A Partial Inventory of Insect Populations in Tallgrass Prairie Pastures in North Central Oklahoma

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INTRODUCTION

As part of a rangeland insect ecology program being conducted by the Entomology Department of Oklahoma State University, the insect population of a pasture in the tallgrass prairie north of Lake Carl Blackwell was sampled. Samples of the insect population were taken during the growing seasons of 1957, 1958, 1959 and 1960; however, only that portion of the data for 1957 is included in the present paper.

Three plot areas were used in this survey: a bottomland, midland, and upland pasture. The locations of two of the plots are in the SE ¼ SW ¼ Sec. 31, T. 20 N, R. 1 E Indian Meridian, Noble County, Oklahoma, and the third plot is located in the NW ¼ NE ¼ Sec. 6, T. 19 N, R. 1 E Indian Meridian, Payne County, Oklahoma. The two sections are adjacent to each other; the north side of section six and the south side of section 31 are contiguous. All plots were on the property of the Animal Husbandry Department, Oklahoma State University, Stillwater.

Without the assistance of many specialists it would not have been possible to make accurate determinations of many of the species collected; therefore, our grateful acknowledgment is extended for the aid of the federal specialists who, at the time, were under the direction of Dr. P. W. Oman: Dr. J. G. Rozen (COLEOPTERA; Orthoperidae, Scaphidiidae), Dr. R. S. Beal (COLEOPTERA; Phalacridae), Dr. E. A. Chapin (COLEOPTERA; Coccinellidae), Mr. G. B. Vogt (COLEOPTERA; Chrysomelidae), Miss L. M. Walkley (COLEOPTERA; Lathridiidae) and (HYMENOPTERA; Ichneumonidae), Dr. W. W. Wirth (DIPTERA; Ceratopogonidae, Ephydridae, Phoridae), Dr. R. H. Foote (DIPTERA; Empididae, Muscidae), Mr. C. W. Sabrosky (DIPTERA; Anthomyzidae, Sphaeroceridae), Mr. P. D. Ashlock (HEMIPTERA; Lygaeidae, Nabidae), Miss L. M. Russell (HOMOPTERA; Aleyrodidae, Aphidae), Mr. J. P. Kramer (HOMOPTERA; Cicadellidae), Dr. B. D. Burks (HYMENOPTERA; Chalcididae, Elasmidae, Encyrtidae, Eulophidae, Eupelmidae, Eurytomidae, Mymaridae, Pteromalidae, Thysanidae, Torymidae, Trichogrammatidae), Dr. L. H. Weld (HYMENOPTERA; Cynipidae), Mr. K. V. Krombein (HYMENOPTERA; Bethylidae, Dryinidae, Sphecidae), Mr. C. F. W. Muesebeck (HYMENOPTERA; Braconidae, Ceraphronidae, Diapriidae, Scelionidae), Dr. M. R. Smith (HYMENOPTERA; Formicidae), Dr. E. L. Todd (LEPIDOPTERA; Noctuidae), Mr. H. W. Capps (LEPIDOPTERA; Noctuidae), Dr. A. B. Gurney (ORTHOPTERA; Acrididae, Gryllidae, Mantidae, Phasmidae), Miss Kellie O'Neill (THYSANOPTERA).

METHOD OF SAMPLING

Within each of the three plot areas described above were placed three plots, making a total of nine sampling areas. The three plot area system is similar to that used by Muma and Muma (1949), and the nine specific plot system is similar to that used by Shackelford (1929). The combination of these two systems gave enough flexibility to insure that most plant types in each area would be included among their respective plots (for a list of plants see Tables 1, 2, and 3; for quadrat maps of the plot areas see Figs. 1, 2, and 3). Each plot was 225 square feet in size.

The insect samples were taken once a week during the growing season of 1957. Using a sweep net 14 inches in diameter, fifteen sweeps were taken in each plot, making a total of 45 sweeps per plot area. Sweeps were taken on a different course each week to avoid "pathing" the plot areas. The insects collected in this manner were sorted by the use of Berlese funnels.

Sampling in the above manner makes recovery of extremely soft bodied insects such as aphids almost impossible. Also, the insects that remain on or in the ground were not sampled.

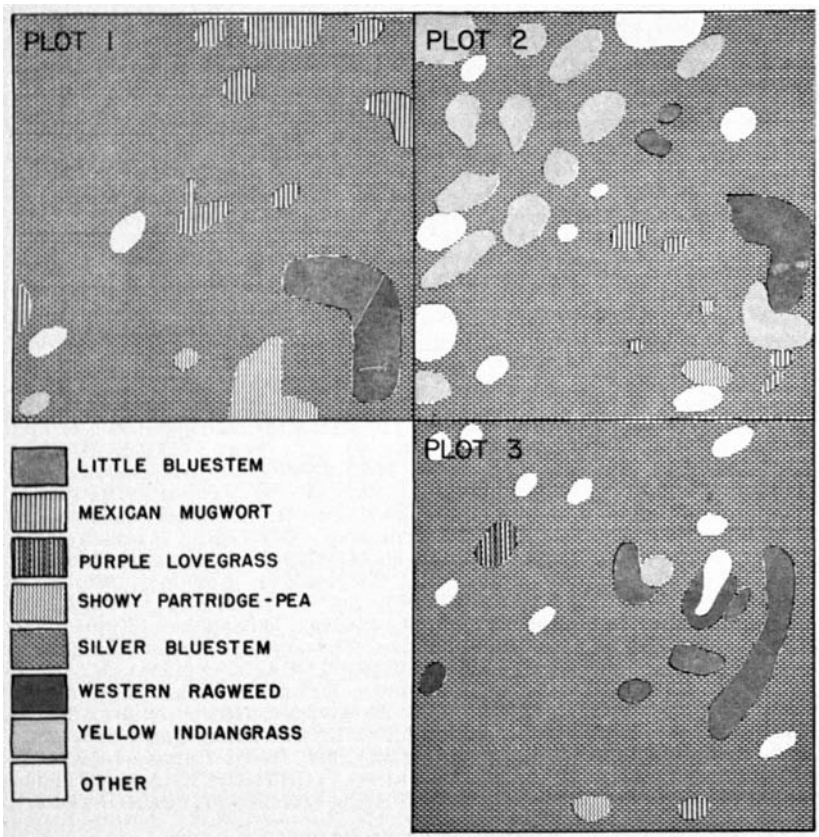

Figure 1. Quadrat maps of the bottomland pasture plot area plots showing the predominant plant species. Lake Carl Blackwell region, Payne County, Oklahoma, 1957.

RESULTS

All major orders of Insecta found in this survey were represented in each of the three sampling areas; however, not all species found were represented in each of the three sampling areas. As shown in Table 4 the number of specimens taken from each of the three pasture areas is rather uniform, but in Table 5 it may be seen that, of the 274 species of insects collected, 114 species were taken from only one pasture area, 65 species were collected from two of the pastures and 95 species were found in all three of the pasture areas.

The qualitative analysis of the data will be presented in later papers when it will be possible to compare the data taken for the three subsequent years.

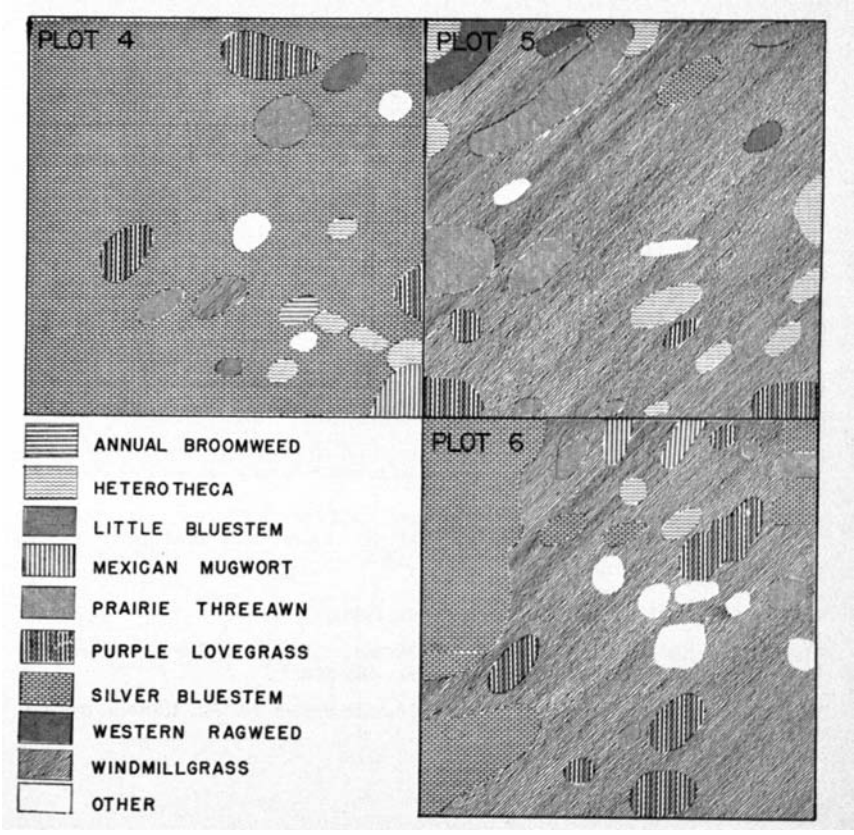

Figure 2. Quadrat maps of the midland pasture plot area plots showing the predominant plant species. Lake Carl Blackwell region, Noble County, Oklahoma, 1957.

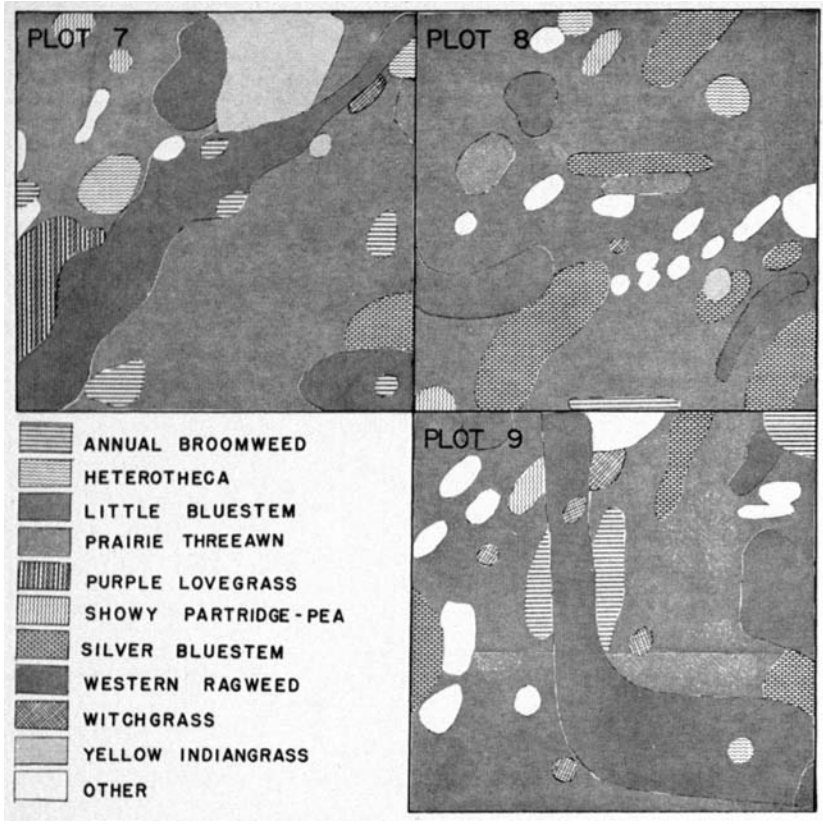

Figure 3. Quadrat maps of the upland pasture plot area plots showing the predominant plant species. Lake Carl Blackwell region, Noble County, Oklahoma, 1957.

LITERATURE CITED

Muma, Martin H. and Katherine E. Muma. 1949. Studies on a population of prairie spiders. Ecology 30: 485-503.

Shackelford, M. W. 1929. Animal communities of an Illinois prairie. Ecology 10: 126-154.

TABLE 1. PLANTS REPRESENTED IN THE BOTTOMLAND PASTURE PLOT AREA. LAKE CARL BLACKWELL REGION, PAYNE COUNTY, OKLAHOMA, 1957.

	GRASSES	
	Big bluestem	*Andropogon gerardi* Vitman
	Hairy chess	*Bromus commutatus* Schrad.
*	Little bluestem	*Andropogon scoparius* Michx.
*	Purple lovegrass	*Eragrostis spectabilis* (Pursh) Steud.
	Purpletop	*Tridens flavus* (L.) Hitchc.
	Scribner panicum	*Panicum scribnerianum* Nash.
*	Silver bluestem	*Andropogon saccharoides* Swartz
	Virginia wild-rye	*Elymus virginicus* L.
*	Yellow Indiangrass	*Sorghastrum nutans* (L.) Nash.
	LEGUMES AND FORBS	
	Annual broomweed	*Amphiachyris dracunculoides* (DC.) Nutt.
	Annual sunflower	*Helianthus annuus* L.
	Buckbrush	*Symphoricarpos orbiculatus* Moench.
	Curlycup gumweed	*Grindelia squarrosa* (Pursh) Dunal.
	Ironweed	*Vernonia baldwini* Torr.
	Marestail	*Erigeron canadensis* L.
*	Mexican mugwort	*Artemisia ludoviciana mexicana* (Willd.) Fern.
	Oblong-leaved milkweed	*Asclepiodora viridis* (Walt.) Gray
	Sessile tickclover	*Desmodium sessilifolium* (Torr.) T. & G.
*	Showy partridgepea	*Cassia fasciculata* Michx.
	Small wild bean	*Strophostyles pauciflora* (Benth.) Wats.
	Smooth ground cherry	*Physalis subglabrata* MacKenzie & Bush
	Snow-on-the-mountain	*Euphorbia marginata* Pursh.
*	Western ragweed	*Ambrosia psilostachya* DC.
	White aster	*Aster ericoides* L.
	Wooly croton	*Croton capitatus* Michx.
	Yarrow	*Achillea lanulosa* Nutt.
	TREES	
	American elm	*Ulmus americana* L.
	Black willow	*Salix nigra* Marsh.

*Predominant plants for this area.

TABLE 2. PLANTS REPRESENTED IN THE MIDLAND PASTURE PLOT AREA. LAKE CABL BLACKWELL REGION, NOBLE COUNTY, OKLAHOMA, 1957.

GRASSES	
Big bluestem	*Andropogon gerardi* Vitman
Fall panicum	*Panicum dichotomiflorum* Michx.
Fringeleaf paspalum	*Paspalum ciliatifolium* Michx.
Hairy chess	*Bromus commutatus* Schrad.
* Little bluestem	*Andropogon scoparius* Michx.
Mat sandbur	*Cenchrus pauciflorus* Benth.
* Prairie threeawn	*Aristida oligantha* Michx.
* Purple lovegrass	*Eragrostis spectabilis* (Pursh) Steud.
Purpletop	*Tridens flavus* (L.) Hitchc.
Scribner panicum	*Panicum scribnerianum* Nash.
Short-stalked lovegrass	*Eragrostis curtipedicellata* Buckl.
* Silver bluestem	*Andropogon saccharoides* Swartz
Stinkgrass	*Eragrostis cilianensis* (All.) Link.
Tall dropseed	*Sporobolus asper* (Michx.) Kunth.
* Windmillgrass	*Chloris verticillata* Nutt.
Witchgrass	*Panicum capillare* L.
Yellow Indiangrass	*Sorghastrum nutans* (L.) Nash.
Yellow nutgrass	*Cyperus esculentus* L.
LEGUMES AND FORBS	
* Annual broomweed	*Amphiachyris dracunculoides* (DC.) Nutt.
Annual sunflower	*Helianthus annuus* L.
Arrow-leaved aster	*Aster sagittifolius* Wedemeyer
Black-eyed susan	*Rudbeckia hirta* L.
Buckbrush	*Symphoricarpos orbiculatus* Moench.
Evening primrose	*Oenothera biennis* L.
Glandular croton	*Croton glandulosus* L.
* Heterotheca	*Heterotheca subaxillaris* (Lam.) Britton & Rusby
Horse nettle	*Solanum carolinense* L.
* Mexican mugwort	*Artemisia ludoviciana mexicana* (Willd.) Fern.
Prairie acacia	*Acacia angustissima* (Mill.) Ktze.
Prostrate sperge	*Euphorbia supina* Raf.
Rough buttonweed	*Diodia teres* Walt.
Sessile tickclover	*Desmodium sessilifolium* (Torr.) T. & G.
Smooth ground cherry	*Physalis subglabrata* MacKenzie & Bush
Snow-on-the-mountain	*Euphorbia marginata* Pursh
Tall thistle	*Cirsium altissimum* (L.) Spreng.
* Western ragweed	*Ambrosia psilostachya* DC.
White aster	*Aster ericoides* L.
White horse nettle	*Solanum elaeagnifolium* Cav.
White vervain	*Verbena urticaefolia* L.
Woolly plantain	*Plantago purshii* R. & S.
Yarrow	*Achillea lanulosa* Nutt.
Yellow wood sorrel	*Oxalis stricta* L.
TREES	
American elm	*Ulmus americana* L.
Eastern cottonwood	*Populus deltoides* Bartr.

*Predominant plants for this area.

TABLE 3. PLANTS REPRESENTED IN THE UPLAND PASTURE PLOT AREA. LAKE CARL BLACKWELL REGION, NOBLE COUNTY, OKLAHOMA, 1957.

GRASSES	
Hairy chess	*Bromus commutatus* Schrad.
* Little bluestem	*Andropogon scoparius* Michx.
* Prairie threeawn	*Aristida oligantha* Michx.
* Purple lovegrass	*Eragrostis spectabilis* (Pursh) Steud.
Scribner panicum	*Panicum scribnerianum* Nash.
Side-oats grama	*Bouteloua curtipendula* (Michx.)
* Silver bluestem	*Andropogon saccharoides* Swartz
Slender rush	*Juncus tenuis* Willd.
* Witchgrass	*Panicum capillare* L.
* Yellow Indiangrass	*Sorghastrum nutans* (L.) Nash.
LEGUMES AND FORBS	
* Annual broomweed	*Amphiachyris dracunculoides* (DC.) Nutt.
Curlycup gumweed	*Grindelia squarrosa* (Pursh) Dunal.
Daisy fleabane	*Erigeron annuus* (L.) Pers.
Dotted gayfeather	*Liatris punctata* Hook
Glandular croton	*Croton glandulosus* L.
Grooved yellow flax	*Linum sulcatum* Riddell
* Heterotheca	*Heterotheca subaxillaris* (Lam.) Britton & Rusby
Oblong-leaved milkweed	*Asclepiodora viridis* (Walt.) Gray
Pink milkwort	*Polygala incarnata* L.
Prairie acacia	*Acacia angustissima* (Mill.) Ktze.
Prairie sabbatia	*Sabatia campestris* Nutt.
Rough buttonweed	*Diodia teres* Walt.
Showy partridgepea	*Cassia fasciculata* Michx.
Slender three-seeded mercury	*Acalypha gracilens* Gray
Small wild bean	*Strophostyles pauciflora* (Benth.) Wats.
Snow-on-the-mountain	*Euphorbia marginata* Pursh
Tall thistle	*Cirsium altissimum* (L.) Spreng.
* Western ragweed	*Ambrosia psilostachya* DC.
White aster	*Aster ericoides* L.
White vervain	*Verbena urticaefolia* L.
Whorled milkwort	*Polygala verticillata* L.
Wild-alfalfa	*Psoralea tenuiflora* Pursh
Woolly croton	*Croton capitatus* Michx.
Wooly plantain	*Plantago purshii* R. & S.
Yarrow	*Achillea lanulosa* Nutt.
Yellow wood sorrel	*Oxalis stricta* L.

*Predominant plants for this area.

TABLE 4. NUMBERS OF INSECTS TAKEN BY SWEEPING IN ALL PASTURE PLOT AREAS. LAKE CARL BLACKWELL REGION, PAYNE AND NOBLE COUNTIES, OKLAHOMA, 1957.

Group	Bottomland	Midland	Upland	Total
Coleoptera	677	435	256	1,368
Collembola	1,012	114	354	1,480
Diptera	657	272	142	1,071
Hemiptera	722	362	542	1,626
Homoptera	2,103	3,607	3,487	9,197
Hymenoptera	291	469	681	1,441
Lepidoptera	29	34	39	102
Neuroptera	23	24	75	122
Odonata	2	0	0	2
Orthoptera	89	127	43	259
Psocoptera	11	6	5	22
Thysanoptera	806	224	290	1,320
Total	6,422	5,674	5,914	18,013

TABLE 5. A LIST OF ALL SPECIES TAKEN BY SWEEPING IN BOTTOMLAND (B), MIDLAND (M) AND UPLAND (U) PASTURE PLOT AREAS. LAKE CARL BLACKWELL REGION, PAYNE AND NOBLE COUNTIES, OKLAHOMA, 1957.

Insect	Pasture plot area
COLEOPTERA	
Anthicidae	
Lappus sp.	B
Buprestidae	
Acmaeodera pulchella (Hbst.)	M
Cantharidae	
Silis latilobus Blatch.	M
Carabidae	
Amara fallax Lec.	B
Casnonia pennsylvanica L.	B
Lebia ludoviciana Csy.	B
Chrysomelidae	
Altica nanula (Lec.)	B M U
Anisistena sp., prob. *perspicua* (Horn)	B
Aphthona picta Say	M U
Calligrapha bigsbyana (Kby.)	U
Chaetocnema pulicaria Melsh.	B M U
Diabrotica undecimpunctata howardi Barber	B M U
Epitrix parvula (Fabr.)	M U
Galerucella sp. nr. *notulata* (Fabr.)	U
Glyptina spuria Lec.	M U
Glyptocelis pubescens (Fabr.)	M

TABLE 5 (Continued)

Pachybrachys sp., prob. *diversus* Fall			U
Pachybrachys sp., poss. *vestigialis* Fall			U
Pachybrachys vau Fall			U
Phaedon spp.		M	
Psylliodes convexior Lec.	B	M	U
Coccinellidae			
Hippodamia convergens Guer.	B	M	U
Hyperaspidius pallescens Csy.			U
Hyperaspis bensonica Csy.	B		U
Hyperaspis fimbriolata Melsh.	B		U
Scymnus spp.	B	M	U
Scymnus natchezianus Csy.		M	U
Curculionidae			
Anacentrus longipennis (Linell)	B		
Anthonomus albopilosus Dietz	B	M	U
Conotrachelus leucophaeatus Fabr.		M	
Pantomorus tesselatus (Say)	B		
Sitophilus oryza L.		M	
Smicronyx sp.			U
Elateridae			
Conoderus vespertinus (Fabr.)		M	
Lathridiidae			
Melanophthalma spp.	B	M	U
Meloidae			
Epicauta albida (Say)		M	
Epicauta sericans Lec.		M	U
Melyridae			
Collops quadrimaculatus (Fabr.)	B	M	U
Monotomidae			
Monotoma americana Aubé	B		U
Mordellidae			
Mordella sp.	B	M	
Orthoperidae			
(Genus and species unidentified)	B	M	U
Phalacridae			
Stilbus sp.	B	M	
Scaphidiidae			
Probably *Baeocera* sp.		M	
Staphylinidae			
(Genera and species unidentified)	B	M	U
COLLEMBOLA			
Entomobryidae			
(Genus and species unidentified)	B	M	U
Isotomidae			
(Genus and species unidentified)			U
Poduridae			
(Genus and species unidentified			U
Sminthuridae			
(Genus and species unidentified	B	M	U
DIPTERA			
Agromyzidae			
Agromyza sp.	B	M	U
Anthomyzidae			
Mumetopia occipitalis Mel.	B	M	

TABLE 5 (Continued)

Asilidae			
(Genus and species unidentified			U
Calliphoridae			
Phaenicia caeruleiviridis (Macq.)	B		
Ceratopogonidae			
Forcipomyia sp.	B	M	U
Palpomyia sp.	B		
Chloropidae			
Hippelates particeps (Becker)	B	M	U
Meromyza americana Fitch		M	U
Thaumatomyia glabra (Mg.)	B	M	
Dolichopodidae			
Diaphorus leucostoma Loew	B	M	U
Dolichopus bifractus Loew	B		
Empididae			
Drapetis sp.	B		U
Ephydridae			
Discocerina obscurella (Fall.)	B	M	U
Nostima quinquenotata Cress.		M	
Muscidae			
Coenosia atrata Walk.	B	M	U
Phoridae			
Megaselia sp.	B	M	U
Pipunculidae			
(Genus and species unidentified)	B		U
Psychodidae			
(Genus and species unidentified)		M	
Sarcophagidae			
Sarcophaga lherminieri (R.-D.)	B		
Sarcophaga rapax Walker	B	M	U
Sarcophaga sueta Van der Wulp	B		
Sciaridae			
(Genus and species unidentified)	B	M	U
Sepsidae			
Sepsis pectoralis Macq.	B	M	U
Sphaeroceridae			
Leptocera fontinalis (Fall.)	B	M	U
Syrphidae			
Mesograpta marginata (Say)		M	U
Tachinidae			
Ceracia dentata Coq.	B	M	U
Distichona varia Van der Wulp			U
Trupaneidae			
Neotephritis finalis (Loew)			U
Trupanea actinobola (Loew)	B	M	U

HEMIPTERA

Anthocoridae			
Orius tristicolor (White)	B	M	U
Coreidae			
Chariesterus antennator (Fabr.)		M	
Corizus hyalinus (Fabr.)	B	M	
Corizus lateralis (Say)	B	M	U
Harmostes reflexulus (Say)	B	M	U
Merocoris distinctus Dall.	B	M	U
Cydnidae			
Thyreocoris ater (Am. & Serv.)	B	M	

TABLE 5 (Continued)

Lygaeidae			
Blissus leucopterus (Say)	B	M	U
Geocoris sp.	B		U
Geocoris pallens Stål		M	
Nysius californicus Stål	B	M	U
Pachybrachius basalis (Dall.)	B	M	U
Phlegyas abbreviatus (Uhl.)	B	M	
Miridae			
Ceratocapsus fasciatus (Uhl.)	B		U
Chlamydatus associatus (Uhl.)	B	M	U
Lygus apicalis Fieb.	B		
Lygus lineolaris (P. B.)	B	M	U
Psallus seriatus (Reut.)	B	M	U
Tuponia subnitida Uhl.	B	M	U
Nabidae			
Nabis alternatus Parshley	B	M	U
Nabis capsiformis Germ.	B		
Neididae			
Jalysus spinosus (Say)	B	M	
Pentatomidae			
Euschistus varolarius (P. B.)	B		
Mecidea longula Stål	B	M	U
Mormidea lugens (Fabr.)	B	M	
Oebalus pugnax (Fabr.)	B		
Peribalus limbolarius Stål	B		U
Podisus maculiventris (Say)	B		
Thyanta pallido-virens (Stål)	B	M	U
Scutelleridae			
Homaemus bijugis Uhl.	B	M	
Homaemus parvulus (Germ.)	B	M	
Tingididae			
Gargaphia solani Heid.		M	U
HOMOPTERA			
Aleyrodidae			
Probably *Trialeurodes abutilonea* (Hald.)	B	M	U
Aphidae			
Aphis spp.	B	M	U
Cercopidae			
Lepyronia gibbosa Ball	B	M	U
Cicadellidae			
Aceratagallia uhleri (Van D.)	B	M	U
Carneocephala sp.		M	U
Carneocephala flaviceps (Riley)	B	M	
Chlorotettix sp.	B	M	U
Empoasca sp.	B	M	U
Endria inimica (Say)	B	M	U
Exitianus exitiosus (Uhl.)	B	M	U
Graminella mohri DeLong	B	M	U
Gyponana sp.		M	
Macrosteles fascifrons (Stål)	B	M	U
Mesamia coloradensis (Gill. & Bak.)	B		
Nesosteles sp.	B	M	U
Norvellina seminuda (Say)	B		
Paraphlepsius sp.	B	M	U
Scaphoideus sp.	B	M	U
Scaphytopius sp.	B	M	U
Spangbergiella sp.			U
Stirellus bicolor (Van D.)		M	

TABLE 5 (Continued)

Stirellus obtutus (Van D.)	B	M	
Xerophloea viridis (Fabr.)	B	M	U
Cicadidae			
Tibicen aurifera (Say)		M	
Cixiidae			
Oliarus aridus Ball			U
Delphacidae			
Delphacodes sp.	B	M	U
Liburniella ornata (Stål)	B	M	U
Dictyopharidae			
Scolops angustatus Uhl.	B	M	U
Scolops sulcipes (Say)			U
Issidae			
Bruchomorpha suturalis Melichar	B	M	U
Membracidae			
Campylenchia latipes (Say)		M	U
Micrutalis parva (Godg.)		M	U
Psyllidae			
Paratrioza cockerelli (Sulc.)		M	U
HYMENOPTERA			
Bethylidae			
Epyris sp.	B	M	U
Perisierola cellularis (Say)	B	M	U
Braconidae			
Apanteles sp.	B		U
Apanteles ensiger (Say)	B	M	
Apanteles forbesi Vier.		M	U
Apanteles marginiventris (Cress.)	B	M	
Apanteles terminalis Gahan	B	M	
Aphidius multiarticulatus (Ashm.)			U
Aspilota sp.		M	
Bracon sp.		M	
Bracon curtus (Prov.)		M	U
Bracon mellitor Say	B	M	U
Bracon nuperus Cress.			U
Bracon (?) *platynotae* (Cush.)	B		
Bracon pyralidiphagus (Mues.)		M	
Chelonus texanus Cress.			U
Heterospilus n. sp.		M	
Microplitis maturus Weed	B	M	
Opius spp.	B	M	
Orgilus sp.		M	U
Polystenidea parksi Vier.			U
Rhaconotus gracilliformus (Vier.)	B	M	
Ceraphronidae			
Aphanogmus sp.	B		
Ceraphron sp.		M	
Chalcididae			
Dirhinus texanus (Ashm.)		M	
Haltichella xanticles (Wlkr.)	B	M	U
Spilochalcis dorsata (Cress.)	B		
Spilochalcis sanguiniventris (Cress.)	B		U
Chrysididae			
Elampus marginatus (Patt.)		M	
Cynipidae			
Hexacola sp.		M	

TABLE 5 (Continued)

Diapriidae			
Aclista sp.	B		
Trichopria spp.		M	U
Dryinidae			
(Genus and species unidentified)	B	M	U
Elasmidae			
Elasmus marylandicus Grlt.	B		
Encyrtidae			
Anagyrus sp.	B	M	
Chalcaspis pergandei How.		M	U
Chrysopophagus compressicornis Ashm.	B	M	U
Microterys marginatus Ashm.	B		
Ooencyrtus johnsoni (How.)	B	M	U
Paraphaenodiscus sp.			U
Pseudleptomastix sp.	B		
Xanthoencyrtus sp.		M	
Eulophidae			
Encarsia sp.		M	U
Prospaltella sp.	B	M	U
Tetrastichus spp.	B	M	
Tetrastichus ainsliei Gah.		M	
Tetrastichus gibboni (Gir.)	B		
Tetrastichus pulchriventris (Gir.)	B		
Tumidiscapus flavus Gir.	B		
Eupelmidae			
Eupelmus sp.	B	M	U
Eupelmus allynii (French)		M	
Eurytomidae			
Eurytoma sp.	B	M	U
Figitidae			
Prosaspicera sp.	B	M	U
Formicidae			
Crematogaster lineolata (Say)	B	M	U
Dorymyrmex pyramicus (Roger)		M	
Leptothorax pergandei Emery	B	M	U
Pogonomyrmex occidentalis (Cress.)	B		
Tapinoma sessile (Say)	B	M	U
Halictidae			
Halictus sp.	B	M	U
Halictus ligatus Say	B		
Lasioglossum pruinosiforme (Crawf.)	B		
Ichneumonidae			
Gelis sp.	B		
Tromatobis rufopectus (Cress.)	B		
Megachilidae			
Megachile brevis Say			U
Mutillidae			
Dasymutilla quadriguttata (Say)	B		
Mymaridae			
Acmopolynema bifasciatipennis (Gir.)		M	U
Lymaenon spp.		M	
Polynema sp.			U
Polynema enchenopae Gir.	B		
Platygasteridae			
Amblyaspis sp.	B		
Brachinostemma n. sp.		M	

TABLE 5 (Continued)

Pteromalidae			
Colotrechnus ignotus Burks			U
Merisus sp.		M	
Muscidifurax sp.		M	
Scelionidae			
Acoloides n. sp.	B	M	
Ceratoteleia marlattii (Ashm.)	B	M	
Macroteleia macrogaster Ashm.		M	
Telenomus sp.	B	M	U
Telenomus sp., apparently new	B	M	
Telenomus chrysopae Ashm.		M	
Telenomus dimmocki Ashm.	B	M	U
Sphecidae			
Didineis texana (Cress.)			U
Pluto suffusus (Fox)			U
Thysanidae			
Thysanus niger (Ashm.)		M	
Torymidae			
Torymus sp.			U
Trichogrammatidae			
Oligosita sp.	B	M	U
Oligosita sanguinea (Gir.)		M	
Vespidae			
Polistes fuscatus (Fabr.)	B		
LEPIDOPTERA			
Gelechiidae			
(Genera and species unidentified	B	M	U
Noctuidae			
Caenurgina spp.	B	M	U
Heliothis zea (Boddie)		M	
Leucania sp.	B	M	U
Pieridae			
Eurema euterpe Menetries			U
Eurymus eurytheme Boisduval	B		
NEUROPTERA			
Chrysopidae			
Chrysopa plorabunda Fitch	B	M	U
ODONATA			
Agrionidae			
Argia moesta (Hagen)	B		
ORTHOPTERA			
Acrididae			
Ageneotettix deorum (Scudder)		M	U
Arphia sp.	B		
Boopedon gracile Rehn		M	
Chortophaga viridifasciata (Deg.)		M	
Melanoplus bilituratus vulturnus Gurney & Brooks		M	U
Melanoplus bivittatus (Say)	B	M	
Melanoplus differentialis (Thomas)	B	M	
Mermiria maculipennis Bruner	B	M	
Orphulella pelidna (Burmeister)			U
Pseudopomala brachyptera (Scudder)	B		
Schistocerca lineata Scudder	B		
Syrbula admirabilis (Uhler)	B	M	

TABLE 5 (Continued)

Gryllidae			
Miogryllus verticalis (Serv.)		M	
Oecanthus niveus (Deg.)	B	M	U
Mantidae			
Oligonicella scudderi (Saussure)			U
Stagmomantis carolina L.	B	M	
Phasmidae			
Diapheromera velii velii Walsh			U
Tettigoniidae			
Conocephalus strictus (Scudder)	B	M	
Neoconocephalus robustus crepitans (Scudder)	B	M	
Pediodectes nigromarginata (Caudell)		M	U
Scudderia furcata furcata (Brunner)	B		
PSOCOPTERA			
Polypsocidae			
(Genus and species unidentified)	B	M	
Psocidae			
(Genus and species unidentified)	B	M	U
THYSANOPTERA			
Aeolothripidae			
Aeolothrips bicolor Hinds	B	M	U
Stomatothrips flavus Hood	B	M	U
Phlaeothripidae			
Probably *Agrothrips dimidiatus* (Hd.)	B	M	U
Leptogastrothrips sp.	B		U
Leptothrips sp.			U
Thripidae			
Bregmatothrips venustus Hd. or near	B	M	U
Chirothrips sp. nr. *texanus* Andre	B	M	U
Frankliniella fusca (Hinds)	B	M	U
Frankliniella tritici (Fitch)	B	M	U
Microcephalothrips abdominalis (Crawf.)	B	M	U
Plesiothrips sp.	B	M	U
Sericothrips variabilis (Beach) or near	B	M	U