

REVIS ORTHOPTERA STUDY
WITH EMPHASIS ON PRAIRIE ACRIDIDAE

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INTRODUCTION

In 1990 a proposal was approved for the study of Orthoptera at Revis Nature Preserve in Mason County, Illinois. This is the first study of Orthoptera of a central Illinois hill prairie to date.

Project Objectives were to 1) identify the Orthopteran species of Revis 2) their habitat and 3) relative abundance. Also included in the study is 4) comparing the success of sweeping versus netting for each species.

MATERIALS AND METHODS

Numerous trips were made to Revis Prairie in the spring and summer of 1990 and to date in 1991 to collect and observe Orthoptera. Species were visually identified when possible, and netted and killed for identification at home when necessary. Both sweeping and hunting of Orthopterans was performed to collect insects.

RESULTS

Table 1 indicates the species identified at Revis, their abundance and habitat preference. There are three levels of abundance: common; uncommon; and rare. Definitions of these ratings appear below.

Common species: seen by the scores on a single visit, and often multiple individuals were seen simultaneously.

Uncommon species: less than a score seen on a single visit, and rarely were two individuals sighted at once.

Rare species: only a few seen on a visit, sometimes quite localized.

TABLE 1

Species found:

Abundance and Habitat Preference:

Amphitornus coloradus	Uncommon; Loess Prairie
Arphia sulphurea	Uncommon; in all Prairies
Arphia xanthoptera	Rare; Sand Prairie
Camplycantha olivacea	Uncommon; Sand Prairie
Conocephalus strictus	Rare; all soils
Diapheromera femorata	Uncommon; timbered area
Diapheromera vellii	Uncommon; Loess Prairie
Eritettix simplex	Common; all Prairies
Hesperotettix viridis pratensis	Common; Loess Prairies
Melanoplus angustipennis	Rare; Sand Prairie
Melanoplus bivitattus	Uncommon; Loess Prairie
Melanoplus gracilis	Uncommon; all prairies
Melanoplus keeleri luridus	Common; Loess Prairie
Melanoplus mexicanus	Common; Sand Prairie
Mermeria neomexicana	Uncommon; Sand Prairie
Orpulella speciosa	Rare; Loess Prairie
Pardolophora apiculata	Uncommon; all Prairies
Phoetaloites nebrascensis	Uncommon; all Prairies
Scudderia curvicauda	Uncommon; all Prairies
Schistocerca alutacea	Uncommon; Loess Prairie
Spharagemon bolli	Rare; Sand Prairie
Syrbula admirabilis	Uncommon; all Prairies

Objective 4): comparing the success rate of sweeping versus hunting for Orthoptera ran into problems. Unexpected difficulty was encountered identifying species in the field, especially in the genus *Melanoplus*, where male genitalia must often be examined to positively identify species. This made it difficult to perform Objective 4, the success of sweeping versus stalking grasshoppers on a species by species basis. I am presenting some observations here instead of the data originally intended.

Some species are extremely wary and fly at a distance of greater than six feet. These species would likely be overlooked in a sweeping only survey. Other species fly at a couple feet and are readily captured when sweeping. Species like the Walkingsticks (*Diaperomera* sp.) are readily captured by sweeping, whereas they may be easily overlooked when hunting insects.

DISCUSSION

Following are a series of disjointed observations that occurred to me during the study.

- A) Burning greatly enhances the ability to monitor Orthopterans by: 1) improving surveyors visibility; 2) allowing greater velocity of the net; 3) allowing the surveyor easier passage thru the prairie. High net velocity is especially important when capturing grasshoppers, as they are very quick and can even jump back out of a slow moving net.
- B) The absence of *Chortophaga viridifasciata* from Revis is surprising. This widespread spring grasshopper (Helfer 1987, Hebard 1934) occurs in other hill prairies and in dry old fields (personal observation) and would be expected from Revis.
- C) The absence of *Dissosteira carolina* (Carolina Grasshopper), a common species of old fields and dry pastures, is noteworthy. Hebard (1934) says it is "one of the commonest in the state".
- D) An abundance of *Eritettix simplex* is noteworthy as this species is thought to be restricted to the Illinois River Sand Area in Illinois (Hebard 1934). I am unaware of any prior record of this species from loess hill prairie, although it also occurs in the Heckenkamp Prairie south of Chandlerville.
- E) *Diaperomera velli* was captured several times by sweeping, observed in grass once, and discovered attached to my arm another time. This species was recorded only once before from Illinois (Walsh, genotype female, Rock Island, 1864). Hebard considered Walsh's identification "doubtful". The nearest recorded populations are a few localities in NE Missouri and eastern Iowa. The bulk of its distribution is from SW Minnesota thru western Iowa, and western Kansas and Oklahoma. There are curiously few reports from the Flint Hills.
- F) Three rarely encountered species were found in very sandy prairies at Revis, versus one in loess soil, and one rarely found in all prairies. There is also a sand prairie species that I likely failed to identify, because I couldn't get close enough to catch it. This indicates that further effort should be expended in the sand areas of Revis.

Field Records to Date:

April 25, 1990

Partly Sunny high temp. 85-90:

Eritettix simplex caught in all prairies, common.

Pardalophora apiculata seen in B prairie, at least seven individuals.

May 7, 1990

Sunny, temp. 85-90 :

Arphia sulphurea seen in D Prairie.

Pigmy Grasshopper captured in C Prairie

Pardalophora apiculata one seen in C Prairie, several dozen in B Prairie.

Eritettix simplex abundant everywhere.

July 28, 1990

Mostly sunny, temp. mid 80's.

Collected various grasshoppers in A Prairie. *

Collected three *Diapheromera velii* from low prairie.

August 9, 1990

Temp. low 80's

Searched D and C Prairies for Orthoptera.

August , 1990

Searched for grasshoppers.

August , 1990

Searched for grasshoppers

August 25, 1990

Partly cloudy, high low 80's.

Searched in A prairie.

August 29, 1990

Sunny, upper 80's.

Searched in B Prairie.

* Species are listed in field records from the spring, because field identification of the relatively few spring Orthoptera is simple. Summer records indicate the areas collected, and noteworthy events, but do not list the species encountered as field identification of many species is not practical.

Sept. 11, 1990

Partly cloudy, mid 80's.

Searched in D Prairie.

Very wary species encountered that I could not get within 8' of. Not collected.

Sept. 20, 1990

Searched in A Prairie.

Sept. 25, 1990

Searched in B and C Prairies.

Sept. 28, 1990

Searched in A and B Prairies.

April 8, 1991

Sunny.

Pardalophora apiculata seen in A Prairie

Eritettix simplex common everywhere.

Arphia sulphurea, several seen in A Prairie.

April 30, 1991

Pardalophora apiculata nearly a dozen seen in C & D Prairie.

Arphia sulphurea nearly a dozen seen in C & D Prairie.

Eritettix simplex abundant.

Appendix 1

Species name:

Common Name (Helfer 1987):

<i>Amphitornus coloradus</i>	Striped Slant Faced Grasshopper
<i>Arphia sulphurea</i>	Sulphur Winged Grasshopper
<i>Arphia xanthoptera</i>	Autumn Yellow Winged Grasshopper
<i>Camplycantha olivacea</i>	Fuzzy Olive Green Grasshopper
<i>Conocephalus strictus</i>	Rapier Meadow Katydid
<i>Diaperomera femorata</i>	Woodland Walkingstick
<i>Diaperomera velli</i>	Prairie Walkingstick
<i>Eritettix simplex</i>	Velvet-striped Grasshopper
<i>Hesperotettix viridis pratensis</i>	Green Striped Grasshopper
<i>Melanoplus angustipennis</i>	Narrow Winged Spur-throat Grasshopper
<i>Melanoplus bivitattus</i>	Two-striped Grasshopper
<i>Melanoplus gracilis</i>	Graceful Spur-throat Grasshopper
<i>Melanoplus keeleri luridus</i>	Keeler's Spur-throat Grasshopper
<i>Melanoplus mexicanus</i>	Migratory Grasshopper
<i>Mermiria neomexicana</i>	Mermirea Grasshopper
<i>Orphulella speciosa</i>	Green Desert Grasshopper
<i>Pardalophora apiculata</i>	Coral-winged Grasshopper
<i>Phoetaloites nebrascensis</i>	Large Headed Grasshopper
<i>Scudderia curvicauda</i>	Curve-tailed Katydid
<i>Schistocerca alutacea</i>	Leather-colored Bird Grasshopper
<i>Spharagemon bolli</i>	Boll's Grasshopper
<i>Syrbula admirabilis</i>	Brown-winged Slant-faced Grasshopper

Bibliography

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Revis Hill Prairie

Sand or Gravelly Sand

A
collecting
stations