

**Inventory of conservative Auchenorrhyncha (Insecta: Hemiptera) of 15  
hill prairies from the Peoria area**

Carried out by members of the  
Illinois Natural History Survey  
1816 South Oak Street  
Champaign, IL 61820

Annual report for the 2007 – 08 fiscal year

Illinois Natural History Survey Technical Report #2007(08)  
Prepared by:  
Adam Wallner

Submitted: October 2008

## **Introduction**

Terrestrial arthropods, in particular Auchenorrhyncha (i.e., leafhoppers, planthoppers, cicadas, and spittlebugs) are some of the most speciose and abundant groups of organisms in grassland ecosystems. Conservative estimates suggest that the Illinois prairie may harbor as many as 300 conservative auchenorrhynchous species (DeLong 1948, Panzer et al. 1995, and Hamilton 2005). Hill prairies, which have remained relatively untouched by intensive agriculture and development (Robertson et al. 1997), may have a disproportional greater number of these species. Thus, the focus of this report is to list all the conservative auchenorrhynchous species encountered from the 15 hill prairies sampled of Peoria and Marshall Counties.

## **Materials and Methods**

Sampling of Auchenorrhyncha focused on 15 native hill prairies in Peoria and Marshall Counties near the Illinois River. These prairies range in quality from degraded remnants with heavy encroachment of oaks, hickory and garlic mustard to open prairie dominated by little blue stem, sideoats grama, and prairie drop seed. These remnants range in size from a half an acre to five acres (see Table 1).

At each of these sites Connie Carroll-Cunningham (INHS), Clark Danderson (UIUC), James Ellis (INHS), Brenda Molano-Flores (INHS), David Ketzner (INHS), Paul Marcum (INHS), Michael Murphy (INHS), Loy Phillippe (INHS) and I randomly placed three 40m-linear transects, which were perpendicular to a 50m baseline. Transects were parallel to the contours of the hill prairie. Their position was determined using a random numbers table. I sampled Auchenorrhyncha with a modified leaf blower vacuum for approximately five minutes from mid-July through August when peak species richness/abundance occurs. All adult Auchenorrhyncha were temporarily stored in

ethanol, identified to species, and specimens were deposited at the Illinois Natural History Survey Insect Collection. All conservative species listed below were entered into a database using the 3I (Internet Accessible Internet Identification) software.

## **Results and Discussion**

Intensive sampling on Detweiller South Prairie, visited on July 20, 2007, yielded no conservative species. However, many auchenorrhynchous species typical of forests were numerically dominant, such as *Paraulazices irrorata*, *Acanalonia bivittata*, and a large population of the flatid planthopper species *Anormenis septentrionalis* (see Table 2). Heavy woody encroachment and lack of adequate management may help explain the absence of any conservative auchenorrhynchous species that are typical of hill prairies.

Detweiller North Prairie, visited on July 20, 2007, harbored several conservative auchenorrhynchous species, such as *Bruchomorpha dorsata*, *Flexamia pectinata*, *Laevicephalus unicoloratus*, *L. minimus*, *Limotettix anthracinus*, *Phylloscelis atra*, and *Polyamia caperata*, all of which specialize on native perennial grasses and forbs, and are known only from a few localities in Illinois. Some other notable finds include a population of *Driotura gammaroides*, a specialist on *Solidago* spp.

The most notable finds of Camp Wokanda Prairie, visited on July 21, 2007, were *Bruchomorpha dorsata*, *B. oculata*, *Flexamia pectinata*, *Laevicephalus minimus*, *Memnonia flavida*, *Polyamia caperata*, and *Scaphytopius dorsalis*, all of which are specialists on native prairie grasses and forbs. Nevertheless, many auchenorrhynchous species typical of a hill prairie remained absent and the numerically dominant Auchenorrhyncha were widespread, generalist typhlocybine species, such as *Dikranuera*

*angustata*, *Empoasca* spp., and *Erythroneura* spp. This may be attributed to frequent burning, although further study is needed.

Robinson North Prairie C and Peoria Park Hill Prairie, visited on July 22, 2007, harbored several conservative auchenorrhynchous species. On Robinson North Prairie C, large populations of *Bruchomorpha dorsata*, *Flexamia pectinata*, *Laevicephalus minimus*, and *Phylloscelis atra* were discovered, all of which are specialists of native prairie grasses and forbs. Peoria Park Hill Prairie yielded some specimens of *Bruchomorpha dorsata*, *B. oculata*, *Laevicephalus minimus*, *L. unicoloratus*, *Limotettix anthrocinus*, and *Scolops pungens*, all of which are specialists of native grasses and forbs. However, many auchenorrhynchous species typical of hill prairies remained absent on Peoria Park Hill Prairie, such as *Flexamia* spp. and the numerically dominant Auchenorrhyncha were widespread, generalist typhlocybine species, such as *Empoasca* spp., *Erythroneura* spp., and *Forcipata loca*.

Intensive sampling on Robinson South Prairie yielded some conservative species, such as *Flexamia prairiana*, *Laevicephalus melsheimeri*, and *L. minimus*, all of which are specialists on prairie grasses. Other notable finds include *Polyamia caperata* and *Scolops angustatus*, specialists on prairie grasses and forbs.

Gentiana 1 and 2, visited on July 31, 2007, harbored several conservative species, such as *Bruchomorpha dorsata*, *Flexamia prairiana*, *F. pectinata*, *Laevicephalus minimus*, *Phylloscelis atra*, *Polyamia caperata*, and *Scolops angustatus*. Another notable find was the discovery of a large population of *Laevicephalus melsheimeri*, a leafhopper species that is a specialist on poverty oats grass.

Robinson Park Prairie North and Robinson Park Prairie North B, visited on August 2, 2007, harbored some conservative species. Robinson Park Prairie North harbored a large population of *Bruchomorpha dorsata*, *Flexamia pectinata*, *Memnonia flavida*, and *Phylloscelis atra*, all of which are specialists on prairie grasses and forbs. In contrast, Robinson Park Prairie North B was dominated by widespread, generalist Auchenorrhyncha that are typical of forests, such as *Acanolonia bivittata*, *A. conica*, *Paraulazices irrorata*, and *Osbornellus auronitens*. However, *Paraphlepsius electus*, a conservative species often found on hill prairies was discovered.

Hopewell Prairie A and B, visited on August 14, 2007, harbored several conservative species, such as *Bruchomorpha dorsata*, *B. tristis*, *Flexamia pectinata*, *Laevicephalus minimus*, *Paraphlepsius electus*, and *Phylloscelis atra*, all of which are specialists on native prairie grasses and forbs. Another notable find was the discovery of a large population of the leafhopper species *Scaphytopius dorsalis*, which feeds on native forbs. These sites also supported a large population of *Kansendria kansiensis*, a leafhopper species introduced from Kansas.

Intensive sampling at Wier Prairie, visited on August 16, 2007, yielded several conservative species, such as *Bruchomorpha dorsata*, *Flexamia pectinata*, *F. prairiana*, *Laevicephalus melsheilmeri*, and *L. minimus*, all of which are specialists on native prairie grasses. Other notable finds were the discovery of *Pendarus punctiscriptus* and *Texananus decorus*, both of which are specialists of native grasses. A large population of *Kansendria kansiensis* was also discovered.

Singing Woods, visited on August 17, 2007, harbored several conservative species. The most notable finds were *Bruchomorpha dorsata*, *Delphacodes caerolata*,

*Laevicephalus minimus*, and *Paraphlesius electus*, all of which are specialists on native prairie grasses and forbs. Conspicuously absent and typical of hill prairies were species of *Flexamia* and *Polyamia*. The recent burn at this site may explain their absence.

Intensive sampling at Forest Park Prairie, visited on August 25, 2007, yielded several conservative species, such as *Bruchomorpha oculata*, *Laevicephalus melsheimeri*, *L. minimus*, *Polyamia apicata*, *P. caperata*, and *P. compacta*, all of which are specialists on native prairie grasses. Despite the presence of these species, this site was dominated by widespread, generalist deltocephalin and typhlocybin leafhoppers, such as *Balclutha neglecta*, *Endria inimica*, *Empoasca* spp., *Erythroneura* spp., *Stirellus bicolor*, and *Xestocephalus pulicarius*.

#### Literature Cited

- DeLong, D.M. 1948. The leafhoppers, or Cicadellidae, of Illinois (Eurymelinae - Balcluthinae). State of Illinois Natural History Survey Bulletin 24(2): 97 - 376.
- Hamilton, K.G.A. 2005. Bugs reveal an extensive, long-lost northern tallgrass prairie. Bioscience 55(1): 49 - 59.
- Panzer, R., D. Stillwaugh, R. Gnaedinger, and G. Derkovitz. 1995. Prevalence of remnant dependence among the prairie and savanna-inhabiting insects of the Chicago region. Natural Areas Journal 15: 101 - 116.
- Robertson, K.R., R.C. Anderson, and M.W. Schwartz. 1997. The tallgrass prairie mosaic. Pp. 55 - 87 in M. Schwartz, ed., Conservation in Chronically Fragmented Landscapes. Chapman Hall, New York.

**Table 1:** List of 15 hill prairies sampled in Peoria and Marshall Counties, along with their corresponding INAI grades and acreage.

<b>Site</b>	<b>County</b>	<b>INAI Grade</b>	<b>Acreage</b>
1. Detweiller South	Peoria	B	0.50
2. Detweiller North	Peoria	D	1.00
3. Camp Wokanda Prairie	Peoria	C+/B-	0.50
4. Peoria Park Hill Prairie	Peoria	B	1.25
5. Robinson Park Prairie North C	Peoria	B/B-	0.25
6. Robinson Park Prairie South	Peoria	C+/B-	0.75
7. Gentiana Prairie 1	Peoria	B	2.00
8. Gentiana Prairie 2	Peoria	B	0.75
9. Robinson Park Prairie North	Peoria	C+/B	0.75
10. Robinson Park Prairie North B	Peoria	D	0.25
11. Hopewell A	Marshall	A	1.30
12. Hopewell B	Marshall	B	0.40
13. Wier Prairie	Marshall	B	2.50
14. Singing Woods Prairie	Peoria	A	2.00
15. Forest Park South Prairie	Peoria	C	5.00

Table 2: Auchenorrhynchous species sampled from 15 hill prairies of the Peoria area.

Species	Sites														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<i>Acanalonia bivittata</i>	X		X			X	X	X	X	X		X		X	X
<i>Acanalonia conica</i>										X	X	X			
<i>Anormenis septentrionalis</i>	X														
<i>Balclutha neglecta</i>		X	X		X							X	X		X
<i>Bruchomorpha dorsata</i>		X	X	X	X		X	X	X		X		X	X	
<i>Bruchomorpha oculata</i>			X	X											X
<i>Bruchomorpha tristis</i>											X	X			
<i>Campylenchia latipes</i>		X	X	X	X				X			X			
<i>Cedusa obscura</i>					X										
<i>Ceratagallia agricola</i>				X										X	X
<i>Chlorotettix galbanatus</i>												X	X		
<i>Chlorotettix nudatus</i>										X					
<i>Chlorotettix spatulatus</i>		X	X	X		X									
<i>Cixius basalis</i>	X			X						X					
<i>Delphacodes caerulata</i>														X	
<i>Delphacodes campestris</i>		X													
<i>Delphacodes puella</i>		X									X				X
<i>Delphacodes rotundata</i>		X	X	X			X	X	X		X	X	X	X	X
<i>Dikraneura angustata</i>			X												
<i>Dikraneura mali</i>		X	X			X		X			X				X
<i>Draeculacephala antica</i>												X	X		
<i>Draeculacephala mollipes</i>			X											X	
<i>Driotura gammaroides</i>		X													
<i>Empoasca bifurcata</i>														X	X
<i>Empoasca deluda</i>															X
<i>Empoasca erigeron</i>				X										X	
<i>Empoasca fabae</i>		X	X	X			X	X	X		X	X	X	X	X
<i>Empoasca recurvata</i>			X		X				X				X		X
<i>Endria inimica</i>		X	X	X											X
<i>Erythrídula obliqua</i>					X			X						X	
<i>Erythroneura comes</i>			X						X	X					
<i>Erythroneura vitis</i>				X											
<i>Exitianus exitiosus</i>			X												X
<i>Flexamia pectinata</i>		X	X		X		X	X	X			X	X		
<i>Flexamia prairiana</i>					X	X	X			X	X	X			
<i>Forcipata loca</i>		X	X			X	X	X				X			
<i>Graphocephala hieroglyphica</i>		X	X		X		X					X			X
<i>Gyponana aculeata</i>										X					
<i>Jikradia olitoria</i>	X									X				X	
<i>Kansendria kansiensis</i>											X	X	X		
<i>Laevicephalus melsheimeri</i>					X	X	X					X		X	X
<i>Laevicephalus minimus</i>		X	X	X	X		X				X	X	X	X	X
<i>Laevicephalus unicoloratus</i>		X		X					X			X	X		
<i>Lepyronia quadrangularis</i>			X		X							X			
<i>Liburniella ornata</i>		X	X	X					X	X	X	X	X		
<i>Limotettix anthrocinus</i>		X		X											
<i>Macrosteles quadrilineatus</i>		X													
<i>Memmonia flavida</i>			X					X							
<i>Menosoma cincta</i>			X												
<i>Mesamia nigridorsum</i>		X						X							
<i>Neocoelidia tumidifrons</i>		X			X			X	X						
<i>Oecleus borealis</i>		X			X	X	X	X							
<i>Oncometopia orbona</i>	X														
<i>Ormenoides venusta</i>	X														
<i>Osbornellus auronitens</i>	X								X	X					
<i>Paraphlepsius electus</i>									X	X	X			X	
<i>Paraulazices irrorata</i>	X		X						X		X				
<i>Pendarus punctiscriptus</i>													X		
<i>Penthimia americana</i>											X	X	X	X	
<i>Phylloscelis atra</i>		X		X		X	X	X				X			
<i>Planicephalus flavicostus</i>															X
<i>Polyamia apicata</i>															X
<i>Polyamia caperata</i>		X	X		X	X	X	X		X		X	X	X	X
<i>Polyamia compacta</i>															X
<i>Scaphytopius acutus</i>				X											
<i>Scaphytopius dorsalis</i>		X								X	X				
<i>Scaphytopius frontalis</i>					X										
<i>Scolops angustatus</i>					X		X								
<i>Scolops pungens</i>			X												
<i>Scolops sulcipes</i>		X	X	X	X					X	X				X
<i>Stictocephala lutea</i>				X											
<i>Stictocephala bisonia</i>															X
<i>Stirellus bicolor</i>		X	X	X	X		X	X		X		X	X	X	X
<i>Texanus decorus</i>													X		
<i>Thionia bullata</i>											X				
<i>Vanduzeeae triguttata</i>					X		X								
<i>Xerophloea major</i>										X	X			X	
<i>Xestocephalus pulicarius</i>		X	X	X	X	X	X	X	X	X	X	X	X	X	X