants for this genus include grasses and sedges. This new species brings the total number of *Chlorotettix* species in Ohio to 11. The following description of the late instar nymph is only the second known nymph positively associated for this genus.

CHLOROTETTIX MERISCUS NEW SPECIES.

Length of male 7.2-7.7 mm; female 7.4-7.8 mm.

Color: Variable. Yellow to light green. Forewing yellowish subhyaline, costal margin occasionally green. Legs yellowish green, hind tibia usually light green, tarsal claw dark.

Structural features: Crown broadly rounded, median length only slightly longer than length next to eye.

Male genitalia: Pygofer with posterior margin roundly triangular, sloping anteriorly from dorsal margin to ventral margin, ventroposterior margin curved mesally and with row (5-7) of spine-like setae. Plate triangular, lateral margin slightly sinuate, apex bluntly rounded. Stylar apex elongate, preapical angle bluntly triangular. Connective elongate. Aedeagus tubular, two pairs of apical

processes present, posterior pair directed laterally then turning dorsally in posterior aspect, anterior process approximately half the length of posterior process in lateral aspect, directed laterally in posterior aspect. Gonopore subapical.

Female seventh sternite: Posterior margin with V-shaped excavation extending over half the length of segment, median spatulate process with apical, V-shaped notch, lateral angles rounded.

Late instar nymph: Like adult except body dorsoventrally flattened. Crown, face, pronotum, and wing pads smooth. Color yellow, legs light green. Abdominal setae dark, four per segment on tergites III-VIII; segment IX elongate, attenuate, bifurcate apically. Male plate short, lateral margin not sinuate.

Type-series: Holotype male-Ohio, Clark County, Redmond [Springfield] Fen, 20 July 1986, P. Cwikla coll.; 19 male and 11 female paratypes-same data as holotype except 1 male 1 June 1986; 2 males 5-13 July 1986, sticky trap; 2 males 13-20 July 1986, sticky trap; 1 male and 4 females 20 July 1986; 1 male 3 August 1986; 1 male and 1 female 10 August 1986; 1 male and 1 female 10-17 August 1986, sticky trap; 3 males 17-21 August 1986, sticky trap; 1 female 31 August 1986; 1 male 24-31 August 1986, sticky trap; 2 males and 1 female 14-21 September 1986, sticky trap; 1 male Prairie Road Fen, 2 July 1986; 1 male and 2 females Prairie Road Fen, 3 July 1986; 1 female Prairie Road Fen, 10 August 1986; 1 male Prairie Road Fen, 1-6 August 1986, sticky trap; 1 male Prairie Road Fen, 24-31 August 1986, sticky trap. Three male and 3 female paratypes-North Carolina, Swannanoa, 15 August 1919, Osborn and Metcalf; 1 female same data except 11 August 1919; 1 female and 3 males 23 August 1919; 1 female 26 August; 1 male paratype Massachusetts, Boston, Arnold Arboretum. Types collected from Springfield Fen were deposited in the Collection of Insects and Spiders, Department of Entomology, The Ohio State University. The four paratypes from Prairie Road Fen were deposited in the National Museum of Natural History, Washington D.C. Paratypes collected from North Carolina and Massachusetts were deposited in the Department of Entomology, North Carolina State University Collection. Seven nymphs from Springfield Fen, were not part of the type-series and were deposited in the OSUC.

Biology: Specimens were collected by sweeping pure stands of narrow-leaf *Carex* spp. at Springfield Fen. Nymphs were collected from 8 May through 15 July suggesting only one generation per year. Adults were present from early June through September, with the greatest number collected by sticky traps at Springfield Fen during the month of July. Overall, specimens were collected infrequently by both sweeping and by sticky traps, thus indicating that populations of this species are low in the field.

Etyymology: Old English, merisc (marsh) refers to the fen habitat of this species.

Notes: The elongate tergite IX of the nymph resembles the genus *Remadosus* Ball as illustrated by Oman (1949). This character may serve as a possible synapomorphy for Deltocephalinae genera in the future.

Diagnosis: This species is similar to *C. limosus* DeLong and Cartwright, and can be separated from it and other

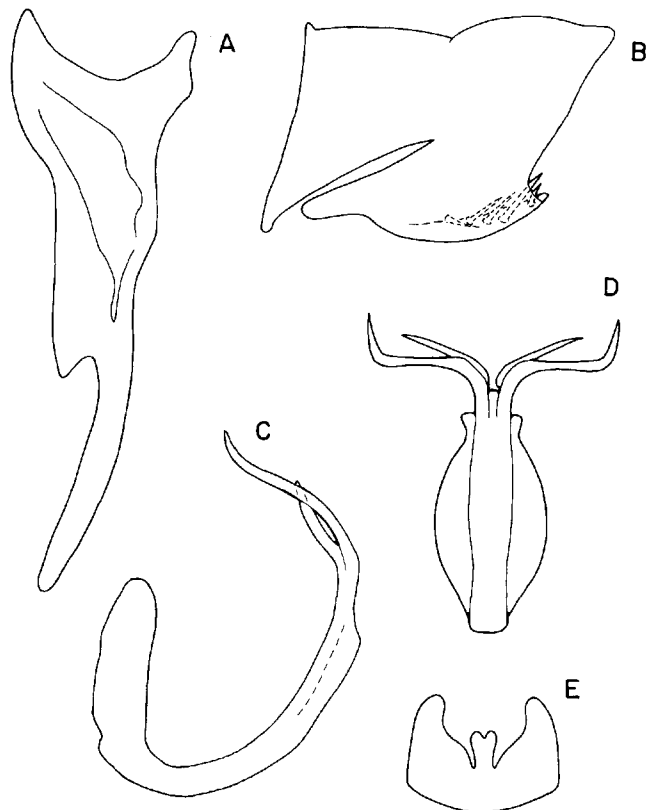


FIGURE 1. New species of *Chlorotettix meriscus*. A: left style, dorsal aspect. B: pygofer, left lateral aspect. C: aedeagus, left lateral aspect. D: aedeagus, posterior aspect. E: female seventh sternite, ventral aspect.

Chlorotettix by the row of setae on the ventroposterior margin of the pygofer and the anterior aedeagal process half the length of the posterior process in lateral aspect.

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APPENDIX. List of Cicadellidae collected at Springfield Fen and Prairie Road Fen, Clark County, Ohio. All records were collected in 1986.

Subfamily MACROPSINAE

Macropsis osborni Breakey. Prairie Road fen 22–29 Jun Sticky trap
Macropsis viridis (Fitch). Springfield Fen 22 Jun–5 Jul Prairie Road Fen 22 Jun–5 Jul Sticky trap
Macropsis sp. Prairie Road Fen, 2–8 Jun. Sticky trap

Subfamily AGALLIINAE

Aceratagallia sp. Prairie Road Fen 15 Jun Sweeping
Agallia constricta Van Duzee. Springfield Fen 25 May–31 Aug Prairie Road Fen 25 May–14 Sep Sticky trap, sweeping
Agalliopsis sp. Prairie Road Fen 25 May Sweeping

Subfamily IDIOCERINAE

Idiocerus pallidus Fitch. Prairie Road Fen 5 Jul Sweeping
Idiocerus rotundens DeLong and Caldwell. Prairie Road Fen 29 Jun–5 Jul Sticky trap

Subfamily IASSINAE

Penestrangia probably *apicalis* (Osborn and Ball). Springfield Fen 22 Jun–5 Jul Prairie Road Fen 22 Jun–5 Jul Sticky trap H. D. Blocker determined

Subfamily GYPONINAE

Gypona (Obtusana) melanota Spangberg. Springfield Fen 26 Jul–17 Aug Sticky trap, sweeping
Gyponana (Gyponana) conferta DeLong. Springfield Fen 9 Jun 21–Sep Prairie Road Fen 2 Jun –6 Sep Sticky trap
Ponana (Ponana) pectoralis (Spangberg). Springfield Fen 25 May Prairie Road Fen 8–22 Jun Sticky trap
Prairiana kansana (Ball). Prairie Road Fen 2–8 Jun Sticky trap

Subfamily CICADELLINAE

Amphigonalia gothica (Signoret). Springfield Fen 25 May–21 Jul Sticky trap, sweeping
Draeculacephala antica (Walker). Springfield Fen 2 Jun–21 Sep Prairie Road Fen 13 Jul–17 Aug Sticky trap, sweeping
Draeculacephala mollipes (Say). Springfield Fen 1 Jun–10 Aug Prairie Road Fen 5 May–14 Sep Sticky trap, sweeping
Draeculacephala noveboracensis (Fitch). Prairie Road Fen 13–20 Jul Sticky trap
Draeculacephala portola Ball. Springfield Fen 7–14 Sep Prairie Road Fen 26 Jul–10 Aug Sticky trap, sweeping
Graphocephala coccinea (Forster). Springfield Fen 2 Jun–21 Sep Prairie Road Fen 2 Jun–14 Sep Sticky trap
Graphocephala hieroglyphica (Say). Prairie Road Fen 25 May–22 Jun Sticky trap
Graphocephala versuta (Say). Springfield Fen 22 Jun–31 Aug Prairie Road Fen 5 Jun–14 Sep Sticky trap
Oncometopia orbona (F.). Prairie Road Fen 29 Jun–5 Jul Sticky trap
Paranlacizus irrorata (F.). Springfield Fen 25 May–14 Sep Prairie Road Fen 25 May–8 Jun Sticky trap, sweeping
Plesiommatata tripunctata (Fitch). Springfield Fen 14 Jun–14 Sep Prairie Road Fen 15–22 Jun Sticky trap
Tylozygus bifidus (Say). Springfield Fen 1–6 Sep Prairie Road Fen 7–14 Sep Sticky trap

Subfamily EVACANTHINAE

Evacanthus acuminatus (F.). Prairie Road Fen 8–22 Jun Sticky trap

Subfamily TYPHLOCYBINAE

Empoa vestita (McAtee). Springfield Fen 1–6 Sep Sticky trap
Empoasca bifurcata DeLong. Prairie Road Fen 5 Jul Sweeping
Empoasca sp. (*fabae* complex). Springfield Fen 22 Jun–31 Aug Prairie Road Fen 25 May–14 Sep Sticky trap, sweeping

Forcipata loca DeLong and Caldwell. Springfield Fen 13–20 Jul Sticky trap

Erythroneura (Erasmoneura) tecta McAtee. Prairie Road Fen 24 Aug–14 Sep Sticky trap

Subfamily COELIDIINAE

Jikeradia olitoria (Say). Springfield Fen 26 Jul–17 Aug Prairie Road Fen 26 Jul–14 Sep Sticky trap, sweeping pussy willow

Subfamily NEOCOELIDIINAE

Neocoelidia tumidifrons Gillette and Baker. Springfield Fen 22–29 Jun Prairie Road Fen 2 Jun–14 Jun Sticky trap

Subfamily APHRODINAE

Aphrodes albifrons (L.). Springfield Fen 22–29 Jun Prairie Road Fen 29 Jun Sticky trap, sweeping

Aphrodes placida (Provancher). Springfield Fen 9–29 Jun Prairie Road Fen 9–15 Jun Sticky trap

Subfamily XESTOCEPHALINAE

Xestocephalus desertorum (Berg). Springfield Fen 25 May–31 Aug Prairie Road Fen 22 Jun–6 Sep Sticky trap

Subfamily PENTHIMIINAE

Penthimia americana Fitch. Springfield Fen 25 May–20 Jul Prairie Road Fen 1–14 Jun Sticky trap, sweeping

Subfamily DELTOCEPHALINAE

Arthaldeus pascuellus (Fallen). Springfield 25 May–3 Aug Prairie Road Fen 25 May–1 Jun Sticky trap

Athysanus argentatus (F.). Springfield Fen 14–22 Jun Prairie Road Fen 15 Jun Sticky trap, sweeping

Balclutha abdominalis (Van Duzee). Springfield Fen 24–31 Aug Prairie Road Fen 3 Aug Sticky trap, sweeping

Balclutha guajanae (DeLong). Springfield Fen 10 Aug 6 Sep Prairie Road Fen 7–14 Sep Sticky trap, sweeping H. D. blocker determined

Bandara curvata Knull. Springfield Fen 5–13 Jul Sticky trap
Bandara Johnsoni (Van Duzee). Prairie Road Fen 7–14 Sep Sticky trap

Chlorotettix galbanatus Van Duzee. Springfield Fen 14 Jun–21 Sep Sticky trap, sweeping

Chlorotettix meriscus new species. Springfield Fen 5 Jul–21 Sep Prairie Road Fen 25 Aug–14 Sep Sticky trap, sweeping

Chlorotettix tergatus (Fitch). Prairie Road Fen 24–Aug Sticky trap
Chlorotettix unicolor (Fitch). Springfield Fen 14–22 Jun Prairie Road Fen 13 Jun–5 Jul Sticky trap, sweeping

Cicadula melanogaster (Provancher). Springfield Fen 8 Jun 3 Aug Prairie Road Fen 2 Jun–13 Jul Sticky trap, sweeping

Colladonus clitellarius (Say). Prairie Road Fen 25 May–14 Jun Sticky trap

Doratura (Doratura) stylata (Boheman). Prairie Road Fen 22–29 Jun Sticky trap

Dorydiella floridana Baker. Springfield Fen 1–6 Sep Prairie Road Fen 10 Aug–21 Sep Sticky trap

Endria inimica (Say). Springfield Fen 2–8 Jun Prairie Road Fen 1–6 Sep Sticky trap

Graminella nigrifrons (Forbes). Springfield Fen 1 Jun–21 Sep Prairie Road Fen 10 Aug–6 Sep Sticky trap, sweeping

Laevicephalus acus (Sanders and DeLong). Springfield Fen 22 Jun–20 Jul Sticky trap

Laevicephalus paronatus Ross Hamilton. Springfield Fen 15–22 Jun Sticky trap, sweeping

Macrosteles fascifrons (Stal). Springfield Fen 31 Aug Prairie Road Fen 15 Jun–3 Aug Sticky trap, sweeping

Paraphlepsius collitus (Ball). Springfield Fen 1 Jun–21 Sep Prairie Road Fen 1 Jun–3 Aug Sticky trap, sweeping

Paraphlepsius irroratus (Say). Springfield Fen 22 Jun–3 Aug Prairie Road Fen 25 May–14 Sep Sticky trap

Planicephalus flavocostatus (Van Duzee). Springfield Fen 24 Aug–6 Sep Sticky trap

Polyamia caperata (Ball). Springfield Fen 29 Jun–20 Jul Sticky trap

Scaphoideus (Conenus) intricatus Uhler. Prairie Fen 13–20 Jul Sticky trap

Scaphoideus (Latenus) densus DeLong & Berry. Prairie Road Fen 29 Jun–3 Aug Sticky trap

Scaphoideus (Latenus) minor Osborn. Springfield Fen 14–22 Jun Sticky trap

Scaphoideus (Scaphoideus) cinerosus Osborn. Springfield Fen 14–22 Jun Sticky trap

Scaphoideus (Scaphoideus) titanus Ball. Springfield Fen 9 Jun–13 Aug Prairie Road Fen 13 Jul–14 Sep Sticky trap, sweeping

- Scaphytopius (Cloanthanus) acutus* (Say). Springfield Fen 8 Jun–21 Sep Prairie Road Fen 15 Jun–31 Aug Sticky trap, sweeping
Scaphytopius (Cloanthanus) frontalis (Van Duzee). Springfield Fen 1 Jun–14 Sep Prairie Road Fen 1 Jun–21 Sep Sticky trap, sweeping
Sclerorachus anthracinus (Van Duzee). Prairie Road Fen 15 Jun–29 Jun Sticky trap, sweeping

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