

NEWSLETTER
ARTHROPODS OF CANADIAN GRASSLANDS
NO. 1, 1983

EDITOR'S NOTES

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This newsletter is intended as a forum for communication among those interested in arthropods of Canadian grasslands. We plan to produce at least one issue each year, probably during early spring. This first issue includes a brief history of the Grasslands Project being promoted by the Biological Survey of Canada (Terrestrial Arthropods) an outline of recent subcommittee activities, and information about 3 grassland sites which entomologists are encouraged to study. We will continue with this general format and also hope to include contributions from interested readers in future issues.

If you are working on prairie insects, the newsletter can help you to reach other entomologists with similar interests. We feel that cooperation encouraged by better communication will promote increased synthetic understanding of prairie arthropods from the twin perspectives of faunistics and ecological dynamics. Please spread the word about the Grassland Project among your colleagues and send a brief synopsis of your current work on grassland insects to the Editor. In forthcoming issues I will list investigators and projects underway. Anyone who wishes to be placed on the mailing list for subsequent newsletters should also contact the Editor or Dr. H. V. Danks, Biological Survey of Canada (Terrestrial Arthropods), Invertebrate Zoology Division, National Museum of Natural Sciences, Ottawa, Ontario K1A 0M8.

INITIATION OF THE SURVEY OF THE ARTHROPOD FAUNA OF THE CANADIAN PRAIRIES

Gordon Pritchard, Dept. of Biology, University of Calgary

The Grasslands Sub-Committee of the Biological Survey of Canada (Terrestrial Arthropods) undertook a feasibility study in 1980. The geographic area to be considered was limited to the triangle running from southeastern Manitoba through Saskatoon to Edmonton and south to Waterton National Park, plus the grasslands of interior British Columbia. Five types of grassland (Coupland 1961, J. Ecol.; Scudder 1979, Mem. Ent. Soc. Can. 108) are included within this area:

1. Palouse or bunch-grass prairie of British Columbia,
2. Tall-grass prairie in southern Manitoba,
3. Short-grass prairie in southeastern Alberta, southern Saskatchewan and southwestern Manitoba,
4. Mixed-grass prairie, the principle grassland of Alberta and Saskatchewan,
5. Fescue grassland, associated with aspen parkland throughout the prairie provinces.

In Turnbull's view (1979, Mem. Ent. Soc. Can. 108), the original steppe of the prairies has not changed in any essential biome characteristics as a result of human settlement, but the structure of its biological communities has changed. The Sub-Committee suggested that an approach with both pure and applied aspects would, therefore, be to compare the fauna of agricultural areas with those that have been less influenced by human activity. With this in mind, the Sub-Committee produced a list of relatively undisturbed sites which is continually updated. Many of these sites are small, well-defined areas of grassland that lend themselves well to survey work.

Munroe (1956, Can. Ent. 88) has high hopes for the development of knowledge of the prairie fauna. Unfortunately we are still very far from the "unrivalled understanding" that Munroe predicted. However, the early work of the Sub-Committee resulted in the recommendation that a survey of the Canadian grasslands was indeed feasible, that there was no shortage of study sites, and that there was interest on the part of entomologists across the western provinces. If the Biological Survey can co-ordinate the human resources available, Munroe's optimism may well be rekindled.

RECENT SUB - COMMITTEE ACTIVITIES

John Spence

This report starts with the Discussion Group which met to consider *Arthropods of Canadian Grasslands* at the ESC meeting in Banff, Alta. during October 1981. Many of you who receive this first newsletter will have participated in that discussion. At that time, the following 3 main objectives were outlined for a survey of grassland arthropods:

1. identification of sites with relatively undisturbed grassland representing the major types of Canadian prairie,
2. comprehensive surveys of the arthropod fauna of such areas and evaluation of relationships among faunistic components
3. consideration of the impact of man's activities on the "prairie fauna" in croplands, range lands, and the cultural steppe associated with human habitation.

Preliminary work underway at several sites was discussed by several members of the sub-committee. Although substantial interest in grassland arthropods emerged at the meeting, it was agreed that interest must be focused in order to meet the stated objectives. In other words, entomologists must begin work and attempt to integrate their efforts from the general perspective of understanding the prairie fauna.

Since the Banff meeting, the sub-committee has advertised the project and attempted to establish contact with other groups interested in grasslands and their arthropods. A display, outlining the Grasslands Survey, was prepared for the joint ESC-ESA meeting held in Toronto during December 1982. Contact has also been established with the Grassland Research Institute in Great Britain and the Konza Prairie Research Natural Area in Kansas. Summaries of work going on at those institutions will appear in future newsletters. We have also been in contact with Parks Canada and have received enthusiastic approval in principle for entomological work in grassland areas of National Parks. Individuals wishing to collect insects in a park must still apply for the appropriate permits, but we believe that anyone wishing to do work in the context of the Biological Survey will be assisted by the Parks Branch. We hope to promote baseline entomological work in the new Grassland National Park in southern Saskatchewan as the lands become consolidated under public ownership.

Currently the sub-committee is compiling detailed descriptions of grassland sites available for study. The descriptions will include references to information about the floristics and geological history of the site, summaries of entomological work which has been done or which is in progress, and information about access to the site. Anyone willing to contribute such a description for a favourite grassland site is urged to contact a member of the sub-committee. Members of the sub-committee and their addresses are listed below.

Dr. V. M. Behan, Biosystematics Research Institute, Agriculture Canada, Ottawa, Ontario K1A 0C6.

Mr. R. A. Cannings, British Columbia Provincial Museum, 601 Bellville Street, Victoria, British Columbia V8V 1X4.

Dr. T. D. Galloway, Department of Entomology, University of Manitoba, Winnipeg, Manitoba R3T 2N2

Dr. M. Maw, CDA Research Station, Box 440, Regina, Saskatchewan S4P 3A2.

Mr. H. G. Philip, Alberta Environmental Centre, Bag 4000, Vegreville, Alberta T0B 4L0.

Dr. J. R. Spence, Department of Entomology, University of Alberta, Edmonton, Alberta T6G 2E3

THE LIVING PRAIRIE MUSEUM - WINNIPEG, MANITOBA Terry Galloway, Dept. of Entomology, University of Manitoba

At one time, the true prairie (or long grass prairie) extended over approximately 1,000,000 km² of the North American continent. Undisturbed long grass prairie in Canada has all but disappeared, and at present, only four sites have been identified. The Living Prairie Museum in Winnipeg is the largest of these four sites (a mere 41.5 ha.) and was discovered by a local IBP subcommittee in 1968. It was determined that this long grass site had not been cultivated for at least 100 years, and it was established as a city park. The present interpretive centre was completed by 1976 and, as a result of continuing work on the flora, 169 plant species have been

identified within the park.

The Living Prairie Museum site is surrounded by considerable urban development and is within 5 km of Winnipeg International Airport. Paths are mowed and maintained for easy access in to the prairie and to minimize damage done to the site by the visiting public. A well-planned burn management schedule is presently nearing completion and it is anticipated that various sections of the prairie will be burned each spring on a rotational basis. Accidental grass fires have been part of the history of the site, as occurred for example in the fall of 1981.

Because of its small size, the potential for research in the Living Prairie Museum may be somewhat limited. However, the park staff is enthusiastic and much remains to be learned about this site which is one of the northernmost extensions of true prairie in Manitoba.

Anyone wishing to study or collect in the park should contact Mr. Doug Ross, Chief Naturalist, Living Prairie Museum, City of Winnipeg Parks and Recreation Department, Regional Recreation Services, 2795 Ness Avenue, Winnipeg (204-832-0167).

THE UNIVERSITY OF ALBERTA RANCH

John Spence

The University of Alberta Ranch, located 85 miles SE of Edmonton near the village of Kinsella, Alta., offers excellent opportunities for faunistic and ecological studies of arthropods of fescue grasslands. The ranch includes 6 major grassland communities about which much botanical information has been compiled. Perturbed and control sites exist for study of effects of grazing and burning on arthropod communities of aspen parkland. The ranch is easily accessible via Highway 14 and the staff is enthusiastic about visits by entomologists working in the context of the Biological Survey.

The ranch comprises over 6800 acres at an elevation of about 765 m on the Viking Moraine. The rolling topography is dotted with numerous lakes in sloughs which vary in salinity. The area receives about 430 mm of precipitation annually, most of which falls between May and August, often in intense thunderstorms. Grassland communities occur generally on orthic and eluviated black and dark brown chernozem soils which overlay unsorted, transported glacial material.

The 6 main grassland associations are described as *Symphoricarpos-Festuca*, *Festuca-Stipa*, *Stipa-Festuca*, *Stipa-Agropyron*, sedge meadows, and salt grass meadows. The *Festuca-Stipa* association, which is the major grassland community, can be further partitioned into a grassland phase and a shrub phase depending upon cover of *Elaeagnus commutata*. The floristics and historical development of these communities are subjects of continuing, thorough investigation by Prof. A. W. Bailey and his associates in the Department of Plant Science at the University of Alberta. Bailey's work provides compelling evidence that fire has played a predominant role in development of fescue grassland communities. There is great potential for entomologists to use' this rich botanical background as a basis for their studies about faunistics

and natural history of particular taxa and, ultimately, for integrative studies about evolution of grassland faunas.

The ranch is administered as a research facility by the Department of Animal Science at the University of Alberta. Proposals for large scale or long term studies must be first approved through the office of Prof. R. T. Hardin, Chairman of the Department. Although the ranch cannot provide living accommodations for visitors, workers with mobile units can park them at the ranch. Entomologists wishing to collect insects or undertake short term research at the ranch should contact Mr. T. McDonald, Ranch Manager, University of Alberta Ranch, Kinsella, Alta. (403-336-2328) before arrival.

In conjunction with my research about grassland carabids at Kinsella, I will be preparing detailed descriptions of study sites at the ranch with help from Ms. M. J. Davies of the Department of Plant Science. By midsummer 1983 I aim to have a map of the ranch available which can be used by entomologists. Please contact me if you are interested in further information about work in progress at Kinsella. And, if you can, come to Kinsella and work on insects of grasslands!

HAYNES LEASE ECOLOGICAL RESERVE

R. A. Cannings, Dept. of Entomology, Provincial Museum of British Columbia

Created as British Columbia Ecological Reserve No. 100 on December 17, 1980, this 101 ha. strip of land runs from the northeast corner of Osoyoos Lake north to the cliffs of Inakaneep Mountain. It contains a variety of habitats from lakeshore, river oxbows, riparian woodland and marsh to xeric shrubby grassland and cliffs. About three-quarters of the area can be considered grassland. The ecological reserve is fenced and bounded on the north and east by Inakaneep Indian Reserve and on the west by a similar gradient of marsh and arid grassland. The benchland to the west is a grazing reserve, preventing its incorporation into adjacent vineyards and leaving it available for future use as an ecological reserve. Adjacent wetlands are established as a Wildlife Management Reserve and will be maintained in a more or less natural state. Thus there exists potential for research comparing communities of grassland, wetlands and irrigated vineyards.

The main grassland communities occur on sandy terraces and on cliffs and ledges. Three main associations are found on sandy terraces as follows: (1) a moderately grazed shrub/steppe community on sandy outwash, (*Purshia tridentata*-*Aristida longiseta*-*Sporobolus cryptandrus*), (2) the overgrazed phase of shrub / steppe (including *Bromus tectorum* and *Opuntia fragilis* as significant elements), and (3) savannah-steppe (*Pinus ponderosa*-*Purshia tridentata*). Bunchgrass steppe (*Agropyron spicatum*-*Poa juncifolia*) and ungrazed savannah (*P. ponderosa*-*A. spicatum* and *Pseudotsuga menziesii* -*A. spicatum*) occur on the cliffs and ledges of Inakaneep Mountain. Communities on sandy terraces have been grazed for 120 years while those on cliffs and ledges remain in pristine condition. Comparisons of grassland arthropod assemblages within the newly fenced reserve with those in the adjacent Indian Reserve and Grazing Reserve may also be instructive.

Scudder (1980) lists some of the noteworthy arthropods that are characteristic of the Osoyoos Arid Biotic Zone. These include the scorpion *Paruroctonus boreus* (Girard), the wind-scorpion *Eremobates scaber* (Kraepelin) and the native mantid *Litaneutria minor* (Scudder). Other species virtually confined to this area in British Columbia include the lygaeid *Phlegyas annulicrus* Stal, the reduviid *Fitchia spinulosa* Stal, the hebrid *Merragata hebroides* White, the butterflies *Apodemia mormo* (Felder and Felder) and *Euchloa hyantus* Edw., the apiocerid *Apiocera haruspex* O.S., the syrphids *Aemosyrphus polygrammus* (Loew) and *Copestylum caudatum* (Cn.), the tiger beetle *Cicindela parowana* Wickham and the scarabs *Euphoria inda rufobrunnea* Csy. and *Hoplia deserticola* Bayar. Some of these species undoubtedly occur on the Haynes Lease; at least *Paruroctonus* and *Apiocera* have been collected there. With additional study, the site will yield new Canadian records for Great Basin species.