F488-9

A Survey of the Insects of the Fermilab Prairie Restoration, The West Chicago Prairie, and the Vermont Cemetery, with Special Emphasis on the Butterflies, Moths, Grasshoppers, Katydids, Leafhoppers, Treehoppers, Froghoppers, Dragonflies, Damselflies, and the Tabanid Flies

Conducted by : Ron Panzer & Don Stillwaugh
Northeastern Illinois University
and Rich Gnaedinger
1986 - 1987

Supported by a Nongame Wildlife Grant from the
Illinois Department of Conservation

Introduction

Less than one percent of the vast tallgrass prairie that once blanketed large portions of Illinois remains intact. Unfortunately, the small (most are less than 15 ha.) and widely spaced 'prairie islands' that have been spared will likely prove inadequate as sanctuaries for habitat-restricted animals (Diamond 1975; Soule' *et al.* 1980; Karr 1982; Blake and Karr 1984; Panzer 1984;). This prediction stems not only from the high extinction rates associated with small populations, but also from the apparent inability of many animals to migrate between distant sites.

Because it is destined to be <u>much larger</u> than all but a few of the extant prairie/wetland remnants of the Chicago region, the Fermi Prairie Restoration (FPR) may play an important, if not crucial role in the long term survival of many of the indigenous prairie animals of northeastern Illinois. FLP already supports sizable populations of bobolinks, meadowlarks, and savanna sparrows, migratory prairie animals that were able to reach this isolated site with little difficulty. Unfortunately, many animals, insects included, are apparently sedentary and reluctant to cross even seemingly inconsequential habitat gaps like roads and fences (Ehrich 1961; Terborgh 1975; Diamond 1976; Frankel and Soule' 1981; Arnold 1983; Wourms 1984; Panzer 1984; Cappucino and Karieva 1984). Can (or will) the numerous insect species that once flourished on the prairies of this region recolonize this reclaimed corn field as the prairie habitat improves? Or, will it be necessary to reintroduce most of the local prairie and savanna insects?

Preliminary data suggest that many of the insect species known to inhabit the prairie remnants of this region have thus far failed to recolonize FLP (Panzer and Gnaedinger 1986). Thus, as in the case of the prairie flora, it may indeed be necessary to transfer species from nearby remnants. With this in mind, we have continued our census at FLP in an effort to determine the extent to which translocations may be necessary, and to identify those taxa which are apparently unable (or unlikely) to recolonize this isolated site. Also, we have expanded this census to include two

prairie/wetland remnants† in an attempt to identify those taxa which, by virtue of their presence on neighboring remnants, might reasonably be presumed to be appropriate candidates for introduction. The combined data from these rather pristine sites should provide an excellent standard by which to evaluate the insect fauna of the Fermilab Prairie Restoration, and to assess the potential contributions that large resorations can make toward the conservation of habitat-restricted insect species.

The following taxa, those with which we are most familiar, were heavily emphasized in this survey:

Butterflies & moths (Macrolepidoptera)
Grasshoppers (Orthoptera; Acrididae, Tetrigidae)
Katydids (Orthoptera; Tettigoniidae)
Dragonflies & damselflies (Odonata)
Leafhoppers, treehoppers, and cicadas (Homoptera, in part)
Horse & deer flies (Diptera; Tabanidae)
Stink bugs, shieldbacked bugs, and negro bugs (Hemiptera; Pentatomoidea)

Methods

Fermilab Prairie was visited by 2 (occasionally 3) investigators on 19 occasions in 1986 and on 12 occasions in 1987. The West Chicago Prairie (WCP) and Vermont Cemetery (VCP) sites were censused 12 and 10 times respectively in 1987. All surveys were conducted between April 1 and October 1 both years.

Aerial nets and sweep nets were employed to capture specimens during each visit. A malaise trap was used at the FLP site in July (1986) and again in September (1986 & 1987) in an effort to capture

---

† The West Chicago Prairie Nature Preserve, owned and managed by the DuPage County Forest Preserve District, supports similar plant communities (wetland/silt loam prairie/ silt loam savanna), on similar soils, as those being 'reconstructed' at FPR. This large (80 ha.), high quality preserve is located approximately 8 miles north of Fermilab.

The Vermont Cemetery Prairie is a one hectare high quality black soil remnant located approximately 15 miles south of FLP in Will County.

ellusive species that are difficult to capture by other means (*eg.* Tabanid flies). Black lights and fermented bait mixtures were employed as attractants during five evening surveys conducted on the FLP site between June 15 and September 20, 1986. Three bait traps were used for seven nights in September (1986 & 1987) in an effort to capture late-flying underwing moths at FLP. The WCP site was blacklighted on 4 occasions in September and October (1987).

Common, easily identified insects were captured, identified, and released. Uncommon species were sacrificed and retained for further examination; these are currently housed as voucher specimens at Northeastern Illinois University and in the collection of the senior author.

Specimens were identified using a wide variety of taxonomic manuals, keys, and field guides most of which are listed in the attached bibliography. Also, in the case of the moths, specimens were compared with reference specimens from the collections of the Field Museum of Natural History, Chicago, Il.; and the Illinois Natural History Survey, Champaign, Il.

Results

Three hundred and ninty-six insects have been captured and identified to genus or species. Sixty-three of these were determined to be uncommon remnant-restricted species.

Fermilab Prairie

Two hundred and seventy-eight species representing 59 families were captured and identified to genus; two hundred and fifty of these were identified to species (see attached listing). Whereas the bulk of these animals were determined to be wide ranging species with broad ecological amplitudes, twenty-eight were determined to be potentially uncommon or rare habitat-restricted species (Tables 1 and 2).

West Chicago Prairie

Two hundred and forty-six species representing 60 families were captured and identified to genus; two hundred and thirty of these were identified to species (see attached listing). Forty- four were determined to be potentially uncommon or rare habitat-restricted species (Table 1).

Vermont Cemetery Prairie

Ninty-five species representing 36 families were captured and identified to genus; seventy of these were identified to species (see attached listing); nine were determined to be potentially uncommon or rare habitat-restricted species (Table 1).

Discussion

Qualitative Assessment

The insect community at Fermilab Prairie resembles that of an old field more closely than it does that of a prairie; most of the insects that inhabit this site are known to be wide ranging species with broad habitat requirements (see attached listing).

Many characteristic prairie and savanna insects are conspicuous in their absence at FLP. Examples would include the Silphium weavil, *Merynchites aenous*, the Little wood satyr, *Euptychia cymela*, the bronze copper, *Lycaena thoe*, the Milkweed tiger moth, *Euchaeteus egle*, the Tick clover beetle, *Odontona horni*, and the Cord grass leafhopper, *Hecalus lineatus*, just to name a few.

Interestingly, a moderate number of uncommon habitat-restricted insects, species that are not generally associated with early seral, weedy habitats, distinguish FLP from the typical old fields of this region. Insects such as the the Blue eyed grayling, *Cercyonis pegala olympus*, the Edwards hairstreak, *Satyrium edwardsii*, the Great-spangled fritillary, *Speyeria cybele*, the

Baptisia duskywing, *Erynnis baptisiae* and the leafhoppers *Cicadula melanogaster*, *Dorycephalus platyrhynchus*, *Paraphlepsius lobatus*, *Mesamia nigridorsum* and *Graminella fitchi*, for example, are generally restricted in occurrence to natural areas in Illinois.

As can be seen in Table 1, Fermilab Prairie, although clearly depauperate in certain taxa (*e.g.* Lepidoptera), seems to support far more restricted species than does the small, 'virgin' Vermont Cemetery Prairie. It is, however, important to note that four very uncommon species which seem to be narrowly restricted to quality prairie remnants were recorded at VCP but are apparently absent at FLP.

FLP supports <u>far fewer remnant-restricted insects</u> than the moderately-sized (60-70 ha.) West Chicago and Gensburg Markham Prairie remnants (Table 1). As in the case of the Vermont Cemetery, the GMP and WCP sites support appreciable numbers highly specialized prairie 'obligates' which do not occur on the Fermilab restoration. With few exceptions, the 'best' prairie species are conspicuous in their absence at FLP.

<u>Population densities</u>

Many insects that tend to be exceedingly abundant in old field and even cultivated habitats were found to be very abundant at FLP as well. 'Pests' such as the Armyworm moth, *Psuedaletia unipuncta*, the Cabbage butterfly, *Pieris rapae*, the European skipper, *Thymelicus lineola*, the European leafhopper, *Anthysanus argentarius*, the Cucumber beetle, *Diabrotica undecimpunctata*, the Goldenrod beetle, *Trirhabda canadensis*, a flea beetle, *Systena sp.*, and certain undetermined weavils (Curculionidae), were found to be present in exaggerated numbers both years.

In sharp contrast, most of the uncommon, habitat restricted species encountered during this study (see below) were found to occur in <u>very small numbers</u>. *Speyeria cybele*, *Erynnis baptisiae*, and *Mesamia nigridorsum*, for example, were each recorded 3 or fewer times in 1986. Only one Delaware skipper was observed in 1987.

Many of the remnant-restricted species listed for FLP may, in fact, be best considered 'incipient' breeding residents until such time that these populations increase in size.

It is interesting to note that the grasshoppers recorded for this site were found to be somewhat scarce as well. The very small population of *Melanoplus femurrubrum* at FPR contrasts sharply with the very large populations of this same species that typically occur in the old fields of this region.

Species abundance

Species abundance among several of the groups we examined appears to be very low as compared with comparable natural areas, as seen in Tables 3, 4, 5, and 6. This disparity is particularly evident in the case of the butterflies, as can be seen when FLP is compared with the larger remnants of this region (Table 6). Nearly all of the remnant-restricted butterflies of the nearby West Chicago Prairie are absent from FLP (see species listing).

Unexpectedly, we found a few groups to be well represented on this site. Examples would include the leafhoppers (Table 1, the grasshoppers (Table 7), and especially the katydids (Table 8). In fact, FLP probably supports as many katydid species as do most comparable natural areas (This is the first site we have encountered that supports four coneheaded katydid species [*Neoconocephalus spp.*]).

Evidence of Recolonization

Several prairie and wetland-restricted insects have managed to reinhabit the restored corn fields at FLP. It is possible, however, that most of these species did not migrate from distant remnants. Nearly half of the habitat restricted species shown in Table 2 are wetland species, while fewer than 25% are upland prairie forms. The presence of tiny wet prairie remnants along the old fence rows within the ring may account for the preponderance of wetland species in table 2. Did these very small degraded wetland remnants

serve as insect refugia, or were the extensive wetlands formed by the breaking of the tile drainage simply more easily recolonized from external sources than were the restored uplands? If the bulk of the wetland species listed in Table 2 did indeed simply expand into the resoration from adjacent remnants, then only the 12 upland prairie and savanna species may have managed to transverse a significant distance to reach this site; and many of these may have emanated from the upland woodlands immediately outside of the accelerator ring. In short, the presence of 27 'good' species at FLP does not represent compelling evidence that there has been an appreciable movement of habitat-restricted insects into the Fermilab Prairie Restoration from distant sources. The absence of numerous prairie and wetland Lepidoptera, many of which are known to occupy the West Chicago and/or Vermont Cemetery Prairies (see annotated listing), suggests instead that the traffic between sites has been minimal.

Survey Thoroughness

Whereas we have likely recorded 90-95% of the butterflies, grasshoppers, and katydids that occur on this site, we have almost certainly recorded less than 90% of the leafhoppers and certain of the other groups examined -- far less in the case of the moths. Given the extent of the fluctuations in density that insect populations tend to undergo, the very localized distributions of many species within what appear to be homogeneous habitats, the tendency of certain species to flee well in advance of an investigator, and the large size of the Fermilab Prairie, a third year of study will be required to complete this survey.

Summary

Fermilab Prairie supports a wide variety of very common opportunistic insects, as well as a modest number of what are generally considered to be remnant-restricted species. Whereas many wide-ranging 'pest' species occur in very large numbers on this site, most of the prairie/savanna species present seem to be exceedingly scarce.

There is reason to suspect that those 'missing' insects (*e.g.* butterflies) that have thus far failed to reappear may be excluded from the 'apparently' suitable habitats of the Fermilab Resoration by the inhospitable gaps that separate this site from nearby prairie remnants. Planned attempts to reintroduce missing species into the FermiLab Prairie should provide an interesting test of this hypothesis.

Table 1. The Number of Restricted Insects Known to Occur on the Fermilab Restoration and on four prairie remnants in the Chicago region

Taxon:	Site: FLP 200 ha.	GMP 70 ha.	WCP 60 ha.	CRP 3 ha.	VCP 1 ha.
Butterflies	6	18	20	4	1
Moths	1	18	3	6	2
Leafhoppers	14	20	13	10	4
Katydids	4	2	3	0	0
other	2	10	5	2	2
Totals:	**28**	**68**	**44**	**22**	**9**

FLP= Fermilab Prairie; GMP= Gensburg Markham Prairie;
WCP= West Chicago Prairie; VCP= Vermont Cemetery Prairie
CRP = Chicago Ridge Prairie.

TABLE 2. Habitat associations of the uncommon insects of the Fermilab Restoration.

Species:	Habitat: Wetland	Prairie	Savanna
Enallagma aspersum	X		
Calopteryx maculata	X		
Neoconocephalus robustus		X	
Neoconocephalus nebrascensis			X
Conocephalus attenuatus	X		
Dorycephalus platyrhynchus		X	
Parabolocratus rotundus	X		
Parabolocratus major	X		
Scaphoideus ochraceous			X
Flexamia inflata		X	
Graminella fitchii	X		
Amplicephalus osborni	X		
Amblysellus curtisii	X		
Limotettix striolus	X		
Mesamia nigridorsum		X	
Paraphlepsius eburneolus			X
Paraphlepsius lobatus	X		
Chlorotettix unicolor	X		
Cicadula melanogaster	X		
Satyrium edwardsii			X
Speyeria cybele			X
Lethe eurydice	X		
Cercyonis pegala		X	
Atrytone delaware		X	
Erynnis baptisiae		X	
Catocala amatrix			X
Catocala amica			X
Totals:	13	7	7

TABLE 3. The spittlebug communities of four prairie/wetland/savanna complexes in the Chicago region.

	Somme	Middlefork	Wadsworth	Fermilab
Philaenus spumarius	X	X	X	X
Aphrophora quadrinota	X		X	
Clastoptera obtusa	X	X		
Clastoptera proteus	X	X	X	
Prosapia bicincta		X	X	

TABLE 4. The underwing moth communities of four prairie/wetland/savanna complexes in the Chicago region.

	Somme	Middlefork	Wadsworth	Fermilab
Catocala micronympha		X		
Catocala mira	X			
Catocala ultronia	X			X
Catocala cerogama	X			
Catocala briseis			X	
Catocala ilia	X	X	X	X
Catocala parta			X	
Catocala blandula			X	
Catocala lacrymosa			X	
Catocala paleogama			X	
Catocala grynea	X		X	
Catocala concumbens			X	
Catocala amica		X		X
Catocala cara	X	X	X	X
Catocala obscura		X	X	
Catocala neogama		X		
Catocala amatrix		X		X
Totals:	6	7	10	5

TABLE 5. The treehopper communities of four prairie/wetland/savanna complexes in the Chicago region.

	Somme	Middlefork†	Wadsworth	Fermilab
Campylenchia latipes	X	X	X	X
Enchynopa binotata		X	X	
Acutalis tartarea	X	X	X	X
Micrutalis calva		X	X	X
Stictocephalus taurina	X	X		X
Stictocephalus bubalus	X	X	X	X
Stictocephalus lutea	X	X	X	X
Stictocephalus diceros	X	X	X	X
Stictocephalus basilis		X		
S. constans or *palmeri?*	X			
Spissostilus borealis	X		X	
Publilia concava	X	X	X	X
Atymna querci		X		
Ophiderma salamandra		X		
Ophiderma grisea	X			
Xantholobus muticus	X	X		
Cyrtolobus maculifrontis	X	X		
Cyrtolobus vau	X			X
Cyrtolobus dixianus	X			
Cyrtolobus griseus		X		
Cyrtolobus pallidifrontis		X	X	
Cyrtolobus sp.		X		
Telamona spreta		X		
Telamona unicolor		X		
Telamona compacta		X		
Telamona reclivata		X		
Telamona westcotii		X		X
Telamona decorata				X
Archasia pallida		X		
Glossonotus crataegi			X	
Microcentrus perditus		X	X	X
Entylia bactriana				X
Totals:	14	24	12	13

† high quality savanna complex

TABLE 6. Distribution of butterfly diversity on 18 prairie and wetland remnants in the Chicago region.

Remnant:	Area (ha.)	Species number: Restricted species*	Nonrestricted species	Total species
Fermilab Restoration	200.0+	3	29	32
Braidwood Dunes/Savanna	100.0	18	31	49
Gensburg Markham Prairie	90.0	15	36	51
Lockport Prairie	86.0	11	23	34
West Chicago Prairie	70.0	14	26	40
Romeoville Prairie	62.0	10	24	34
Pratts Wayne Marsh	44.0	10	20	30
Midlothian Prairie	29.0	8	24	32
Paintbrush Prairie	17.0	7	22	29
Somme Prairie	14.0	8	18	26
Cook Prairie	14.0	13	25	38
Buffalo Grove Prairie	6.4	5	16	21
I- 57 Prairie	4.5	3	17	20
Belmont Prairie	4.1	6	27	33
Chicago Ridge Prairie	3.6	3	17	20
Cary Prairie	2.0	3	19	22
Main Street Prairie	2.0	2	19	21
Vermont Cemetery Prairie	1.0	1	15	16

* includes prairie restricted species only.

TABLE 7. The grouse locust, grasshopper, and walking stick communities of four prairie/wetland/savanna complexes in the Chicago region.

	Somme	Middlefork	Wadsworth	Fermilab
Acrididae: **Grasshoppers**				
Chortophaga viridifasciata	X	X	X	X
Dissosteira carolina	X	X	X	X
Chorthippus curtipennis	X	X	X	X
Chloealthis conspersa	X	X	X	X
Melanoplus bivittatus	X	X	X	X
Melanoplus viridipes	X	X		
Melanoplus gracilis		X		
Melanoplus femurrubrum	X	X	X	X
Melanoplus differentailis				X
Trachyrachis kiowa			X	
Tetrigidae: **Grouse locusts**				
Nomotettix cristatus	X	X		
Acadicus granulatus				X
Tettigidea lateralis parvipennis				X
Phasmatidae: **Walkingsticks**				
Diapheomera blatchleyi		X		
Diapheomera femorata		X	X	
Totals	8	11	8	9

TABLE 8. The katydid communities of five prairie/savanna/wetland complexes in the Chicago region.

	Somme	Middlefork	Wadsworth	Fermilab	W. Chgo.
Pterophylla camellifolia	X	X	X	X	
Amblycorypha rotundifolia	X	X	X		X
Amblycorypha oblongifolia	X	X	X	X	
Microcentrum rhombifolium	X			X	
Neoconocephalus ensiger	X	X	X	X	X
Neoconocephalus retusus	X		X	X	X
Neoconocephalus robustus				X	
Neoconocephalus nebrascensis				X	
Scudderia curvicauda			X	X	X
Scudderia furcata	X	X	X	X	X
Scudderia texensis			X	X	X
Scudderia pistillata		X			
Atlanticus testaceus	X	X	X		
Conocephalus attenuatus		X	X	X	X
Conocephalus nigropleurum			X		
Conocephalus fasciatus	X	X	X	X	X
Conocephalus brevipennis	X	X	X	X	X
Conocephalus strictus			X		
Orchelimum vulgare	X	X	X	X	X
Orchelimum nigripes	X	X	X	X	X
Orchelimum gladiator				X	X
Orchelimum concinnum					X
Totals	12	12	16	**16**	13

AN ANNOTATED LISTING OF THE INSECTS OF THE FERMILAB PRAIRIE RESTORATION, DUPAGE COUNTY ILLINOIS*

---

* Insects recorded on the West Chicago Prairie (WCP) and the Vermont Cemetery Prairie (VCP) are included.
† = habitat-restricted species.
Dates = earliest records.
87 (superscript) = indicates second-year records for species first recorded in 1986.
••• = potential candidates for introduction

Order ODONATA
suborder Anisoptera:dragonflies

family Aeshnidae

Anax junius (Drury) **Green darner**[87]
This is a very common, migratory species. WCP VCP

Recorded on the West Chicago Prairie, absent from FLP:
Aeshna constricta (Say) **darner**
1982

family Libellulidae

Sympetrum rubicundulum (Say) 6-16-86 **Red topper**[87]
This is a common, early summer species. Members of this genus breed in the temporary waters of wet prairies, sedge meadows, and marshes. WCP VCP

Sympetrum obtrusum Hagen 7-9-86 **White-faced topper**
This is a somewhat common, late summer species. WCP VCP

Plathymis lydia (Drury) **White-tailed dragonfly**[87]
This very common, wide ranging species breeds in the permanent waters of ponds and ditches. 6-12-87 WCP

Libellula pulchella Drury **Ten-spotted skimmer**[87]
This very common, wide ranging species breeds in the permanent waters of ponds and ditches. WCP VCP

Libellula luctuosa Burmeister **The Widow**
This is a common, wide ranging species. WCP

Tramea lacerata Hagen 7-9-86 **Saddle bags**
This is a very common, wide ranging species. WCP

Pachydiplax longipennis (Burmeister) **Blue pirate**
This is a common, wide ranging species. 6-12-87 WCP

Recorded on the <u>West Chicago Prairie</u>, absent from FLP:

Erythemis simplicicollis Say *Ling*
1982 1987

Sympetrum vicinum Hagen *Autumn topper*
1982

Perithemis tenera Say *Amber wing*
1982 1987

Leucorrhinia intacta Hagen *Yellow spots*
1982 1987

suborder **Zygoptera: damselflies**

family **Coenagrionidae**

Ishnura verticalis (Say) **Common fork-tail**
This is a very common, wide ranging species. WCP VCP

Enallagma civile (Hagen) **bluet**[87]
This is a common species, inhabiting ponds, lakes, and slow streams. 8-12-86 WCP VCP

Enallagma apersum (Hagen)* **bluet**
This uncommon species inhabits sedge and grass-bordered ponds. 8-31-86

Argia apiculata (Say) **stream damselfly**[87]
This species was found to occur along the cooling moat on 6-12-87.

Recorded on the West Chicago Prairie, absent from FLP:

Nehalenia irene (Hagen)[1] ***damselfly***
This is an uncommon sedge meadow species. 1987 [illegible]

family **Calopterygidae**

Calopteryx maculata Burmeister **Black-winged damselfly**
One individual was recorded on this date. This somewhat uncommon stream species probably does not breed in the stagnant waters on this site. 8-11-86

family **Lestidae**

Lestes uncatus Hagen **damselfly**[87]
Several members of this common, widespread species were observed mating on this date. 6-16-86[WCP]

Lestes uniguiculatus Hagen **damselfly**[87]
This is a very common member of this genus. Several individuals were observed mating on 8-11-86. [WCP]

Recorded on the West Chicago Prairie, absent from FLP:

Lestes disjunctus Selys ***spread winged damselfly***
This is a very common member of this genus. 1982 1987

Order **ORTHOPTERA**
suborder **Caelifera: grasshoppers & grouse locusts**

family **Acrididae**
subfamily **Acridinae**

Chloealtis conspersa Harris 7-9-86 **Sprinkled locust**
This would appear to be a somewhat uncommon, northern savanna/woodland species; recorded within plots 1 and 4.

Chorthippus curtipennis (Harris) **slant-faced grasshopper**[87]
This is a very common wetland species. [WCP] [WCP]

subfamily **Oedipodinae**

Chortophaga viridifasciata (DeGeer) **Green-striped g'hopper**[87]
This common, wide ranging spring species overwinters as an adult.
5-28-86 **WCP** **VCP**

Dissosteira carolina (L.) **Carolina grasshopper**[87]
This very common, wide ranging species thrives in denuded habitats such as paths and gravel roadways. **WCP** **VCP**

subfamily **Cyrtacanthacridinae**

Melanoplus bivittatus (Say) **Two-striped grasshopper**[87]
This common, bimodal species occurs both in wet prairies and on xeric hill prairies. 7-9-86 **WCP**

Melanoplus femurrubrum (DeGeer) **Red-legged grasshopper**[87]
This is a very common, wide ranging species. Although this species typically occurs in tremendous numbers in recently degraded, weedy habitats, we found it to be somewhat scarce within the restored prairie plots on this site. 8-11-86 **WCP** **VCP**

Melanoplus differentialis (Thomas) **Differential g'hopper**[87]
This is a very common, wide ranging species. **VCP**

family **Tetrigidae**

Acadicus granulatus Kirby 8-11-86 **grouse locust**
This northern prairie species is somewhat common in the Chicago region. **WCP**

Tettigidea lateralis parvipennis (Harris) **grouse locust**
Captured with a malaise trap on 8-30-87. **VCP**

Recorded on the <u>West Chicago Prairie</u>, absent from FLP:

Tetrix ornatus (Say) ***Ornate grouse locust***
1982 1987

suborder **Ensifera: katydids & crickets**

family **Tettigoniidae**
subfamily **Phaneropterinae**

Scudderia curvicauda (DeGeer) **Curve-tailed bush katydid**
This would appear to be a somewhat common, wide ranging wetland species. 7-9-86 **WCP VCP**

Scudderia furcata Brunner **Fork-tailed bush katydid**[87]
This is a common, wide ranging ecotonal species. **WCP**
8-11-86

Scudderia texensis Saussuer & Picket **Texas bush katydid**[87]
This is a somewhat uncommon prairie species. Found in large numbers in predominantly weed-free stands of prairie grasses on this site.
8-11-86 **WCP VCP**

Amblycorypha oblongifolia (DeGeer) **Oblong-winged katydid**[87]
This common species was recorded singing from shrubs and herbaceous vegetation on several occasions. **WCP**

Microcentrum rhombifolium (Saussure) **Angle-winged katydid**
This common arboreal species was recorded singing within the savanna on 8-25-86.

subfamily **Copiphorinae**

Neoconocephalus ensiger (Harris) **Sword-bearing conehead**[87]
This is a common, wide ranging species. Favored host plants include *Andropogon spp.* 8-11-86 **WCP VCP**

Neoconocephalus robustus Scudder* **Robust conehead**
While apparently restricted to sand prairies in the Chicago region, this species apparently occurs along roads and in oldfields in the Aurora area. 8-29-86

Neoconocephalus retusus (Scudder) **Brown conehead**[87]
This ubiquitous southern species has apparently expanded into this region within the past 20 years. **WCP VCP**

Neoconocephalus nebrascensis (Bruner)* **Nebraska conehead**
Blatchley stated that it was the most common conehead in central and northern Indiana. Nevertheless, this is only our second record of this species in this region. It has been reported to be more of a savanna species in Nebraska. We captured this individual while singing in the savanna. 1986

subfamily **Conocephalinae**

Conocephalus fasciatus (DeGeer) **Slender meadow katydid**[87]
This is a common, wide ranging species. 8-11-8 **WCP**

Conocephalus attenuatus (Scudder)* **meadow katydid**
This would appear to be an uncommon, marsh-inhabiting species in this region. 8-11-86 **WCP**

Conocephalus brevipennis (Scudder) **meadow k'did**[87]
This is apparently the most common member of this genus in this region. It seems to be present in most prairies and old fields in the Chicago area. **WCP VCP**

Orchelimum vulgare Harris **Common meadow katydid**[87]
This is a common, wide ranging upland prairie species.
7-9-86 **WCP VCP**

Orchelimum nigripes Scudder **Black-legged meadow k'did**
This common, wide ranging species occurs along the margins of wetland areas. 8-11-86 **WCP**

Orchelimum gladiator Bruner* **Gladiator**
This is a somewhat uncommon northern, wet prairie/sedge meadow species. 7-14-87 **WCP**

Recorded on the <u>West Chicago Prairie</u>, absent from FLP:

Orchelimum concinnum Scudder* ***katydid***
This is one of the least common members of this genus in this region. ***

subfamily **Pseudophyllinae**

Pterophylla camellifolia (F.) 8-11-86 **True katydid**[87]
Reported to be a somewhat common, arboreal species, this katydid was recorded singing from the savanna tree tops on several occasions.

Family **Gryllidae**
subfamily **Oecanthinae**

Oecanthus niveus (DeGeer) **Narrow-winged tree cricket**
Taken within the savanna on oaks. 8-26-86

Oecanthus argentinus Saussure **tree cricket**
Taken within the savanna on oaks. 8-26-86 **UCP**

Oecanthus nigricornus T. J. Walker **tree cricket**
Taken within the savanna on 9-22-86 **UCP**

Family **Phasmatidae**

Recorded on the Vergennt Cemetery Prairie, absent from FLP:

Manomera blatchlei (Caudell)† ***Blatchley's walking stick***
This is an uncommon mesic/wet prairie species. 1983 **eee**

order **NEUROPTERA: lacewings**

family **Chrysopidae**

Chrysopa spp. **green lacewing**
UCP

family **Hemerobiidae**

Hemerobius spp. **brown lacewings**
UCP

Order HEMIPTERA: true bugs

family Pentatomidae

Euschistus variolarius (P.B.) **One-spotted stink bug**[87]
This is a very common, wide ranging species. **WCP VCP**

Holcostethus limbolarius Stal **stink bug**
WCP

Acrosternum hilare (Say) **Southern green stink bug**
This is a very common, wide ranging species. **WCP**

Cosmopepla bimaculata (Thomas) **stink bug**[87]
This species occurs with regularity on the prairie remnants of this region. Occurs in atypically small numbers on this site. **WCP VCP**

Podisus maculiventris (Say) **Spined soldier bug**
This is a common species in this region. **WCP VCP**

Oebalus pugnax (F.) **Rice stink bug**
This is reportedly a camon, wide ranging species. 8-19-87 **WCP**

Trichopepla atricornis Stal **stink bug**
1987 **WCP VCP**

Recorded on the <u>West Chicago Prairie</u>, absent from FLP:

Apateticus bracteatus (Fitch) ***stink bug***
This northern species is reportedly rare in Illinois. 1987 **eee**

family Podopidae

Neaurochrous brevitylus Barber & Sailer **turtle bug**
Taken in sweep samples on 5-28-86.

Recorded on the <u>Vergennt Cemetery Prairie</u>, absent from FLP:

Neaurochrous cinctipes (Say) ***turtle bug***
1987

family Thyreocoridae

Corimelaena lateralis lateralis (F.) **negro bug**[87]
WCP VCP

family Cydnidae

Sehirus cinctus (Palisot de Beauvois) **burrower bug**
VCP

family Alydidae

Alydus eurinus (Say) **broad-headed bug**
This common prairie species occurs on *Lespedeza capitata*. Immatures are ant mimics. WCP VCP

Recorded on the West Chicago Prairie, absent from FLP:

Protenor belfragei Haglund[1] ***broad headed bug***
This is a somewhat common wet prairie species. 1982 1987 ooo

family Lygaeidae

Ishnodemus falicus (Say.)[1] **Chord grass seed bug**
This common prairie species is apparently restricted to a remnant patch of *Spartina* adjacent to plot 1. 5-28-86 WCP VCP

Lygaeus turcicus (F.) **Small milkweed bug**
This common species occurs predominantly on *A. syriaca*.
6-17-86 WCP

Oncopeltis fasciatus (Dallas) **Large milkweed bug**
This common species occurs predominantly on *A. syriaca*.
6-17-86 WCP

Neacoryphus bicrucis (Say) **seed bug**
This is a common prairie species. 1987 WCP

Recorded on the West Chicago Prairie, absent from FLP:

Oedancala dorsalis (Say) ***seedbug***
1982

family Tingidae

Corythuca ciliata (Say) **lace bug**

family Phymatidae

Phymata sp. **ambush bug**
Common on goldenrods. **WCP VCP**

family Coreidae

Recorded on the West Chicago Prairie, absent from FLP:

Euthochtha galeator (F.) **Large squash bug**
This is a common, wide ranging species. 1987

family Reduviidae

Recorded on the West Chicago Prairie, absent from FLP:

Sinea diadema (F.) ***assassin bug***
1982 1987

Recorded on the Vernont Cemetery Prairie, absent from FLP:

Sinea spinipes (F.) ***assassin bug***
1987

family Nabidae

Nabis americoferus Carayon **damsel bug**
This is a very common, wide ranging species. **WCP**

family Miridae

Poecilocapsus lineatus (F.). **Four-lined plant Bug**
Host plants include gooseberries (*Ribes spp.*). **WCP VCP**

Lygus lineolaris (P.B.) 5-28-86 **Tarnished plant bug**
This is a very common, wide ranging species. **WCP VCP**

Leptopterna dolabrata (L.) **Meadow plant bug**
This is a very common, wide ranging species.

Recorded on the West Chicago Prairie, absent from FLP:

Adelphicornus rapidus (Say) ***Rapid plant bug***
1982

Adelphicornis superbus (Uhl.) ***Superb plant bug***
This is a common prairie species. 1987 ***

Order **HOMOPTERA: leafhoppers & planthoppers**

family **Cicadellidae**

Idiocerus [inconptus or nervatus] **leafhopper**
6-16-86

Macropsis viridis (Fitch) 6-16-86 **leafhopper**[87]
Reported to be a common, transcontinental species. Host plants are willows.

Agallia quadripunctata (Provancher) **leafhopper**[87]
This common northeastern species occurs in moist open woodlands.
5-28-86 **WCP**

Aceratagallia sanguinolenta (Provancher) **Clover leafhopper**[87]
A very common and widespread species. 7-9-86

Kolla bifida (Say) 7-9-86 **leafhopper**[87]
Reported to be a common species.

Helochara communis Fitch 6-16-86 **leafhopper**
A common, transcontinental, wet prairie species.

Graphocephala coccinea (Forster) 9-21-86 **leafhopper**[87]
This common eastern species can be found on ornamentals as well as on *Rubus*. **WCP**

Draeculacephala constricta **leafhopper**
6-16-86 **WCP** **UCP**

Draeculacephala producta (Walker) **leafhopper**
Reported to be a common, wide ranging species. 6-19-86 **WCP**

Draeculacephala antica Walker 7-12-86 **leafhopper**[87]
Common in eastern U.S. **WCP** **UCP**

Gyponana ortha Delong 7-14-86 **leafhopper**
A widely distributed species in eastern and midwestern U.S. **WCP**

Ponana rubida DeLong* 6-19-86 **leafhopper**
A midwestern species taken at black light.

Dorycephalus platyrhynchus Osborn* **Duck-billed leafhopper**[87]
This western grass feeding prairie species is rare in the Chicago region. It is apparently restricted in distribution to plot 6, west of the savanna. 5-28-86 **WCP** **UCP**

Parabolocratus major Osborn* 7-12-86 **leafhopper**[87]
This is a somewhat uncommon, wet prairie species. **WCP**

Parabolocratus rotundus DeLong* 9-21-86 **leafhopper**
Reported to be an uncommon wetland species; known only from Illinois and Ohio (DeLong 1948).

Aphrodes costata (Panzer) **subterranean leafhopper**
This common species is apparently introduced from Europe. **WCP** **UCP**

Xestocephalus superbus (Provancher) **leafhopper**
Reported to be common on herbaceous growth in open woodlands. 8-12-86

Scaphoideus ochraceous Osborn 8-31-86 **leafhopper**
This is reportedly an unusual eastern woodland species.

Scaphoideus sp. **leafhoppers**[87]
7-9-86 **WCP**

Osbornellus clarus Beamer **leafhopper**
This species reportedly occurs in 'open woodlands'. 2-9-87

Prescottia lobata (VanDuzee) 8-31-86 **leafhopper**
Reportedly occurs on *Solidago caesia* in open woodlands or edges.

Cloanthanus cuprescens (Osborn) **Copper leafhopper**[87]
Reported to be a common, widespread species. 7-9-86 **WCP**

Cloanthanus frontalis (VanDuzee) **leafhopper**[87]
Reported to be a common, widespread species. 6-16-86 **WCP** **VCP**

Cloanthanus acutus (Say) 6-19-86 **leafhopper**
Reported to be a common transcontinental species. **WCP**

Flexamia inflata (Osborn and Ball)* 6-16-86 **leafhopper**
DeLong described this as the most common *Flexamia* in Illinois, found on pastures and prairies. Only one specimen was swept. We have yet to encounter this species on other sites.

Latulus misselius (Ball)* 7-9-86 **leafhopper**
A northern species found in meadows and open woodlands.

Latulus sayi (Fitch) 5-28-86 **leafhopper**
A common pasture species on bluegrass and other grasses; swept from *Festuca.*

Polymia ioleica (Say) 6-16-86 **leafhopper**[87]
A common transcontinental grass-feeder. **WCP** **VCP**

Deltocephalus sonorus Ball 8-12-86 **leafhopper**
A common widely distributed grass-feeder.

Laevicephalus sp. 5-28-86 **leafhopper**

Psammotettix striatus (L.) 5-28-86 **leafhopper**
A transcontinental grass-feeder. **VCP**

Aapticephalus osborni (Van Duzee)* 6-19-86 **leafhopper**
A northern marsh species, caught at black light on 6-19-86.

Graminella fitchii (Van Duzee)* 6-19-86 **leafhopper**[87]
A wet prairie species, attracted to black light. **WCP**

Aablysellus curtisii (Fitch)* 9-21-86 **leafhopper**
A northeastern species on *Calamagrostis.*

Stirellus bicolor (Van Duzee) **leafhopper**[87]
Reported to be a common species in meadows and on crops. 7-9-86

Stirellus obtutus (Van Duzee) **leafhopper**[87]
Reported to be a common species in meadows and on crops.
7-6-87 **WCP**

Doratura stylata (Boheman) **Short-winged exotic**
This exotic species would appear to be very common locally.
6-16-86 **WCP** **VCP**

Paramesus nervosus (Fall) 6-19-86 **leafhopper**[87]
This exotic species was abundantly attracted to black light.

Athysanus argentarius Metcalf **leafhopper**[87]
A ubiquitous introduction from Europe. **WCP** **VCP**

Limotettix striolus (Fallen)* 5-28-86 **leafhopper**
A sedge meadow species.

Mesamia nigridorsum Ball* **Helianthus leafhopper**
This prairie species is apparently uncommon in this region.
7-9-86 **WCP** **VCP**

Paraphlepsius irroratus (Say) **leafhopper**
This is a very common transcontinental species. 6-19-86 **WCP** **VCP**

Paraphlepsius eburneolus (Osborn & Lathrop) **leafhopper**
This apparently uncommon species reportedly feeds on grasses in woodlands. 8-31-86

Paraphlepsius collitus (Ball) 6-19-86 **leafhopper**
A common grass-feedeing species in meadows and savannas.

Paraphlepsius lobatus (Osborn)* 8-31-86 **leafhopper**
An uncommon wet prairie species.

Chlorotettix unicolor (Fitch)* 7-9-86 **leafhopper**[87]
This wet prairie species may be uncommon in this region. **WCP** **VCP**

Elymana acrita DeLong 9-21-86 **leafhopper**
Described from Illinois as found on *Elymus* in shaded areas.

Cicadula melanogaster (Provancher)* 6-19-86 **leafhopper**
This would appear to be a somewhat uncommon, wet prairie species.**WCP**

Colladonus clitellarius (Say) **leafhopper**
Reported to be a widespread northeastern and midwestern species.

Macrosteles lepida (van Duzee)* **leafhopper**[87]
This is apparently an uncommon wetland species. 1987 **WCP**

Macrosteles divisa (Uhler) **leafhopper**
A common species on crops. 6-16-86 **WCP** **VCP**

Jassus olitorius Say 8-21-86 **leafhopper**
Common on oaks from mid July onward. **WCP**

Balclutha abdominalis (VanDuzee) **leafhopper**
1987 **WCP**

Mesosteles neglecta (DeLong and Davidson) **leafhopper**[87]
A common widespread species. **WCP** **VCP**

Empoasca spp. 7-12-86 **leafhopper**[87]
VCP

Dikraneura sp. 6-16-86 **leafhopper**[87]

Typhlocyba sp. 6-19-86 **leafhopper**
These leafhoppers were swept from oaks in the degraded savanna on numerous occasions.

Erythroneura sp. 6-16-86 **leafhopper**

Aflidis ohiensis (Hine) **leafhopper**
Plot 1 1987

Recorded on the West Chicago Prairie, absent from FLP:

Agalliopsis novella (Say) ***leafhopper***
1987

Draeculacephala prasina (Walker) ***leafhopper***
1987

Draeculacephala portola paludosa Ball & China ***leafhopper***
1987

Hecalus lineatus (Uhler)* ***leafhopper***
1987 •••

Oncoseiopia undata (F.) ***ironweed leafhopper***
1982 1987

Flexamia reflexa (prairiana?) (Osborn & Ball)* ***leafhopper***
1987 •••

Chlorotettix spatulatus Osborn & Ball* ***leafhopper***
1987 •••

Chlorotettix galbanatus Van Duzee ***leafhopper***
1987

Graminella aurovitatta (Sanders & DeLong)* ***leafhopper***
1987 •••

*Graminella oquaka/sohri** ***leafhopper***
1987 •••

Menosoma cincta (Osborn & Ball) ***leafhopper***
This species is reportedly common in shaded areas. 1987

Exitiarus obscurinervis (Stal) ***leafhopper***
This species is reportedly common and widespread. 1987

Stragania apicalis (Osborn & Ball) ***leafhopper***
The host plant for this common species is reportedly Honey locust. 1987

Cicadula saithii (Van Duzee)* ***leafhopper***
This is an uncommon wet prairie species. 1987 •••

Neocoelidia tumidifrons (Gillette & Baker) ***leafhopper***
This species is reportedly common in moist wooded areas. 1987

Recorded on the Vernon Cemetery Prairie, absent from FLP:

Gyponana sp. ***leafhopper***
1987

Deltocephalus caperatus Ball ***leafhopper***
1987

Stragania sp. ***leafhopper***
1987

Oncopsis variabilis Fitch ***leafhopper***
1987

Coaaelius coaaa (Van Duzee)[9] ***leafhopper***
This very uncommon prairie species reportedly feeds on *Elymus spp.* 1987 ***

Macocelida tumidifrons (G. & B.) ***leafhopper***
1987

Euscelis extrusus (Van Duzee) ***leafhopper***
1987

family Cicadidae

Tibicen linnei (Smith and Grossbeck) **dog-day cicada**
This species was heard singing from the tops of the trees in the oak savanna on 7-9-86.

Tibicen sp. 8-11-86 **dog-day cicada**

Recorded on the Vermont Cemetery, absent from FLP:

Okanagana balli [9] ***Prairie cicada***
This would appear to be a very uncommon prairie species. ***

family Membracidae

Microcentrus perditus (Amyot and Serville) **treehopper**
Host plant is bur oak.

Publica concava (Say) 8-29-86 **treehopper**[87]
A common, wide ranging species that feeds on a wide variety of herbaceous plants. **WCP VCP**

Stictocephala lutea (Say) **treehopper**
WCP

Stictocephala taurina (Fitch) **treehopper**
A common, wide ranging species that feeds on a wide variety of woody and herbaceous plants.

Stictocephala bubalus (F.) **Buffalo treehopper**[87]
This common, wide ranging species feeds on a wide variety of woody and herbaceous plants. 7-9-86 **WCP**

Stictocephala diceros (Say) **treehopper**[87]
Another common, wide ranging species that feeds on a wide variety of woody and herbaceous plants. 7-9-8 **WCP**

Acutalis tartarea (Say) **treehopper**[87]
Host plants for this common species include *Ambrosia, Solidago,* and *Helianthus* 7-3-86 **WCP VCP**

Micrutalis calva Say **minute treehopper**[87]
Host plants for this common species include *Ambrosia* and *Helianthus spp.* 8-11-86 **VCP**

Telamona decorata Ball **treehopper**
Host plants are oaks (*Quercus spp.*) 8-11-86

Telamona westcotti Goding **treehopper**
Host plants are various oaks and Basswood. 8-11-86 **WCP**

Telamona sp. **treehopper**

Crytolobus vau (Say) 1987 **treehopper**

Entylia bactriana Germar **treehopper**
1987

Campylenchia latipes (Say) **treehopper**
1987 WCP

family **Dictyopharidae**

Scolopes sulcipes (Say) **Candle-headed planthopper**
This is a common upland prairie species. WCP

Recorded on the West Chicago Prairie, absent from FLP:

Phyllosceltis pallescens Germar ***planthopper***

family **Acanaloniidae**

Acanalonia bivittatta Say 8-11-86 **planthopper**
A very common, wide ranging species.

family **Derbidae**

Ceresa sp. 8-11-86 **planthopper**
Swept commonly from herbaceous vegetation.

family **Flatidae**

Metcalva pruinosa (Say) 8-11-86 **planthopper**
This common, wide ranging species was swept from trees and shrubs.

Anormenis septentrionalis (Spinola) **planthopper**
This common, wide ranging species was swept from shrubs. WCP

family **Delphacidae**

Recorded on the West Chicago Prairie, absent from FLP:

Scenocranus sp. **planthopper**
1982

family **Cercopidae**

Philaenus spumarius (L.) **Meadow spittlebug**
This is a very common, ubiquitous species. WCP VCP

Order **COLEOPTERA: beetles**

family **Cicindelidae**

Cicindela sexgutata (F.) **Six-spotted tiger beetle**
This is a common denizen of bare soils and pathways. 5-28-86 WCP

Cicindela sp. 7-9-86 **tiger beetle**
This species was found to be common on the bare ground between bunch grasses (plot 6) on this date.

family **Carabidae**

Lebia ornata Say **Ornate ground beetle**
This common species was swept from vegetation in plot 1. WCP

Recorded on the West Chicago Prairie, absent from FLP:

Leptotrachelis dorsalis F. ***ground beetle***
1982

Anisodactylus interpunctatus Kirby ***ground beetle***
1982

family **Silphidae**

Nicrophorus sp. **carrion beetle**
Taken at a blacklight on 8-31-86.

Recorded on the West Chicago Prairie, absent from FLP:

Silpha americana (L.) **carrion beetle**
1982

family Cantharidae

Chauliognathus pennsylvanica (DeGeer) **soldier beetle**
This is a very common, wide ranging species. 7-9-86 WCP VCP

Recorded on the West Chicago Prairie, absent from FLP:

Cantharis bilineatus Say ***soldier beetle***
1982

Cantharis lineola (F.) ***soldier beetle***
1982

Chauliognathus marginatus F. ***Margined soldier***
1982 1987

family Coccinellidae

Coleomegilla fuscilabris (Mulsant) **ladybird beetle**
This somewhat common species occurs with regularity on irises. WCP

Coccinella transversoguttata Faldermann **ladybird beetle**
A common, wide ranging species. 6-14-86

Hippodamia parenthesis (Say) **ladybird beetle**
This species was taken both in sweep samples and at black lights. 6-18-86

Hippodamia tridecimpunctata tibialis (Say) **ladybird beetle**[87]
This is apparently another common species. 1987

Brachyacantha ursina (F) 6-14-86 **Small ladybird**
This species occurs with regularity on *A. syriaca.*

Cycloneda sanguinea (L.) **Unmarked ladybird**
Occurs with regularity on *A. syriaca.* WCP VCP

Recorded on the West Chicago Prairie, absent from FLP:

Anatis quindecimpunctata (Oliver) ***ladybird beetle***
1982

Hippodamia convergens Guerrin Meneville ***Convergent ladybird***
1982 1987

Hyperaspis undulata (Say) **beetle**
1982

family Cerambycidae

Tetraopes tetraophthalmus (Forester) **Red milkweed beetle**
The host plant for this common species is *A. syriaca.*
6-14-86 **WCP VCP**

Oberea tripunctata (Swederus) 6-16-86 **Dogwood longhorn**
Host plants for this common species are reported to include cottonwoods, elms, dogwoods, and viburnum. **WCP**

Typocerus sinuatus (Newman) 7-9-86 **Rudbeckia longhorn**
This common species visits composite flowers with regularity. **WCP**

Recorded on the West Chicago Prairie, absent from FLP:

Acanthoptera bivittatus (Say) ***beetle***
1982

family Chrysomelidae

Systena sp. **leaf beetle**
This ubiquitous species was found to occur in very large numbers on a wide variety of herbaceous plants. **WCP**

Trirhabda canadensis (Kirby) **Goldenrod beetle**
This ubiquitous species was found to occur in large numbers where ever its foodplant, *Solidago altissima,* was present. **WCP VCP**

Microrhopala vittata (F.)* **leaf beetle**
Host plants for this somewhat uncommon species include *Silphium spp.* **WCP**

Diabrotica undecimpunctata howardi Barber **Cucumber beetle**
This is a very common, wide ranging species. **WCP VCP**

Chrysochus auratus (F.) **Dogbane beetle**
This common species feeds on *Apocynum spp.* **WCP**

Labidomera clivicollis (Kirby) **Swamp milkweed beetle**
This common species was found to feed primarily on *A. syriaca* on this site. 6-12-87 **WCP**

Zygogramma suturalis (F.) **leaf beetle**
One individual was taken in plot 1.

Cerotoma trifurcata (Forester) **Bean leaf beetle**[87]
This is a very common, wide-ranging species. 1987

Recorded on the West Chicago Prairie, absent from FLP:

*Disonycha pennsylvanica (Illiger)** ***Smartweed beetle***
Host plants are *Polygonum spp.* 1982 1987

Crysomela scripta (L.) ***Cottonwood beetle***
1982

Gastrophysa polygoni (L.) ***leaf beetle***
Host plants are *Polygonum spp.* 1982

Lema collaris Say ***Spiderwort beetle***
Host plant is *Tradescantia.* 1982 1987

Donacia Subtilis Kunzo ***beetle***
1982

Chlamisus gibbosa F. ***beetle***
1982

Crytocerphalus verustus (F.) ***beetle***
1982

Odontona horni Saith ***Desmodium beetle***
1982 1987 ***

Capriata thymoides Cr. ***beetle***
1982

Anomoea laticlava Forester ***beetle***
1982

Diabrotica longicornis (Say) ***Northern rootworm***
1982

family Nitidulidae

Recorded on the West Chicago Prairie, absent from FLP:

Glischrochilus fasciatus (Oliver) *sap beetle*
1982

family Meloidae

Recorded on the West Chicago Prairie, absent from FLP:

Epicauta pennsylvanica (DeGeer) **blister beetle**
1982

Order **LEPIDOPTERA: butterflies & moths**

family **Hesperiidae**

Euphyes vestris metacomet (Harris) **Dun skipper**
This is another common, wide ranging species. 1987

Thymelicus lineola (Ochsenheimer) **European skipper**[87]
Found to occur in numbers within patches of *Phleum pratense*, its favored host plant. 6-17-86 **HCP VCP**

Polites themistocles (Latreille) **Tawny-edged skipper**
This very common species was found to occur in uncharacteristically small numbers. **HCP VCP**

Atrytone delaware (Edwards)* **Delaware skipper**
The host plants of this somewhat uncommon prairie species include *Andropogon* and *Panicum virgatum*. Only one individual seen. 7-2-87 **HCP VCP**

Ancyloxypha numitor (F.) **Least skipper**[87]
This somewhat common species was sighted on many occasions in the marsh and sedge meadows areas adjacent to the central pond. **HCP VCP**

Erynnis baptisiae (Forbes)* 8-11-86 **Baptisia duskywing**
This very uncommon species was recorded nectaring at *Rotibida pinnata*. Only one individual was seen. No sitings in 1987.

Recorded on the <u>West Chicago Prairie</u>, absent from FLP:

Euphyes dion (Edwards)* ***Dion skipper***
This is a somewhat rare sedge meadow species. 1982 & 1987

Euphyes conspicua (Edwards)* ***Black dash***
This is an uncommon wet prairie species. Host plants are sedges (*Carex spp.*). 1982 & 1987

Euphyes bimacula (Grote & Robinson)* ***Two-spotted skipper***
This is a very uncommon mesic/wet prairie species. 1987

Poanes massasoit (Scudder)* ***Mulberry wing***
The host plants of this uncommon sedge meadow species are sedges (*Carex spp.*) 1982 & 1987

Poanes hobomok (Harris)* ***Hobomok skipper***
This is an uncommon savanna species. 1982 & 1987 ***

Poanes viator (Edwards)† ***Broad winged skipper***
This is a very uncommon sedge meadow species. Host plants include *Panicum* (?) and *Carex lacustris*. 1982 & 1987

Hallengrenia egeremet Scudder ***skipper***
This common species inhabitats a broad range of habitats in this region.

Polites mystic (Edwards)† ***Long dash***
This is an uncommon wet prairie species. 1982 & 1987

Polites coras (Cramer) ***Peck's skipper***
Surprisingly, this very common skipper has yet to be encountered at FLP.

Epargyreus clarus (Cramer) ***Silver spotted skipper***
This common, wide ranging species feeds on a variety of legumes. 1982 1987

Recorded at the Vermont Cemetery Prairie, absent from FLP:

Pholisora catullus (F.) ***Common sooty wing***
1987

family **Papilionidae**

Papilio polyxenes asterius Stoll **Black swallowtail**
This very common species feeds on both native and exotic members of the family Umbelliferae. **WCP VCP**

Papilio glaucus (L.) **Tiger swallowtail**
This common, wide ranging species feeds on *Prunus* and *Populus*. 7-2-87 **WCP**

family **Pieridae**

Colias eurytheme Boisduval **Orange sulphur**
This ubiquitous species was found to occur in large numbers. Host plants include cultivated legumes. **WCP VCP**

Colias philodice Godart **Common sulphur**
This ubiquitous species was found to occur in large numbers. Host plants include cultivated legumes. **WCP VCP**

Pieris rapae (L.) **Cabbage butterfly**
This ubiquitous exotic was found to occur in large numbers. Host plants are crucifers. **WCP VCP**

Recorded at the Vermont Cemetery Prairie, absent from FLP:

Colias cesonia stall ***Dog face***
1987

family **Lycaenidae**

Everes comyntas (Godart) **Eastern-tailed blue**
This very common species feeds on a wide variety of native and exotic legumes. **WCP VCP**

Celastrina ladon (Cramer) **Spring azure**
The host plants for this common species include willows. **WCP VCP**

Satyrium edwardsii (Saunders)* 7-9-86 **Edward's hairstreak**
Two very worn specimens of this <u>uncommon</u>, oak feeding species were captured while visiting *R. syriaca* directly south of the savanna.

Recorded on the <u>West Chicago Prairie</u>, absent from FLP:

Satyrium calanus falacer (Godart)* ***Banded hairstreak***
This somewhat uncommon species feeds on oaks and hickories. 1982

Lycaena thoe (Guerin-Meneville)* ***Bronze copper***
Host plants include *Polygonum spp.* ***

Lycaena xanthoides diona (Scudder)* ***Great Copper***
This is a rare wet prairie species in this region. Host plants include Rumex spp.)

Lycaena helloides (Boisduval)* ***Purplish copper***
This very uncommon wetland species feeds on *Polygonum* and *Galium*.
1982 1987

Recorded on the <u>Vermont Cemetery Prairie</u>, absent from FLP:

Strymon melinus humuli (Harris) ***Gray hairstreak***
This southern species is apparently incapable of surviving the winters at this latitude. 1984

family **Libytheidae**

Libytheana bachmanii (Kirtland) **Snout butterfly**
One worn individual was recorded within the savanna on 6-12-87.

family **Nymphalidae**

Polygonia interrogationis (F.) **Question mark**
This common ecotonal species was seen visiting dogbane and canada thistles on this date. 7-9-86 **WCP**

Polygonia comma Harris **Comma**
One specimen of this somewhat uncommon woodland species was taken in a bait trap on 9-31-86.

Junonia coenia Hubner **Buckeye**
This common, migratory species was recorded 'puddling' along the gravel road. 6-17-86

Nymphalis antiopa (L.) **Mourning cloak**
This common, willow-feeding species was found to be common on this site. 5-28-86 **WCP**

Vanessa atalanta (L.) **Red admiral**
This is a common, wide ranging species. **WCP** **VCP**

Vanessa cardui (L.) 5-28-86 **Painted lady**
This is a very common, wide ranging species. Host plants are thistles (*Circium spp.*). **WCP**

Vanessa virginiensis (Drury) 7-9-86 **American painted lady**
This somewhat common species feeds on pussytoes (*Antennaria spp.*). **WCP**

Speyeria cybele (F.)* **Great spangled fritillary**
This somewhat uncommon species was seen flying through and adjacent to the oak savanna on 7-9-86 (only 3 sightings). **WCP**

Limenitis archippus (Cramer) **Viceroy**
This common, willow-feeding species was found to be somewhat uncommon on this site. **WCP**

Limenitis arthemis astyanax (B.& L.) **Red-spotted purple**
This common ecotonal species is reported to feed on a wide variety of woody plant species. 8-11-86 **WCP** **VCP**

Phyciodes tharos (Drury) 7-9-86 **Pearl crescent**
This very common, wide ranging species feeds on asters. WCP VCP

Recorded on the West Chicago Prairie, absent from FLP:

Chlosyne nycteis (Doubleday)* ***Silvery checkerspot***
This is an uncommon wet prairie/savanna species. Host plants are sunflowers (*Helianthus spp.*). 1982

Boloria selene myrina (Cramer)* ***Silver bordered fritillary***
This is an uncommon wet prairie species. Host plants are violets. 1982 1987

Boloria bellona (F.)* ***Meadow fritillary***
This is a very uncommon wet prairie species in this region. Host plants are violets. 9-4-87

Speyeria aphrodite (F.)* ***Aphrodite***
This is an uncommon mesic prairie species. Host plants are violets. 1983

family Danaidae

Danaus plexippus (L.) 5-28-86 **Monarch**
This is a common, migratory species. WCP VCP

family Satyridae

Satyrodes eurydice (Johannsson)* **Eyed brown**
This is an uncommon wet prairie species. Host plants are sedges [*Carex spp.*] WCP

Cercyonis pegala (F.)* **Blue-eyed grayling**
This is a somewhat uncommon inhabitant of the prairie/forest ecotone. Host plants are grasses. WCP

Recorded on the West Chicago Prairie, absent from FLP:

Euptychia cymela (Cramer)* ***Little wood satyr***
This is a somewhat common savanna species. 1982 1987

Family Sphingidae

Hemaris diffinus (F.) **Bumblebee hawkmoth**
This somewhat common day flying moth was recorded (1 individual) on 5-27-87. WCP

family **Noctuidae**

Catocala ultronia (Hbn) 7-14-86 **Ultronia underwing**
Host plants are members of the family Rosaceae.

Catocala ilia (Cramer) 7-14-86 **Ilia underwing**
This oak-feeding species is reported to be common.

Catocala amica (Hbn.) 7-14-86 **Girlfriend underwing**
This oak-feeding species is reported to be common.

Catocala amatrix (Hbn.)* **The Sweetheart**
This is reported to be an uncommon, willow-feeding species.

Catocala cara **Hickory underwing**
This hickory feeder is reportedly common. Taken in a bait trap on 8-30-87.

Zale lunata (Drury) 7-14-86 **Lunar moth**
Host plants include willows and maples. Taken at blacklight.

Papaipema arctivorens Hampson 9-21-86 **moth**
This somewhat common species reportedly feeds on burdock.

Papaipema nebris (Guenee) **moth**
This common species reportedly feeds on a variety of weedy plants.

Sunira bicolorago (Guenee) **Bicolored sallow**
This reportedly common species feeds on a variety of weedy plants.

Lithacodia synochitis (Grote & Robinson) **Dotted lithacodia**
This species is reported to feed on smartweeds (*Polygonum spp.*).

Lithacodia carneola (Gn.) **Pink-bordered lithacodia**
Host plants include *Solidago* and *Polygonum spp.*; taken at blacklight 7-14-86

Caenurgina erechtea Cramer **Clover moth**
This is an exceedingly common and wide ranging species. Host plants incude several exotics. **UCP VCP**

Leuconycta diphteroides (Gn.) 6-18-86 **Green leuconycta**
This reportedly common (?) species feeds on goldenrods (*Solidago spp.*).

Scoliopteryx libatrix (L.) 8-29-86 **The Herald**
Host plants are reported to be poplars and willows.

Plusia falcifera Kirby 6-14-86 **Celery looper**
This is a very common and wide ranging species. Host plants incude several exotics.

Autographa biloba Stephens 7-9-86 **Bilobed looper**
This is reported to be a very common, wide ranging species.

Autographa simplex Guenee **Cabbage looper**
This very common species was recorded on 7-10-87. **WCP**

Simyra henrici (Grote) 6-17-86 **Henry's marsh moth**
The host plants of this common species include cattails, grasses, and sedges. **WCP VCP**

Tarachidia erastrioides (Gn.) **Small bird-dropping moth**
The host plant for this common species is *Ambrosia trifida*.
6-16-86

Apamea amputatrix (Fitch) 7-14-86 **Yellow-headed cutworm**
This common species apparently feeds on a wide variety of native and cultivated plants. Taken at bait.

Amphipoea americana (Speyer) 7-14-86 **American ear moth**
Host plants are grasses and sedges. Common at bait.

Nephelodes minians Gn. 8-21-86 **Bronzed cutworm**
Hosts are grasses including corn.

Idia aemula (Hubner) 8-21-86 **Common idia**
Larvae feed on dead leaves on the forest floor.

Idia americalis (Guenee) 7-14-86 **American idia**
This reportedly common lichen-feeder was taken at bait.

Idia lubricalis (Geyer) 8-14-86 **Glossy black idia**
Host plants include grasses and rotten woods. Taken at baits.

Pseudaletia unipuncta (Haworth) **Armyworm moth**
This very common broad spectrum feeder was taken on numerous occasions at black lights and baits. 7-9-86 VCP

Leucania multilineata Walker **Many-lined wainscot**
This is reportedly a common, grass-feeding species. 6-19-86

Leucania scirpicola Guenee **Scirpus wainscot**
This somewhat uncommon species was taken at baits. 8-31-86

Spodoptera frugiperda (J.E. Smith) **Fall armyworm**
This very common species feeds on a wide variety of plants. 8-26-86

Bleptina caradrinalis Guenee **Bent-winged owlet**
Reported to be a common, wide ranging species. 7-10-86

Agrotis ipsilon (Hofnagel) **Ipsilon dart**
Reported to be a very common wide ranging species. Host plants include several cultivated plants. 7-14-86

Xestia dolosa Francleamont **Black-lettered dart**
Reported to be a very common wide ranging species. Host plants include cultivated plants. 8-31-86

Pyrophila tragopogonnis L. **Three-dotted wing**
Taken at a black light on 7-14-86.

Amphipyra pyramidoides Guenee **Copper underwing**
This common woodland species reportedly feeds on a wide variety of woody plants. 8-31-86

Heliothis zea (Boddie) 9-21-86 **Corn earworm**
This common agricultural pest was taken at black light.

Recorded on the West Chicago Prairie, absent from FLP:

Schinia guaraa (Smith & Abbot)* **Clouded crimson**
This uncommon prairie species feeds on Guara biennis.

Leucania diffusa Walker **Wheathead armyworm**
This ubiquitous species feeds on a wide variety of native and exotic plants. 1982

*Papaipema silphii** **Silphium root borer**
This is a very uncommon prairie species. Host plants are *Silphium spp.*

*Papaipema beeriana** **Liatris root borer**
This is an uncommon prairie species. Host plant is *Liatris spp.*

Papaipema furcata **Ash stem borer**
1987

Apomea related species **Hop vine borer**
1987

Recorded on the Vernont cemetery Prairie, absent from FLP:

*Schinia arcigera** **Aster moth**
This somewhat uncommon prairie species feeds on asters. 1987

family Arctiidae

Ctenucha virginiensis (Esper) **Virginia ctenucha**
A common, grass and sedge-feeding species. 5-28-86 WCP

Scepsis fulvicollis (Hubner) **Yellow-collared scape moth**
A common, wide ranging species. WCP VCP

Haploa reversa Stretch 6-18-86 **Reversed haploa**
Captured at black lights. This common ecotonal species feeds on a wide variety of forbs and woody species.

Hypoprepia fucosa Hubner 7-14-86 **Painted lichen moth**
This reportedly common, lichen-feeding species was taken at lights.

Phragmatobia fuliginosa (L.) **Ruby Tiger moth**
Taken at a black light. 7-14-86

Cycnia tenera Hubner. 7-14-86 **Dogbane moth**
Taken at a black light. WCP

Halysidota tessellaris (J.E. Smith) **Banded tussock moth**
This reportedly common species feeds on a wide variety of woody plant species. 7-14-86

Orgyia sp. (J. E. Smith) **tussock moth**
Larvae recorded on Bur oak on **6-12-87***

Recorded on the West Chicago Prairie, absent from FLP:

Euchaetias egle Drury ***Milkweed tiger moth***
This somewhat common species feeds on milkweeds, including *A. syriaca*.
1982 1987 ***

Apantesis virgo (L.) ***Virgin tiger moth***
1982

Diacrisia virginica (F.) ***Yellow woolly bear***
1982 1987

Recorded on the Vermont Cemetery Prairie, absent from FLP:

Halonoline spp. ***moth***
1982 1987

family Agaristidae

Recorded on the West Chicago Prairie, absent from FLP:

Alypia octomaculata (F.) **Eight-spotted forester**
The host plants of this ecotonal species include grapes. 1982 1987

family Lasiocampidae

Malacosoma americana (F). **Eastern tent caterpillar**
Fresh specimens captured at blacklights on this date.
6-18-86 **WCP VCP**

family Notodontidae

Datana integerrima Grote & Robinson **Walnut caterpillar moth**
Host plants of this reportedly common species include walnut and hickories. 7-14-86

Nadata gibbosa (J.E. Smith) **White-dotted prominent**
This reportedly common species feeds on a variety of hardwood species. Taken at a black light. 6-19-86

Recorded on the Vermont Cemetery Prairie, absent from FLP:

Datana sp. **prominent moth**
8-19-87 larvae on willow (*Salix sp.*)

family **Pyralidae**

Desmia funeralis (Hubner) **Grape leaf folder**
Host plants include *Oenothera.* 8-31-86 **WCP**

Crambus spp. **grass moths**
1982

Pyrausta orphisalis Walker 7-14-86 **moth**
Host plants include *Monarda fistulosa.*

Callima argenticinctella Clemens **moth**
Taken on 7-14-86 at lights. Associated with elms.

Argyrotaenia quercifoliana (Fitch) **leafroller moth**
Host plants for this reportedly common species include Oaks.
6-18-86

Recorded on the West Chicago Prairie, absent from FLP:

Pyrausta ochosalis Fitch ***Red & black***
1982

Cindaphia bicoloralis (Gn.) ***moth***
1982 1987

family **Lymantriidae**

Orgyia leucostigma (J. E. Smith) **White marked tussock moth**
Over 140 known hosts. Taken at black light on 9-21-86.

family **Geometrididae**

Orthonama centrostrigaria (Wallaston) **Bent line carpet**
Host plants include smartweeds (*Polygonum spp.*).

Eulithis diversilineata (Hubner) **Lesser grape vine looper**
Common

Scopula limboundata (Haw.) 6-18-86 **Large lace-border**
This common woodland species feeds on a wide variety of plants. **WCP**

Euchloena serrata (Drury) 6-18-86 **The Saw-wing**
Host plants include maples (*Acer spp.*). **WCP**

Xanthotype urticaria Swett 7-14-86 **False crocus geometer**
This species is somewhat common in this region. Host plants include a wide variety of woody and herbaceous species. **WCP**

Haematopis grateria (F.) **Chickweed geometer**
This very common species feeds on a wide variety of weedy plant species. 7-7-86 **WCP VCP**

Recorded on the <u>West Chicago Prairie</u>, absent from FLP:

Apica confusaria (Hubner) ***moth***
1982

Erastria mauturaria Walker ***moth***
1982

Euchaeca albovittata Guenee ***White striped black***
1982

Heterophleps triguttaria Herrich-Schaeffer ***3 spotted phillip***

family **Gelechiidae**

Trichotaphe flavocostella (Clemens) **Cream costal trichotaphe**
Host plants are sunflowers (Helianthus) and goldenrods (Solidago). Taken at a black light.

family **Tortricidae**

Eucosma dorsisignata (Clemens) 9-21-86
Larvae feed on roots of *Solidago spp.* Taken at black light.

Choristoneura rosaceana (Harr.) **Oblique-banded leafroller**
Larvae feed on oaks, roses, and other woody species. Taken at black lights. 6-18-86

Sparganothis reticulatana (Clemens) 9-21-86 **moth**
Larvae feed on a variety of trees and shrubs. Taken at black light.

Recorded on the Vermont Cemetery Prairie, absent from FLP:

Eucosma gigantea Riley* ***Prairie dock tortricid***
This very uncommon prairie species was recorded on the Vermont Cemetery in 1984.***

Family **Sesiidae**

Recorded on the West Chicago Prairie, absent from FLP:

Melittia satyriniformis Hubner ***moth***
1982

Order **DIPTERA: flies**

family **Tachinidae**

Archytas apicifer (Walker) **Caterpillar tachinid**
This common species preys on caterpillars.

family **Tabanidae**

Tabanus quinquivittatus Weidemann **horse fly**
This is a very common, wide ranging species. Larvae have been found in soils with a variety of moisture conditions. **WCP**

Tabanus subsimilis Bellardi **horse fly**
This is a very common, wide ranging species. Larvae prefer moist conditions.

Tabanus sigillis Macquart 8-86 **horse fly**
This is a very common, wide ranging species. Larvae have been found in soils with a variety of moisture conditions.

Chrysops pikei Whitney 7-9-86 **deer fly**
This is a very common, wide ranging species. Larvae found in moist conditions.

Chrysops univittattus 7-9-86 **deer fly**
This is a very common, wide ranging species. Larvae found in wet conditions.

Chrysops flavidus Wiedemann 7-14-86 **deer fly**
This is a very common, wide ranging species. Larvae found in moist conditions.

Recorded on the West Chicago Prairie, absent from FLP:

Chrysops brunneus ***deer fly***
Restricted to the northeastern corner of this state. 1987

Chrysops callidus Osten Sacken ***deer fly***
1987

Chrysops aestuans Wolp ***deer fly***
This species is associated with permant bodies of water in northern Illinois.
1987

family **Sciomyzidae**

Recorded on the West Chicago Prairie, absent from FLP:

Tetanocera sp. ***marsh fly***
1982

family **Bombyliidae**

Recorded on the West Chicago Prairie, absent from FLP:

Bombylius major (L.) ***bee fly***
1982

Sparnopolius fleraani Macquardt ***bee fly***
1982

family Asilidae

Recorded on the West Chicago Prairie, absent from FLP:

Promachus vertebratus (Say) **robber fly**
1982

Order HYMENOPTERA: bees & wasps

family Sphecidae

Sphex ichneumoneus (L.) **thread-waisted wasp**
1982 1987 WCP

Ammophila pennsylvanica (L.) **thread-waisted wasp**
A common, wide ranging species WCP

Recorded on the West Chicago Prairie, absent from FLP:

Bembix sp. ***sand wasp***
1982

family Vespidae

Vespula maculifrons (L.) 9-20-86 **Eastern yellow jacket**
A very common, wide ranging species. WCP VCP

Vespula maculata (L.) **Baldfaced hornet**
A very common, wide ranging species. WCP

Polistes sp. **paper wasp**
1982 1987 WCP VCP

family Apidae

Apis mellifera (L.) **Honey Bee**
This is an exceedingly common exotic species. WCP VCP

Bombus fervidus (F.) **bumble bee**
A common, wide ranging species. WCP VCP

Bombus affinus Cresson **bumble bee**
A common, wide ranging species. **WCP**

Bombus pennsylvanicus (DeGeer) **bumble bee**
A common, wide ranging species. **WCP**

Recorded on the West Chicago Prairie, absent from FLP:

Bombus bimaculatus Cresson ***bumblebee***
1982

BIBLIOGRAPHY

Arnold, R. A. 1983. Ecological studies of six endangered butterflies (Lepidoptera; Lycaenidae): Island biogeography, patch dynamics, and the design of habitat preserves. University of California Press, Berkley, Ca.

Alexander, R.D., Pace, A.E., and D. Otte 1972. The singing insects of Michigan. The Great Lakes Entomologist 5(2): 33-65.

Blake, J. G., and J. R. Karr. 1984. Species composition of bird communities and the conservation benefit of large versus small forests. Biol. Conserv. 30: 173-187.

Blake, J. G. 1983. Species-area and species-habitat relationships of breeding birds in isolated forest patches in east-central Illinois. PhD dissertation, University of Illinois.

Blatchley, W.S. 1920. Orthoptera of Northeastern America. The Nature Publishing Company, Indianapolis, Ind.

Borrer, D.J., DeLong, D.M., and C.A. Triplehorn 1981. An introduction to the study of insects. Saunders College Publishing, Chicago, Il.

Cancelado, R., and T.R. Yonke 1969. Collecting prairie insects with malaise traps. Trans. Mo. Acad. Sci. 3: 83-88.

Cappucino, N. and P. Karieva. 1985. Coping with a capricious environment: A population study of a rare pierid butterfly. Ecology 66: 152-162.

Covell, C.V., 1984. A field guide to the moths of eastern North America. Houghton Mifflin Company. Boston, Ma.

Diamond, J. M. 1975. The island dilemma: Lessons of modern biogeographic studies for the design of natural reserves. Biol. Conserv. 7: 129-146.

Diamond, 1976. Relaxation and differental extinction on land-bridge islands: Applications to nature preserves. Proc. 16th. Internat. Ornith. Cong. pp. 616-628.

Dillion, E. and L.S. Dillion. A manual of common beetles of eastern North America. Dover Publications, Inc. New York.

DeLong, D.M. 1948. The leafhoppers, or Cicadellidae, of Illinois. Bull. Ill Natur. Hist. Survey. Champaign, Il.

Deitz,, L.L. 1975. Classification of the higher orders of the new world treehoppers (Homoptera, Membracidae). N.C. Agr. Exp. Sta.Bull. 225.

Ehrlich, P. R. 1961. Intrinsic barriers to dispersal in a checkerspot butterfly. Science 134: 108-109.

Frankel, O. H. and M. E. Soule'. 1981. Conservation and evolution. Cambridge University Press. Cambridge, Mass.

Ebner, J.A. 1970. The butterflies of Wisconsin. Milw. Public Mus. Milwaukee, Wisc.

Forbes, W. T.M. 1954. Lepidoptera of New York and neighboring states, part III. Cornell University Agricultural Experiment Station. NY.

Froeschner, R.C. 1954. The Grasshoppers and other Orthoptera of Iowa. Iowa State Col J. Science 29: (2) 163-354.

Hamilton, K. G. A. 1980. Review of the Nearctic Idiocerni, excepting those from the Sonoran subregion (Rhynchota: Homoptera: Cicadellidae). Canadian Entomol. 112: 811-848.

Hamilton, K. G. A. The insects and arachnids of Canada part 10 The spittlebugs of Canada Homoptera: Cercopidae. Biosystematics Research Institute. Ottawa, Ontario.

Hanna, M., and T.H. Moore 1966. The spittlebugs of Michigan. Pap. Mich. Acad. Sci., 51:39-73.

Hebard, M. 1934. The Dermaptera and Orthoptera of Illinois. Il. Nat. Hist. Survey. Urbana, Il.

Holland, W.J. 1968. The moth book. Dover Publications Incorporated. N.Y.

Irwin, R. R. and J. C. Downy, 1973. Annotated checklist of the butterflies of Illinois. Il. Nat. Hist. Sur. Urbana, Il.

Karr, J. R. 1982. Avian extinction on Barro Colorado Island, Panama: A reassessment. Amer. Nat. 119: 221-239.

Klots, A.B. 1951. A field Guide to the Butterflies of North America, East of the Great Plains. Houghton Mifflin Company, Boston, Mass.

Kopp, D.D., and T.R. Yonke 1973-1974. The treehoppers of Missouri. J. Kansas Entomol. Soc.: Part I, 46:42-64 (1973); Part II, 46: 233-276 (1973); PartIII, 46: 375-421 (1973); Part IV, 46: 80-130 (1974).

McCafferty, W.P., and J.L. Stein 1976. Indiana Ensifera (Orthoptera). The Great Lakes Entomologist. 9(1): 25-56.

McPherson, J.E. 1982. The Pentatomoidea (Hemiptera) of northeastern North America with emphasis on the faune of Illinois. Southern Illinois University Press. Carbondale, Il.

Moore, T.E. 1966. The spittlebugs of Michigan. Pap. Mich. Acad. Sci. 51:39-73.

Needham, J.G.; and M.J. Westfall 1955. A manual of the dragonflies of North America (Anisoptera). Univ. of Calif. Press. Berkley, Ca.

Opler, P. A. 1981. Management of prairie habitats for insect conservation. J. Nat. Areas Assoc. 1:(4) 3-6.

Osborn, H. 1940. The Membracidae of Ohio. Ohio Biol. Survey Bull. 7(2): 51-101

Otte, D. 1981. The North American grasshoppers, Volume I, Acrididae; Gomphocerinae and Acridinae. Harvard University Press, Cambridge, Mass.

Otte, D. 1984. The North American grasshoppers, Volume II, Acrididae; Oedipodinae. Harvard University Press, Cambridge, Mass.

Panzer, R. 1984a The prairie insect fauna of the Chicago region. Proc. 6th. N. Il. prairie workshop. McHenry Co. Conserv. Dist. Crystal Lake, Il.

_____ 1984b. The importance of reserve size in the conservation of prairie and wetland butterfly communities (Lepidoptera: Hesperioidae, Papilionoidae). MS thesis, Northeastern Illinois University, Chicago, Il.

Pechuman, L.L.; Webb, D.W.; and H.J. Teskey 1983. The Diptera, or true flies of Illinois: I. Tabanidae. Illinois Natural History Survey Bulletin 33: 1.

Pollard, E. 1977. A method for assessing changes in the abundance of butterflies. Biol Conserv 12:115 - 133.

Remington, Cherles L. 1968. The population genetics of insect introduction. A. Rev. Entom. 13:415-426.

Soule, M. E., Wilcox, B. A., and C. Holtby. 1980. Benign neglect: a model of the faunal collapse in the game reserves of East Africa. Biol. Conserv. 15: 259-272.

Stein, J. L. and W.P. McCafferty 1975. Diagnostic tables to the longhorned grasshoppers and crickets of Indiana. Purdue University Agr. Exp. Sta. Res. Bull. no. 921 - 1-20.

Terborgh, J. 1975. Faunal equilibria and the design of nature preserves. Tropical ecological systems, trends in terrestrial and aquatic research. F. B. Jolly and E. Medina eds. pp. 369-380 Springerverlag, NY.

Walker, E.M. 1953. The Odonata of Canada and Alaska. Univ. of Toronto Press, Toronto, Canada.

White, J. 1978. Illinois natural areas inventory technical report. Dept. Landscape Architecture, University of Illinois, Urbana-Champaign, and Natural Land Institute, Rockford, Il.

Wilson, S.W. and J.E. McPherson 1980. Keys to the planthoppers, or Fulgoroidea, of Illinois (Homoptera). Trans. Il. State Acad. Sci. 73:(2) 1-61.

Wourms, M.K. 1984. Are chain link fences barriers to butterflies? J. Lepidop. Soc. 38: 67.

Young, D.A. and B.P. Beirne 1958. A taxanomic revision of the leafhopper genus *Flexamia* and a new related genus (Homoptera, Cicadellidae) US Dept. Agric. Tech. Bull.. 1173.

Young, F. N. and I. J. Cantrall 1956. Orthoptera of relic prairie fragments in Green Co. Indiana. Proc. Ind Acad. Sci. 65: 111-115.