

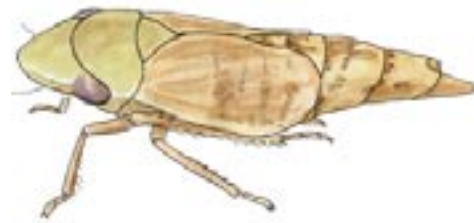
Aflexia rubranura is a specialist on prairie dropseed; but despite being completely flightless it is found on alvars on islands in Lake Huron as well as in eastern prairies from Manitoba to northern Illinois.



Erythroneura carbonata is a specialist on sea-milkwort, a primrose relative that carpets saline depressions.



Memnonia consobrina, found in arid grasslands in western Canada, has subterranean nymphs.



Memnonia consobrina
female



Neohecalus magnificus, found in Canada only in the Red River valley and at Ojibway Prairie in Windsor, Ontario, has very different males and females.



Neohecalus magnificus
female



Stirellus bicolor – in the United States this species has two forms: in spring it is brown and in high summer it is iridescent; but in Canada the two forms may be taken together.



Stirellus bicolor
(spring form)

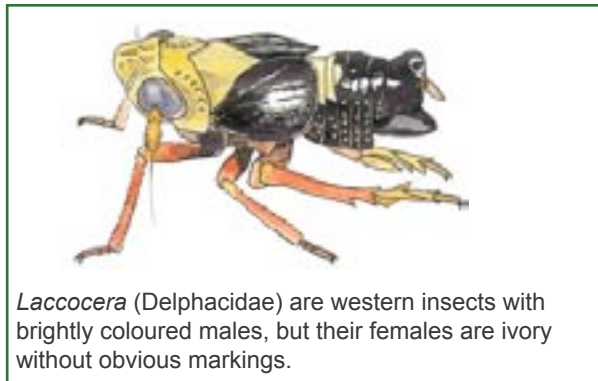


Leafhoppers and their relatives (Homoptera, Auchenorrhyncha) from the Canadian Great Plains

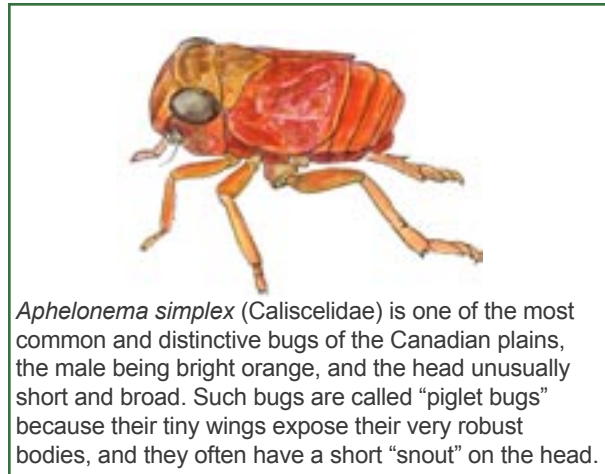
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The Canadian Great Plains are often referred to as “prairies”. This term is French for “meadows” and properly describes only the eastern plains grasslands, particularly those around the southern end of Lake Manitoba or “Lac des Prairies.” There, prairie grasses are lush even in the driest part of the summer, yet seldom if ever attain the height of “tall-grass” prairies farther south. The Auchenorrhyncha fauna or “short-horned bugs” of this region of Manitoba is unique (Hamilton 1999). Just how unique, and how extensive this fauna is, has never been elucidated. Recent sampling suggests that it extends all the way into eastern Saskatchewan! A preliminary analysis of this fauna generates other surprising results. For example, the biodiversity “hot spot” on the Canadian Great Plains appears to be Elbow, Saskatchewan which is at the head of Lake Diefenbaker behind the Gardiner and Qu-Appelle dams.



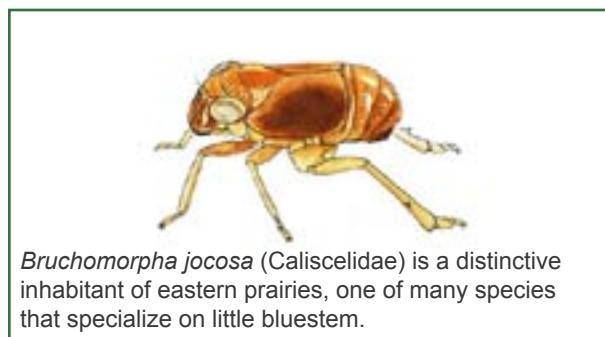
Short-horned bugs include a large number of species endemic to the Great Plains. The following account of the Canadian fauna is presented as a species list. An ongoing analysis of detailed biogeographic patterns and their implications for understanding the ecology of the Great Plains requires a great deal of analysis and will be published as separate papers. The listing presented here gives an overview by grouping the sites by latitude and longitude so that the most obvious distribution patterns



(east vs. west, north vs. south, regional endemism vs. migration from southern localities) can be determined easily.

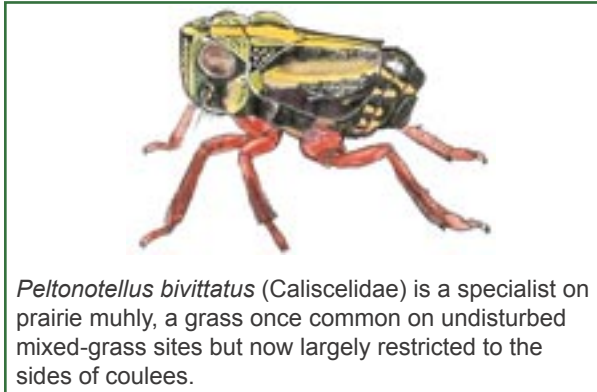
This synthesis is based on nine surveys across the Canadian Great Plains that were made since I was a student and began collecting leafhoppers at Winnipeg in 1965. The initial work was greatly assisted by the catches from mosquito traps maintained at the University of Manitoba and at Glenlea Research Station (Hamilton 1972). This work has been supplemented by studies on other northern grasslands since I first found a “prairie” leafhopper on a heathland near Manitoulin Island, Ontario in 1975.

What, exactly, is an endemic “prairie” bug? It is one that feeds only on a grassland-associated plant



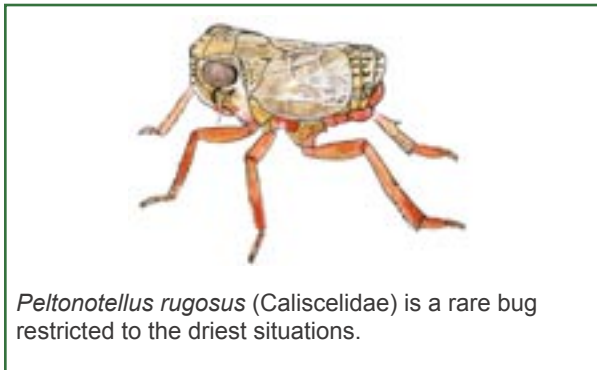


or is rarely, if ever, taken far from a native prairie. The definition must be expanded somewhat to include the insects feeding on plants that are largely associated with the prairies, but by virtue of their preference for moist habitats, find their way along water courses a considerable distance from the Great Plains (sandbar or “wolf” willow and certain diminutive spike-rushes are good examples).



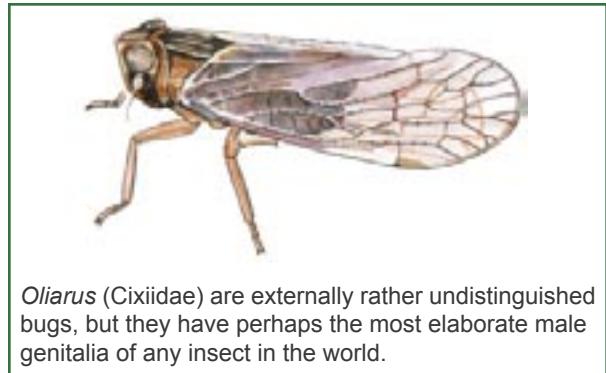
Peltonotellus bivittatus (Caliscelidae) is a specialist on prairie muhly, a grass once common on undisturbed mixed-grass sites but now largely restricted to the sides of coulees.

Others that are not confined to the Great Plains are found in areas that were probably once connected to the prairies, but as world temperatures declined over the last 7000 years have become isolated in forested regions. They now inhabit sheltered valleys in the mountains as far north as the Yukon, or patches of sandy soils in boreal forest, or limestone plains (alvars) in the vicinity of the Great Lakes, and even on saline or sandy areas of the Atlantic coast.



Peltonotellus rugosus (Caliscelidae) is a rare bug restricted to the driest situations.

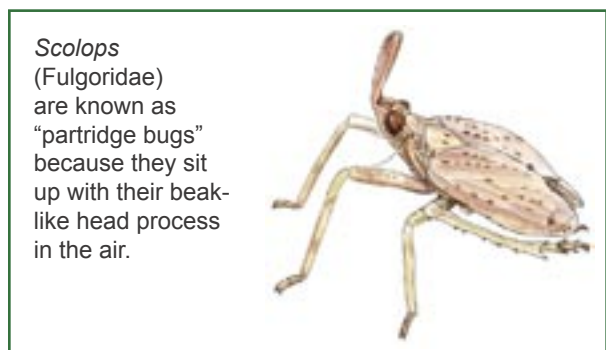
This summary of what we now know about the Auchenorrhynch fauna of the Canadian prairies is based on more than 340 sites (Table 1). Samples taken within a 5 km radius of each other are “lumped” to make data presentation simpler. These sites are then grouped according to one-degree quadrats (Fig. 1). In Alberta (AB) and Saskatchewan (SK) there are an average of 4-5 sites per quadrat; in Manitoba



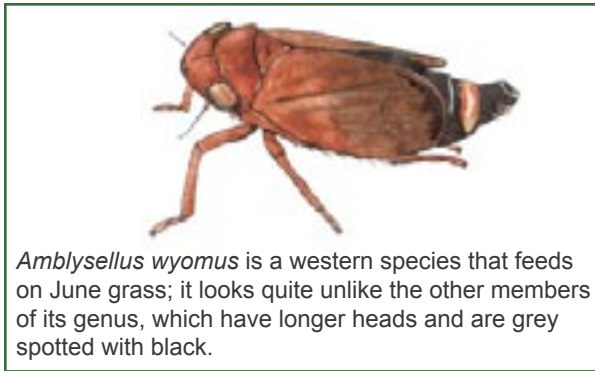
Oliarus (Cixiidae) are externally rather undistinguished bugs, but they have perhaps the most elaborate male genitalia of any insect in the world.

(MB), where the prairie is much more localized and fragmented, there are 6.7 sites per quadrat. The maximum number is 17 sites in quadrat 2 of southwestern Manitoba (between 49°N 100°W and 50°N 101°W) which has been a favourite collecting area for many entomologists.

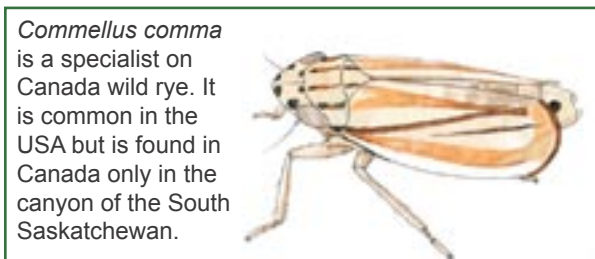
This information is taken largely from material in the Canadian National Collection of insects, supplemented by data from DeLong (1931), Doering (1940), Strickland (1953), Medler (1958), Nielson (1965), Kramer (1967), and Hamilton (1972). The results of this compilation indicate that there are at least 226 prairie-endemic Auchenorrhyncha, of which 168 are leafhoppers (Cicadellidae), 47 are planthoppers (Fulgoroidea), 7 are treehoppers (Membracidae), 3 are cicadas (Cicadidae) and 1 is a spittlebug (Cercopidae). Almost all the planthoppers are Delphacidae, but these are rare compared to the Caliscelidae or “piglet bugs,” with 6 species of *Bruchomorpha* plus one of *Aphelonema* and two of *Peltonotellus*, most of which are common and widespread on the plains. The remaining families of Fulgoroidea represented in the endemic fauna are Fulgoridae (or Dictyopharidae) with one species of “partridge-bug” *Scolops*, and Cixiidae with one species each in the genera *Myndus* and *Oliarus*.



Scolops (Fulgoridae) are known as “partridge bugs” because they sit up with their beak-like head process in the air.



The species are grouped roughly by overall distribution. Fifty-five species are found widely across the Great Plains; 32 of these also occur in other Canadian grasslands, either along the Atlantic coast, or in alvars and relict grasslands of Ontario (ON), intermontane grasslands of British Columbia (BC) and the Yukon Territories (YT), or in the Peace River District of Alberta (Table 2). These widespread insects are therefore characteristic of the Northern Grasslands Biome. When these are known only (or primarily) from the Canadian Great Plains, they are indicated as “endemic.”



Species characteristic of only parts of the Great Plains can be divided into two biotic provinces, 34 species characteristic of eastern grasslands or “true prairie” and 39 that are widespread on the western plains or “Canadian steppe” (Table 3), with the remaining species divided between 40 on moist steppe or “aspen parkland” and 58 on dry steppe or “short-grass prairie” (Table 4). The intervening area or “mixed grass prairie” appears to have no characteristic bugs.

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Acknowledgments

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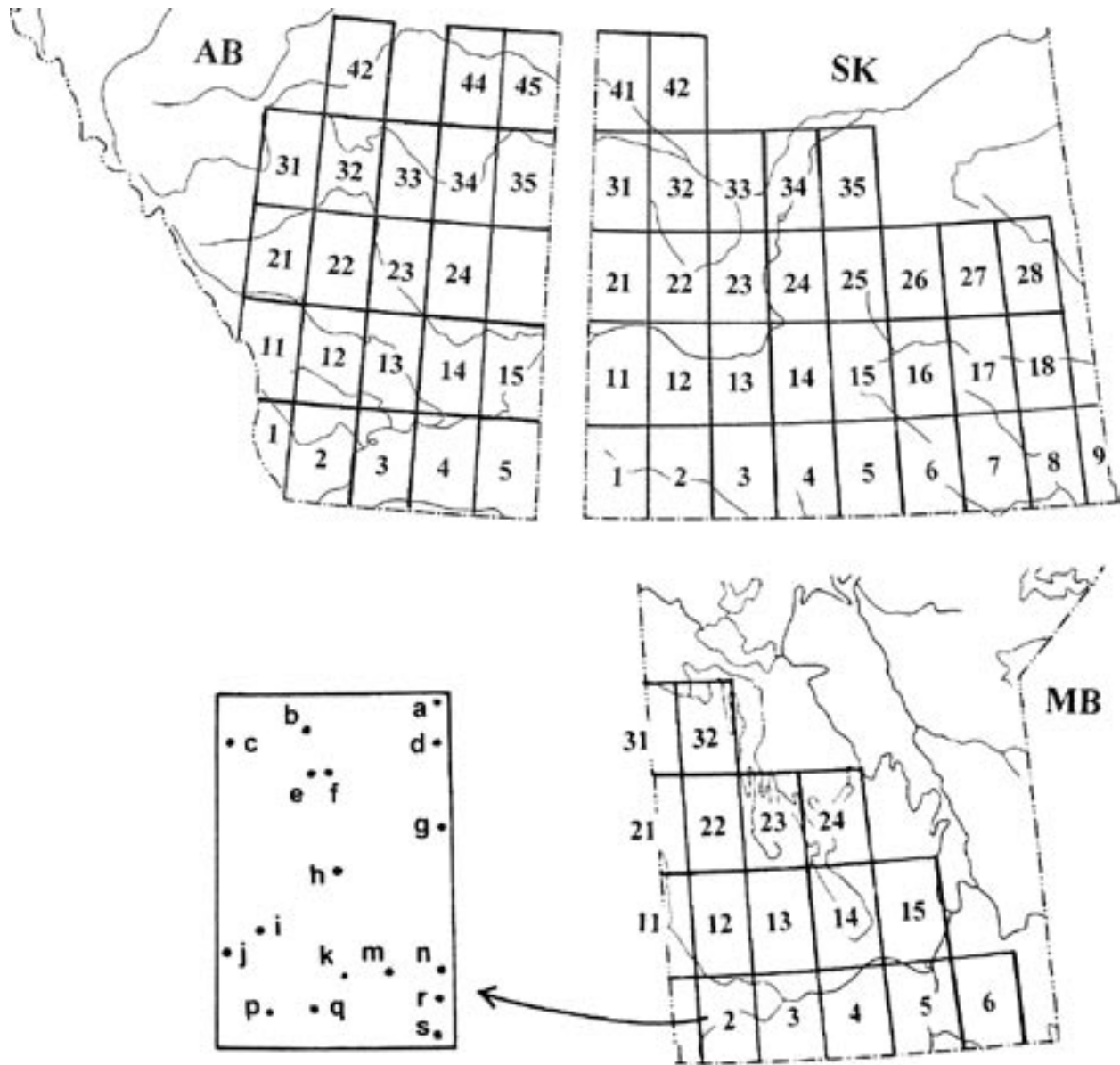


Figure 1. Distribution of sampled sites on the Canadian Great Plains by one-degree quadrats, with quadrats for each province numbered from west to east, beginning with southern row. Individual sites are listed north to south and west to east within each quadrat, as shown in enlarged view of quadrat 2 of Manitoba (lower left).



Table 1. Sites sampled on the Great Plains of Canada (conserved sites in boldface), numbered and lettered as in Fig. 1.

Alberta (AB)

1a Porcupine Hills (44 km N Lundbreck), *b* Frank, *c* Bellevue
2a Granum, *b* **Smashed-in-Head Buffalo Jump**, *c* Fort McLeod, *d* Cowley, *e* Pincher Ck, *f* Brocket, *g* Glenwood, *h* **Waterton**
3a Iron Springs, *b* Taber 15 km N, *c* Taber, *d* Chin, *e* Diamond City, *f* Lethbridge, *g* Welling, *h* Stirling, *i* Magrath, *j* Raymond, *k* New Dayton, *m* Del Bonito 10 km NW (**Ross Lake**), *n* Milk River, *p* Kimball, *q* Del Bonito 9 km E
4a Purple Spgs 5 km W, *b* Burdett, *c* Whitla, *d* Foremost, *e* Clarinda, *f* Milk River 10 km E, *g* Coutts, *h* **Writing-on-Stone**, *i* Aden
5a Irvine, *b* Walsh, *c* **Elkwater**, *d* Orion, *e* Manyberries, *f* Orion 8-10 km S, *g* Onefour, *h* **Orion 40 km S**, *i* Manyberries 45 km S
11a Hartell, *b* Pekisko 5 km W, *c* Longview 22 km S, *d* Longview 30 km S
12a Gleichen, *b* Nanton
13a Bassano, *b* Scandia, *c* Vauxhall
14a Steveville, *b* Duchess 13 mi N, *c* Brooks, *d* Tilley, *e* Tilley 5 mi E
15a Empress, *b* Suffield CFB (**Amiens**), *c* Medicine Hat
21a Olds, *b* Didsbury, *c* Ghost Dam, *d* Calgary 9 mi W (Chestermere Lake), *e* Calgary
22a Beiseker 5 mi E
23a Morrin, *b* Delia, *c* Michichi 4 mi N, *d* Drummheller, *e* Rosedale, *f* Rosebud, *g* Hussar
24a Sheerness 10 mi NW, *b* Sunnynook 12 mi SW
31a Spruce View
32a Wetaskiwin, *b* Battle River 1st- 3rd crossing, *c* Lacombe, *d* Red Deer
33a Nevis, *b* Stettler
34a Castor
35a Wainwright, *b* Czar, *c* Provost
42a Edmonton, *b* Devon
44a Ranfurly, *b* Mannville
45a Vermilion, *b* Islay 4 mi S, *c* Blackfoot

Saskatchewan (SK)
1a **Cypress Hills**
2a Gull Lk 14 mi S, *b* Illerbrun 2 mi S, *c* Simmie 6-7 mi SW, *d* Scotsguard 3 mi N, *e* Dollard, *f* Eastend
3a Cadillac 9-11 mi S, *b* Val Marie (**Grasslands N Pk**)
4a Assiniboia, *b* Limerick, *c* Wood Mountain, *d* Lisieux, *e* Killdeer
5a Mossbank, *b* Ardill, *c* Willows, *d* Readlyn 5 mi W, *e* Verwood, *f* St. Victor, *g* Willow Bunch, *h* Rockglen, *i* Fife Lake
6a Pangman, *b* Minton

7a Weyburn, *b* Stoughton 5 km W, *c* Torquay
8a Kenosee, *b* Kisbey 8 km W, *c* Kisbey 5 km E, *d* Arcola, *e* Glen Ewen, *f* Estevan, *g* Roch Percée, *h* North Portal
9a Maryfield, *b* Redvers 15 km N, *c* Wauchope 4 km E
11a Gascoign, *b* Fox Valley, *c* Cliftonville, *d* Maple Creek 10 mi NW, *e* Piapot and 2 mi NW
12a Lacedena, *b* **Great Sand Hills** (Hazlet), *c* Hazlet 6 mi E, *d* Swift Current 10 mi W, *e* Webb, *f* Gull Lk 8 mi N, *g* Tompkins, *h* Gull Lake
13a **Matador Prairie**, *b* **Saskatchewan Ldg** (Stewart Valley 9 mi W), *c* Waldeck, *d* Swift Current, *e* Simmie 5 mi NE
14a Riverhurst, *b* Tugaska, *c* Eyebrow 3 mi SE, *d* Chaplin, *e* Bateman
15a Aylesbury, *b* Brownlee, *c* Moose Jaw 5 mi S, *d* Crestwynd 4 mi N
16a Craven 2 km NW, *b* Lumsden, *c* Regina, *d* Davin
17a Duff 2 km E, *b* Fort Qu'appelle (Lebret), *c* Katepwa Bch, *d* Qu'Appelle, *e* Indian Head, *f* Qu'Appelle 7 mi S
18a Melville, *b* Duff 8 km E, *c* Stockholm and 5 km W, *d* Esterhazy, *e* Round Lake 6 km E Birds Point, *f* B roadview, *g* Pipestone Creek, *h* Pipestone Creek 6 km SE St. Hubert, *i* Peebles, *j* Kennedy
21a Marengo, *b* Kindersley 13 km W
22a Plato
23a Harris, *b* Rosetown, *c* Dinsmore
24a Saskatoon 14 km SE, *b* Beaver Creek, *c* **Pike Lake**, *d* Dundurn, *e* Dundurn 5 mi S (Rudy), *f* Hanley 3 mi SE, *g* Bladworth, *h* Davidson 11 mi W, *i* Elbow, *j* Elbow 8 mi SE (**Douglas Prov. Park**)
25a Viscount 11 km E, *b* Imperial, *c* Imperial 11-18 km E (**Last Mountain WMA**), *d* Davidson
26a Dafoe, *b* Kandahar
27a Foam Lake, *b* Ituna 3 km N
28a Canora, *b* Willowbrook 12 km E, *c* Yorkton, *d* Rokeby, *e* Crescent Lake
31a Neilburg, *b* Cut Knife, *e* Rutland
32a Battleford, *b* Denholm
33a Redberry, *b* Radisson, *c* Borden, *d* Ceepee, *e* Asquith, *f* Biggar 16 mi N
34a Blaine Lake, *b* Duck Lake, *c* Rosthern, *d* Fish Creek, *e* Hepburn, *f* Vonda, *g* Martensville, *h* Saskatoon 3 mi NW, *i* Saskatoon 4 mi NE, *j* Saskatoon
35a Dana
41a Tangleflags, *b* Lloydminster 4 mi SE, *c* Marshall 3 mi NW, *d* Lashburn 3.5 mi E, *e* Maidstone

42a Cochin

Manitoba (MB)

2a Brandon 5-7 mi N, *b* Oak Lake 11 km N, *c* Virden, *d* Brandon, *e* Oak Lake, *f* Griswold 4 km W, *g* Brandon 15 mi S (Carroll), *h* Hartney, *i* Napinka, *j* Melita, *k* Deloraine, *m* Whitewater Lk, *n* Boissevain, *p* Waskada, *q* Horton, *r* Goodlands, *s* **Turtle Mountain Prov. Park**
3a Onah, *b* Carberry, *c* Melbourne, *d* Shilo 5 mi SW, *e* Carberry 7 mi S, *f* Glenboro 13 mi N (**Bald Head Hills**), *g* Glenboro 14-18 km N, *h* Rounthwaite, *i* Treesbank (Aweme), *j* Stockton MB 2 mi W, *k* Glenboro MB and 5 km N, *m* Ninette, *n* Baldur, *p* Ninga, *q* Rock Lake
4a MacGregor 3 mi E, *b* Austin MB 16 km S, *c* La Riviere, *d* Pilot Mound, *e* Crystal City, *f* Morden, *g* Morden 5 km W, *h* Morden 6 km S, *i* Snowflake
5a St. Fr-Xavier, *b* Winnipeg (St. Charles Rifle Range), *c* Winnipeg (airport, **Living Prairie Museum**), *d* Transcona, *e* Winnipeg (S), *f* Ft Whyte, *g* Glenlea, *h* Niverville, *i* Myrtle, *j* Morris, *k* Arnaud, *m* Altona (Neuenburg 2 km W), *n* Dominion City, *p* Emerson
6a Steinbach 9 km S, *b* Marchand 2 mi W, *c* **Marchand 6 mi E**, *d* **Stuartburn 8 km ENE**, *e* **Tolstoi 2-6 km E**, *f* **Gardenton and 3-5 km W**
11a Russell, *b* Binscarth, *c* Birtle
12a Rossburn, *b* Solsgirth, *c* Kelloe, *d* Shoal Lake, *e* Strathclair, *f* Rapid City 6 mi E, *g* Oakner
13a St. Amelie, *b* McCreary 3 km E, *c* Minnedosa and 5 mi N, *d* Forrest Station 9 mi N
14a Mulvihill 4 km N, *b* Oak Point 3 mi S, *c* Gladstone, *d* Woodside 5 km E, *e* Westbourne, *f* High Bluff 3 mi S
15a Fraserwood, *b* Komarno, *c* St. Laurent 13 km E, *d* St. Laurent 8 km S, *e* Lake Francis 3 mi NW, *f* **St. Ambrose 7-9 km E**, *g* Woodlands and 3 mi SE, *h* **Stony Mountain 12 km N**, *i* Grosse Isle
21a Roblin
22a Pulp River 13 km E, *b* Ethelbert, *c* Ashville 16 km N (**Crocus Hill**), *d* **Ashville 11 km N**, *e* Ashville, *f* Dauphin, *g* Keld
23a Winnipegosis 1 km NW, *b* Toutes Aides, *c* Rorketon 6 km SE, *d* Ochre River 4 km N
24a Moosehorn, *b* Wapah 7-10 km E, *c* Camper 2.5 km SSE
31a Mafeking
32a Cowan



Table 2. "Short-horned" bug fauna characteristic of the Northern Grasslands biome including much of the Great Plains of Canada, with distribution (codes as in Table 1).

Leafhoppers		
Amblysellus acuerus DeLong & Hamilton: SK 3a, 5f; MB 15d, 24b.	Flexamia serrata Beamer & Tuthill: BC; AB 35a, 44a; SK 8abf, 18a, 24fi, 25c, 27b, 28de, 31a, 34gi; MB 4g, 6ef, 12c, 14b-d, 15cdghi, 22a, 23c.	Mesamia nigradorsum (Ball): AB 21e, 45c; SK 4cd, 24d, 34i; MB 3ip, 5hp, 6e, 15di; ON.
Athysanella attenuata Baker: BC; AB 3f, 5ce-h, 13c, 14b, 15a-c, 22a, 23ae, 32a, 42b; SK 2a, 3ab, 5d, 8h, 11bd, 12be, 13ad, 14a, 15b-d, 16b, 17d, 18b, 21b, 24hi, 25d, 28d, 33bf, 34i-km; MB 3km, 5c, 14d.	Gypona contana DeLong: AB 2b, 3fn, 5cg, 14b, 15c, 21e, 22a, 23dg, 33b; SK 2f, 3b, 6b, 8f, 9a, 11e, 12bg, 13d, 17c, 24bcdi, 28b, 32b, 33e, 34g-j; MB 2a, 3in, 4gi, 5bdehp, 15dfi.	Mocuellus americanus Emeljanov: AB Peace R District, 45a; SK 3b, 5b, 8b, 17e, 18ch, 25c, 28b, 34bij, 42a; MB 2df, 3k, 4b, 12c, 14a, 15cg-i, 22f, 23cd, 24bc; ON.
Athysanella kadokana Knull: AB 5g, 15a; SK 5bd, 24fi, 25c, 26ab; MB 3j, 12c, 14d, 15gh.	Hebecephalus occidentalis Beamer & Tuthill: AB 3fq, 14ce, 15a-c, 21e, 22a, 23f, 24ab, 42b, 44b; SK 5de, 8bch, 11e, 13d, 15cd, 17bde, 21b, 24h-j, 25ad, 28bde, 32b, 33c, 34gj, 42a; MB 2bf, 3c, 4a, 5e, 12c, 14d, 15i, 23d, 24c.	Paraphlepsius continuus (DeLong): AB 33b, 42a; SK 31b; MB 15e; ON.
Athysanella secunda Blocker & Wesley: SK 24f, 25c, 34gi; MB 14b, 15d. Endemic sp.	Hebecephalus truncatus Beamer & Tuthill: YT; BC; AB 3m, 15b, 23a; SK 24c, 34j; MB 2dr; 5e.	Paraphlepsius lascivius (Ball): YT; BC; AB Peace R District, 3c, 14c, 15b, 23d, 33b; SK 3b, 4b-d, 5gh, 15a, 21a, 23b, 24cd, 26b, 33b, 34cj; MB 4af, 5ef, 15i.
Athysanella terebrans Gillette & Baker: AB 5fhi, 15ab, 35a; SK 3b, 8f, 11e, 18e, 24c, 33c; MB 3cij, 5e.	Hecalus viridis (Uhler): AB 2b, 3bcfmq, 4adf, 5abe-h, 13b, 14a, 15a-c, 23df, 35a; SK 1a, 3ab, 4a, 5g, 11e, 12h, 15c, 21b, 24i, 25c, 34j; MB 3bhim, 5cip, 6e, 13d, 14d; ON.	Paraphlepsius solidaginis (Walker): AB 3f, 5e, 15c, 33b, 35a; SK 4d, 5gh, 6b, 13d, 28d, 31ac, 34i; MB 3im, 5n, 6e, 12dg, 14d, 15di; Atlantic coast.
Attenuipyga minor (Osborn): AB 3b, 4abf, 5afh, 13b, 15bc, 21ce, 23a; SK 2bc, 3ab, 12bf, 13e, 18bce, 22a, 24aci, 25c, 33a, 34j; MB 3bin, 4af, 5dimp, 12f, 13b, 14bcd.	Idiocerus freytagi Hamilton: BC; AB Peace R District, 3f, 5ce, 15c; SK 13b, 16b, 17bd, 24j, 32a, 33d, 34ij; MB 2a, 4eg, 5e, 12bd; ON.	Paraphlepsius turpiculus (Ball): AB 35a; SK 4c, 24i; MB 2deh, 3i, 4f, 11a, 22a; ON.
Auridius sandaraca Hamilton: YT; AB 42b; MB 3c, 6a; ON.	Idiocerus raphus Freytag: BC; AB 3f, 5ce, 15c, 23d; SK 5a, 13b, 17b, 24j, 32a, 33d, 34j; MB 2ar, 3di, 4e-g, 5eg, 12b, 14f, 31a; ON.	Pendarus magnus (Osborn & Ball): AB 15b; SK 9c, 12b, 18bc, 24i, 28d, 34j; MB 4g, 6e, 14b, 15di.
Ceratagallia viator Hamilton: AB 1a, 2h, 3f, 5c, 11a-c, 13b, 14a, 15bc, 22a, 23d, 24a, 33b, 34a, 35a, 42a; SK 2a-d, 3ab, 5bd, 7a, 8bf, 9bc, 13e, 15c, 17a, 18cehi, 24ci, 27b, 28e, 31b, 34j; MB 2d, 3bcimn, 4eg, 5bcdjp, 6ef, 12c, 13b, 14c, 22cf, 23a-d, 31a, 32a.	Laevicephalus poudris Tuthill: AB 2h, 34a, 35a, 44a; SK 2b, 18a, 24fi, 31ac, 34gi, 35a; MB 6ef, 13d, 14b-d, 15cdf-i, 22f.	Prairiana cinerea (Uhler): YT; AB 1b, 2h, 3fq, 4i, 5ace-h, 15bc, 21e, 23acde, 33b; SK 2b, 3ab, 4c, 5acd, 8a, 13e, 15c, 18f, 24ai, 25c, 33a, 34gi; MB 2c, 3beim, 4f, 5abe, 6e, 14b, 21a.
Cicadula longiseta (Van Duzee): YT; BC; AB Peace R District, 12b, 21b, 22a, 33b, 44a; SK 8b, 21c, 31a, 33b, 34ag, 41b; MB 2a, 22a.	Laevicephalus saskatchewanensis Hamilton & Ross: SK 5b, 12e, 18b, 24h, 28d, 33b, 35a, 41b; MB 5c, 12c, 14bd. Endemic sp.	Prairiana kansana (Ball): AB 15b; SK 2c, 3b; MB 3i, 4g, 5b, 6e, 15b, 24c; ON.
Commellus sexvittatus (Van Duzee): YT; BC; AB Peace R District, 5begh, 12a, 14a, 15a-c, 21e, 23de, 42b; SK 2b-d, 3b, 5c, 6a, 7a, 8h, 12beh, 13ae, 15c, 24i, 28d, 34j; MB 2hj, 4d, 5c, 11a, 15b, 32a.	Limotettix symphoricarpae (Ball): MB 2h, 5e. Limotettix uneolus (Ball): YT; BC; AB 3f, 5c, 14c, 15bc, 22a, 33b; SK 2e, 3b, 5dg, 17b, 24gi, 33be, 34ej; MB 2an, 3i, 4df, 5e.	Psammotettix knullae Greene: YT; BC; AB 5e, 14c, 15bc, 22a, 44a; SK 2e, 4a, 8b, 13d, 24di, 32b, 33b, 34acj, 41e; MB 2d, 4b, 13b, 14c, 22a, 23acd, 24b, 31a.
Deltocephalus serpentinus Hamilton & Ross: AB 21d, 23d, 33b; SK 3b, 5d, 8b, 11d, 17bd, 18b, 24fhi, 28de, 34f, 41c; MB 12d, 14d, 24b, 31a; coast of James Bay, ON.	Limotettix utahns (Lawson): BC; AB 42a; SK 15d, 17f, 24i, 31b, 34j; MB 4f, 5efg.	Texananus marmor (Sanders & DeLong): AB 23d, 33b, 34a, 44b, 45a; SK 18b, 23a, 24bi, 34bj; MB 3abeij, 11a; ON.
Destria crocea (Beirne): SK 8g 14e, 24fi, 31a, 34i; MB 3i, 4f-h, 5bce, 15dhi; Atlantic coast.	Lonatura salsura (Ball): BC; AB 3c, 14a, 15ab, 33b, 45bc; SK 5bdg, 8b, 18bc, 24fhi, 25c, 33b, 34a, 41b; MB 2m, 6e, 14d, 15di, 23ab, 31a.	Xerophloea zionis Lawson: BC; AB 15c; SK 2b-d, 3a, 13e; MB 2p, 3i, 5e.
Driotura robusta Osborn & Ball: AB 5h, 15b; SK 3ab, 8f, 18e, 26b, 28d; MB 2jkr, 3beg.	Lonatura teretis Beamer: AB 32c; SK 18eh, 24fi, 27b, 34i; MB 15di.	Other bugs
Erythroneura carbonata McAtee: AB 45b; SK 8c, 34j; MB 13b, 23a.	Macropsis feminis Hamilton: AB 2c, 23d; SK 18d, 33d, 34j; MB 2e, 3bi, 4g, 5e, 6b, 12bf, 13c.	Aphelonema simplex Uhler: AB 3c, 5g, 35a; SK 5g, 8c, 14e, 18ac, 24i, 26b, 28de, 31c, 34ij; MB 2nq, 4d, 5bdi, 6e, 12c, 13b, 14b-e, 15dghi, 22af.
Euscelis maculipennis DeLong & Davidson: BC; AB 3f, 5cg, 15b, 35a; SK 3b, 5g, 16b; MB 4f, 5e.	Macropsis rufescens Hamilton: AB 5e, 15c, 23d; SK 4c, 16b, 33d, 34j; MB 2d, 3b, 5e.	Bruchomorpha beameri Doering: BC; AB Peace R District, 2bh, 5ceg, 14b, 22a, 23cdf, 24ab, 33b, 35ac, 44b; SK 1a, 2b, 3ab, 5bdeg, 8cf, 11ae, 12b, 13bde, 15b-d, 17bf, 18a-c, 24bci, 25c, 28bd, 31ab, 32ab, 33bcf, 34bgj; MB 2gn, 3bdei, 4b, 5b.
Extrusanus oryssus Hamilton: AB Peace R District, 3f, 5cgh, 11b, 15a-c, 23d, 32d, 35a, 42b; SK 1a, 2bc, 3ab, 4c, 5cg, 6a, 8a, 13e, 16b, 18g, 21b, 24ai, 25c, 28ac, 31ac, 33a, 34j; MB 2iqs, 3bimnq, 4g, 5b-ep 6aef, 14bd, 15cdhi, 21a, 22e, 24b, 31a.	Macropsis rufocephala Osborn: AB 21b, 23d, 17b, 24i, 27a, 32a, 33d, 34ij; MB 2s, 3i, 4ag, 5e, 12b, 13c; ON.	Caenodelphax nigriscutellata Beamer: AB 5fi, 13b, 15b; MB 3g, 5b; ON.
Flexamia decora Beamer & Tuthill: AB Peace R District, 2h, 12a, 15b, 21e, 35a; SK 2bc, 3b, 5h, 8a, 11d, 13a, 18a, 24fi, 28d, 31ac, 34gij, 41a; MB 6e, 14bd, 15cdfhi, 24bc.	Memnonia anthalopus Hamilton: AB 35a; SK 3b, 24i, 25c, 31a, 34j; MB 6ef, 14bd, 15cdhi, 24b.	Cixius cultus (Ball): AB Peace R District, 3cf-jn, 5ceg, 14cd, 15a-c, 23g; SK 1a, 3b, 5i, 8a, 13d, 24i, 34j.
	Mesamia ludoviciana Ball: AB Peace R District, 2b, 3cf, 15b, 23d, 34a; SK 2c, 3b, 8f, 13d, 18c, 24bi, 25c, 34gj; MB 15i.	Delphacodes sp.nov. A: AB Peace R District, 4f; SK 24i, 26b, 34j; MB 14b.
		Pissonotus delicatus Van Duzee: BC; AB 3cf, 14acd, 15ac, 23d; SK 5g, 8b, 11a, 13d, 16bc, 24i, 31a, 32b, 34gi; MB 2jm, 5i, 11ab, 14d, 23ab.
		Publilia brunnea (Ball): AB 3f, 4a, 5acde, 13b, 15abc; SK 11a, 12bh, 13bd, 14d, 16a, 18ce, 24bci, 25b, 28ab, 33e; MB 2b, 4g, 5bi, 15a, 22cd, 23c, 24a; ON.



Table 3. "Short-horned" bug fauna characteristic of two major subdivisions (biotic provinces) of the Great Plains of Canada, with distribution (codes as in Table 1).

BIOTIC PROVINCE: PRAIRIES

Leafhoppers

Aflexia rubranura (DeLong): MB 5b, 14b, 15d/hi, 24b; ON.
Athysanella incongrua Baker: MB 3g, 15g.
Attenuipyga joyceae Hamilton: MB 14b, 15di. Endemic sp.
Commellus colon (Osborn & Ball): SK 18eh; MB 3di, 5bc, 11a, 15di.
Commellus comma (Van Duzee): AB 15b; SK 24i.
Cuerna fenestella Hamilton: MB 3im, 5b, 15i, 24c; ON.
Flexamia atlantica (DeLong): SK 18e; MB 15g.
Flexamia delongi Ross & Cooley: SK 18e; MB 3i, 14bd, 15bcdghi, 24c; ON.
Flexamia graminea (DeLong): SK 9c, 18ch; MB 2f, 4g, 13b, 23c.
Flexamia inflata (Osborn & Ball): BC; MB 5d, 6ef, 13b, 14d, 15h, 22f, 23a, 32a; ON.
Flexamia prairiana DeLong: MB 4g, 5b-d, 6ef, 14c, 15dgi, 22bc, 24b; ON.
Flexamia reflexa (Osborn & Ball): MB 14d, 22f; ON.
Flexamia sp.nov.: MB 14c. Endemic sp.
Graminella ampla (Beamer): SK 8g; MB 5c.
Laevicephalus unicoloratus (Gillette & Baker): SK 18ceh, 28b; MB 2f, 3k, 4g, 5dp, 6ad-f, 13b, 14b-d, 15cdf-i, 23cd, 24c; ON.
Laevicephalus vannus Knull: MB 6b, 23a?
Latalus latidens (Sanders & DeLong): MB 2d.
Limotettix urmura Hamilton: SK 5g; MB 5eg, 6e, 15i; ON.
Macrosteles flavalis Hamilton: 5 MB 2d, 3d, 4f, 5eg. Endemic sp.
Macrosteles sp.nov.: MB 24b. Endemic sp.
Memmonia panzeri Hamilton: MB 5bp, 6ef, 14b, 15dhi; ON.
Neohecalus magnificus Hamilton: MB 5b-eik, 6e, 14b, 15di; ON.
Paraphlepsius hemicolor (Sanders & DeLong): MB 4f, 5ej.
Paraphlepsius lobatus (Osborn): SK 9b, 17a, 18ceh; MB 4g, 12c, 15i, 22cd; ON.
Paraphlepsius umbrosus (Sanders & DeLong): SK 18ce; MB 3b, 4g, 5e; ON.
Polyamia caperata Ball: SK 18ceh; MB 4gh, 5bc, 13b, 14c, 15di, 22d; ON.
Stirellus bicolor (Van D): SK 18c, 28b; MB 2f, 4g, 5bp, 6e, 14bd, 15cdghi, 23c, 24c.

Other bugs

Bruchomorpha dorsata Fitch: SK 18eh; MB 4g, 5bc, 6ef, 15cdf; ON.
Bruchomorpha jocosa Stål: SK 8cf, 18ceh, 28ab; MB 3c, 5p, 6e, 13b, 15d/hi, 22c, 23c.
Bruchomorpha keidensia Doering: AB Peace R District; MB 6e, 15bdi, 22dfg, 31a. Endemic sp.
Bruchomorpha pallidipes Stål: SK 18c; MB 3a, 23c.
Delphacodes angulata Beamer: MB 4g.
Delphacodes parvula (Ball): MB 5b-dp, 6ae,

14bd, 15dghi, 22cd, 24c, 32a; ON.
Delphacodes sp.nov. B: MB 5c.
Megamelus metzaria Crawford: MB 2g, 5b, 6e, 15h, 23a; ON; Atlantic coast.
Megamelanus sp.nov.: MB 14d.
Prokelisia crocea (Van Duzee): SK 16a, 17d; MB 4gh, 5bcd/fim, 6e, 13a, 14a, 15f, 23a; Atlantic coast.
Lepyronia gibbosa Ball: 7 SK 8g; MB 3abd/hi, 4b; Atlantic coast [MA].
Tortistilus minutus Cald.: 3 MB 3b, 4g, 14b.

BIOTIC PROVINCE: STEPPE

Leafhoppers

Acinopterus viridis Van Duzee: BC; AB 14be, 23d, 24b, 33b, 34a; SK 3b, 5e, 13a, 23bc, 24ej, 34g.
Amblysellus valens (Bm. & Tut.): AB 5c, 23f, 24a, Peace R District; SK 2b, 3ab, 34j.
Athysanella bifida Ball & Beamer: AB 3bfq, 5cegh, 13b, 14a-ce, 15c, 22a, 23de, 35a, 45c; SK 2a-d, 3ab, 4c, 8abf/h, 11b, 12h, 13ae, 15bcd, 18g, 24ci, 25c, 34gj; MB 2q, 3bj.
Athysanella occidentalis Baker: AB 3fq, 4a, 5ce, 12a, 15ab; SK 2a, 3b, 11b 12h, 15c, 24ci, 25d, 34j.
Athysanella robusta Baker: YT; BC; AB Peace R District, 3mq, 4a, 5aceghi, 14a, 15a-c, 21e, 23e, 32a; SK 1a, 2a-d, 3ab, 6a, 7a, 8h, 11a, 12h, 13ae, 24acdi, 25c, 33a, 34ff; MB 3i.
Auridium auratus (Gillette & Baker): BC; AB Peace R District, 1c, 4ai, 5e, 12a, 14c, 15ab, 21de, 23c, 31a, 33b, 35a; SK 3ab, 11d, 12e, 13a, 24fi, 32a, 33a, 34j.
Auridium ordinatus (Ball): YT; BC; AB Peace R District, 2b, 3j, 12a, 15b, 21e, 23f, 32b, 42a; SK 2bd, 3b, 5h, 8ah, 11d, 12de, 13ae, 15c, 17e, 18g, 24i, 25c, 31c, 33f, 34j; MB 2q, 6c.
Ceratagallia semiarida Hamilton: AB 3f, 5c, 13b, 14c, 15c, 23bd, 35b; SK 3b, 11a, 12a, 15c, 24bfi, 34j; MB 3i.
Deltoccephalus lineatifrons Oman: BC; AB 13c, 15b; MB 2h.
Empoasca medora DeLong: AB 3e, 5ab, 14c, 15a-c, 34a, 35a; SK 3b, 24i; MB 11a.
Flexamia abbreviata (Osborn & Ball): AB 2b, 3f, 12a, 14ab, 15bc, 21e, 23df, 24b, 35a; SK 2b, 3b, 5cf, 8f, 11d, 13ae, 15cd, 18eh, 24i, 25c, 34j; MB 2j, 3cedegi, 13c.
Flexamia flexulosa (Ball): AB 2b, 3f, 5ceg, 14a-c, 15bc, 22a, 24b; SK 2b, 3ab, 8fh, 11d, 13ae, 24i, 34j; MB 2q, 22c.
Flexamia grammica (Ball): AB 2b, 5ei, 15a, 23d, 35a; SK 11e, 12b, 13b, 24di, 34j.
Flexamia stylata (Ball): AB 2b, 5a, 15b, 21e; SK 3b, 5g, 13a, 18ehj, 24i; MB 2jq.
Frigartus frigidus (Ball): AB 15b, 22a, 34a, 35a; SK 2bc, 3b, 8c, 13e, 23b, 24i, 34ij; MB 3i.
Hardya dentata (Osborn & Ball): BC; AB 1a, 3mq, 5acehi, 11ad, 15b, 23d, 34a; SK 2a-c,

3ab, 11a, 13e, 24ai, 25c, 34j.
Hebecephalus rostratus Beamer & Tuthill: AB 2b, 3cf, 5ceg, 14be, 15c, 22a, 23a-d, 34a; SK 2d, 3b, 5bd, 8ae, 11d, 12f, 13ade, 14bc, 15bd, 17be, 18b, 24e-j, 25d, 33c, 34gij; MB 2a, 4g, 14d.
Idiocerus ramentosus Uhler: BC; AB Peace R District, 3fnp, 5ade, 15c, 23d, 44b; SK 5a, 7c, 12b, 17b, 24cj, 32a, 33e, 34j; MB 2ak, 4ceg, 12a, 13c; ON.
Memmonia brunnea (Ball): AB 3g, 5a; SK 8b, 24i, 34j; MB 14d.
Mocuellus caprillus Ross & Hamilton: AB 1c, 2bh, 3bf, 4ai, 5afg, 12a, 13b, 14bc, 15a-c, 21e, 22a, 23d-f, 24b, 33b, 34a, 35a, 44b; SK 2b-d, 3ab, 4a, 5g, 8h, 11d, 12beh, 13ae, 15cd, 16b, 17bd, 23b, 24ci, 25cd, 33f, 34ij; MB 2j.
Oncopsis marilynnae Hamilton: BC; SK 8f, 34j; MB 2ns, 3b.
Orocastus labecculus (DeLong): BC; AB 5c, 12a, 13b, 14ace, 15a-c, 21e, 24ab, 34a, 35a; SK 2bc, 3ab, 11d, 12h, 13e, 14a, 15cd, 24i, 34j.
Orocastus perpusillus (Ball & DeL.): YT; BC; AB Peace R District, 3bf, 4a, 12a, 13b, 14a-c, 15a-c, 21e, 23df, 34a, 35a, 44b; SK 2b-d, 3ab, 8a, 11d, 12h, 13ae, 17b, 18a, 22a, 24i, 33cf, 34gj; MB 2q, 3cdik, 22c.
Rosenus cruciatus (Osborn & Ball): YT; BC; AB 3bfq, 4adg, 5ce-i, 15b, 23ac-e, 32b, 44b, 45c; SK 2bc, 3ab, 6a, 11b, 13e, 15d, 18eh, 24aci, 25c, 32a, 34j; MB 3deijk, 22c.
Stenometopiellus cookei (Gillette): AB 3q, 5ei, 13c, 15b; SK 2a, 3ab, 13e, 24ai, 34j.

Other bugs

Delphacodes paransera Beamer: AB Peace R District, 35a; SK 5f, 8a, 24j; MB 2c, 3i.
Elachodelphax indistincta (Crawford): AB 3f, 5c, 15c; SK 3b, 24di, 34j; MB 3i.
Eurybregma magnifrons (Crawford): YT; BC; AB Peace R District, 13b, 15ab, 23d; SK 3b, 23a, 34j.
Laccocera obesa Van Duzee: BC; AB 2b, 3f, 5adegh, 14b, 15a-c; SK 3b, 5g, 11ab, 13ae, 21b, 24i, 34j.
Nothodelphax gillettei (Van Duzee): BC; AB 3fnq, 5c/fg, 11c, 21e, 23d; SK 3b, 24i, 28a, 33a.
Peltonotellus bivittatus Ball: BC; AB Peace R District, 2b, 5g, 14b, 15c, 23d; SK 3b, 5g, 8af, 18eh, 24i, 34j.
Pentagramma vittatifrons (Uhler): AB 3ef, 5g, 15ac, 23g, 35a; SK 4c, 8f, 11e, 17b, 24di, 26b, 31b, 33a, 34j; MB 2g, 4d, 12e.
Prokelisia salina (Ball): BC; AB 2bg, 15b; SK 11e, 12b, 17d, 21b, 25a, 26b, 34i; MB 3cdfj; ON.
Campylenchia rugosa (Fowler): BC; AB 1c, 2dh, 3ef, 4i, 5ce, 13b, 15abc, 21e, 33b, 35a; SK 3b, 4e, 5gh, 12bc, 13bd, 17c, 18c, 24ci, 31bc, 34j; MB 2eq, 3bin, 11b, 22d.



Table 4. "Short-horned" bug fauna characteristic of two biotic regions of the steppe of Canada, with distribution (codes as in Table 1).

BIOTIC REGION: ASPEN PARKLAND Leafhoppers

Amblysellus dorsti Oman: AB 33b, 35a, SK 24i, 34j.
 Ceratagallia cerea Hamilton: AB 5c.
 Colladonus olus Nielson: SK 34j.
 Cuerna nielsoni Hamilton: SK 17e; MB 3cm. Endemic sp.
 Deltocephalus castoreus Ball: BC; AB 33b, 35a; SK 16b, 24i, 34a.
 Deltocephalus sp.nov. A: SK 31a.
 Elymana circius Hamilton: BC; AB *Peace R District*, 2d, 21ae, 22a, 23cd, 33b, 34a, 35a; SK 5d, 24fi, 31a, 33bf, 34gij.
 Empoasca digita DeLong: BC; SK 24i; MB 11c.
 Empoasca exiguae Ross: BC; AB 3f, 13c; SK 34j; MB 3i.
 Empoasca mexicana Gillette: SK 34j.
 Empoasca nigroscuta Gillette. & Baker: BC; AB *Peace R District*, 3f, 5g; SK 24bi.
 Erythroneura calva Beamer: 3 AB 13b; SK 25c; MB 3i.
 Flexamia dakota Young & Beirne: SK 24i.
 Flexamia sp. SK 3b.
 Gyponana vincula DeLong: AB 2b, 3f, 4c, 15b, 23f, 24a; SK 18d, 32ab, 34gij; MB 3m, 15i.
 Idiocerus moniliferae Osborn & Ball: SK 16b, 33d; MB 2a.
 Limotettix bisoni Knull: AB 35a; SK 17b, 31a; MB 2m; On.
 Limotettix brooksi Hamilton: AB 45c. Endemic sp.
 Limotettix conservatus Hamilton: AB 33b; SK 31b.
 Limotettix myralis (Medler): AB 23d; SK 34j.
 Limotettix shastus (Ball): BC; SK 35a.
 Limotettix taramus (Medler): SK 34j.
 Macrosteles snowi (Dorst): AB 32d, 35a; SK 24i, 34j; MB 3bf.
 Oncopsis incidens Hamilton: BC; SK 8d, 34j.
 Oncopsis junco Hamilton: BC; SK 24i.
 Pinumius sexmaculatus (Gillette & Baker): BC; AB *Peace R District*, 1c, 21e, 32b, 42b; SK 12e, 34dj.
 Stragania rufoscutellata (Baker): BC; AB *Peace R District*, 2h, 3ef, 4eg, 5a-eh, 15bc, 21e, 23d, 32d, 33ab, 35a; SK 2f, 8a, 11c, 13e, 16d, 17b, 18af, 24ei, 31c, 33a, 34dgj, 41d; MB 2cdkn, 3bdijmn, 13c.

Other bugs

Caenodelphax sp.nov.: SK 25c. Endemic sp.
 Criomorphus inconspicuus (Uhler): MB 2c.
 Delphacodes anufrievi Wilson: YT; BC; SK 24i, 34j.
 Delphacodes lutulentoides (Beamer): BC; SK 8a, 34j; MB 2s.
 Delphacodes stricklandi Metcalf: AB *Peace R District*, 13a, 21d; SK 6a, 7b, 8a, 28e, 34j; MB 2m, 3m, 4d, 31a.
 Elachodelphax hochae (Wilson): YT; BC; AB *Peace R District*, 5c; SK 8a.

Elachodelphax pediforma (Beamer): BC; AB 2h, 5c; SK 8a; MB 2q.
 Elachodelphax sp.nov. A: 5 BC; AB 4f, 5c, 23d, 32d; SK 34f.
 Elachodelphax sp.nov. B: MB 2c.
 Laccocera canadensis Beirne: AB 3m, 5c, 23d; SK 1a, 2b, 3a, 24ai, 33a, 34j.
 Myndus collinus Ball: SK 34j.
 Scolopygos pallidus Bartlett: 4 AB 23d, 33b, 35a; SK 31a; Atlantic coast.
 Vanduzea triguttata (Burmeister): SK 18c; MB 2d, 3i.

BIOTIC REGION: SHORT-GRASS STEPPE

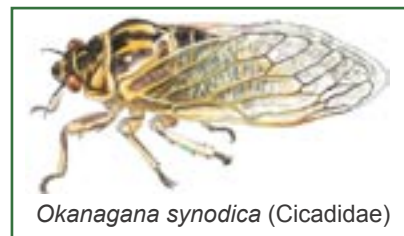
Leafhoppers

Amblysellus punctatus Osborn & Ball: BC; AB 14b, 15b, 24b, SK 2bc, 3ab, 13e.
 Amblysellus wyomus Kramer: BC; AB 1c, 2b, 3m, 5f, 15b; SK 2b, 3b, 6a, 13e, 25c.
 Aplanus albidus (Ball): AB 23d.
 Athysanella obesa Ball & Beamer: AB 3mq, 5acg, 15b; SK 2b-d, 3ab, 4c, 5f, 13e, 24i.
 Athysan ella sinuata Osborn: AB 3f, 4b, 5ceg, 14a, 15a; SK 11b, 24i.
 Attenuipyga balli Oman: SK: 3b.
 Auridius helvus (DeLong): BC; AB *Peace R District*, 2b, 12a, 14be, 15bc; SK 2b-d, 3b, 13e; MB 3k.
 Ballana ortha DeLong: BC; 2 AB 34a; SK 5g.
 Ceratagallia califa Oman: AB 15b.
 Ceratagallia cinerea (Osborn & Ball): AB 5ag, 14b, 15c, 23de, 34a; SK 3b, 5c, 24i.
 Ceratagallia nanella (Oman): SK 3b.
 Cuerna alpina Oman & Beamer: AB 2b, 3dfghjkn, 5dgi, 14ab, 15a-c; SK 2f, 3b, 11e, 13b, 17b, 18e, 24i.
 Cuerna sayi Nielson: AB 3n, 5de, 15c.
 Deltocephalus artemisiae (Gillette & Baker): AB 3f, 14c, 15b; SK 2b, 8b, 13e, 16b, 24i.
 Deltocephalus gnarus Ball: AB 3f, 15b; SK 3b; MB 3di.
 Deltocephalus sp.nov. B: SK 3b.
 Dicyphonina ornata (Baker): AB 15b.
 Empoasca angustifoliae Ross: AB 2f.
 Empoasca typhlocyboides Gillette & Baker: BC; AB *Peace R District*, 15b; SK 2bc, 3ab, 24i.
 Erythroneura sp.nov.: AB 15b; SK 3b.
 Hecalus finnamorei Hamilton: SK 3b. Endemic sp.
 Idiocerus canae Hamilton: AB 15c. Endemic sp.
 Idiocerus interruptus Gillette & Baker: AB 3f.
 Laevicephalus exiguus Knull: AB 3e; SK 3b, 13b, 24i; MB 3f; ON.
 Limotettix cacheolus (Ball): AB 2a.
 Lonatura megalopa (Osborn & Ball): SK 3b, 24i.
 Lonatura melina (DeLong): AB 15a; SK 5g, 24fhi.
 Memnonia consobrina Ball: AB 15b; SK 2c, 3ab.
 Memnonia grandis (Shaw): AB 15b.

Memnonia maia Hamilton: AB 3mq, 5ce, 15b; SK 2acd, 3ab. Endemic sp.
 Mesamia straminea (Osborn): AB 3f; SK 13e.
 Neokolla surcula (DeLong & Currie): AB 3f.
 Norvellina clarivida (Van Duzee): AB *Peace R District*, 5a, 14c; SK 24i.
 Norvellina columbiana (Ball): BC; AB 23d.
 Stragania atra (Baker): BC; AB 3e, 5e, 15c; SK 3b.
 Telusus sp.nov.: AB 15ab; SK 3b, 24i. Endemic sp.
 Texananus cumulatus (Ball): AB 15c; SK 3a; MB 2p, 3a.
 Texananus dolus DeLong: MB 4de.
 Texananus extremus (Ball): AB 15c.
 Unoka gillettei Metcalf: AB 4a.
 Xerophloea peltata (Uhler): AB 2bc, 3f, 4h; SK 3b, 4a, 5b, 8f, 15d; MB 2s.

Other bugs

Okanagana fratercula Davis: AB 2eh, 5a, 21e.
 Okanagana luteobasalis Davis: AB 3f, 5c, 15c.
 Okanagana synodica (Say): AB 3f.
 Bruchomorpha sp.nov.: SK 8f.
 Delphacodes emeljanovi Wilson: YT; BC; AB 11bc.
 Delphacodes munda (Beamer): AB 3n, 5g.
 Eurybregma montana (Beamer): AB 5g, 13b, 14c; SK 12e.
 Laccocera flava Crawford: AB 3n, 4d, 5eg, 14a, 15a-c; SK 23e, 24i.
 Laccocera lineata Scudder: BC; AB 5ch, 15b; SK 2c, 3a, 13e.
 Ollarius dondonius Ball: 8 AB *Peace R District*, 5aeg; SK 3b, 4c, 5g, 6b, 24i.
 Parkana alata Beamer: BC; AB 21d.
 Peltonotellus rugosus (Ball): AB *Peace R District*, 2b, 3acfn, 14be, 15ab, 24b; SK 3b, 6b, 8f, 24ci.
 Scolops hesperius Uhler: AB 3ch, 14b, 15ac; SK 13b; MB 3ef.
 Yukonodelphax kendallae Wilson: YT; BC; AB 13c, 14d, 15c; SK 2b, 3a, 24i.
 Ceresa wickhami Van Duzee: BC; AB 1a, 2h, 5e, 15b.
 Leioscyta ferruginipennis (Goding): AB 5eg; SK 5g, 6b.
 Telamona viridia Ball: AB 3f, 5e, 15c; SK 16c, 18d; MB 3i.



Okanagana synodica (Cicadidae)

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