



Entomologists swarm to Onefour in 2001

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Onefour, Alberta was the scene of last summer's first Survey-sponsored field trip to promote the collection and identification of Canada's grassland arthropods. Co-organized by Survey members Rob Roughley and Kevin Floate, entomologists swarmed to the site from British Columbia, Alberta, Manitoba, Ontario and North Dakota.

Onefour (49° 07' 00" N; 110° 28' 00" W) is a substation of the federal government's Lethbridge Research Centre. Established in 1927, the substation is located in the far southeast corner of the province; one township north of the United States border and four townships west of the Saskatchewan border. The nearest grocery store and gas station are in Elkwater in Cypress Hills Provincial Park, about an hour's drive to the north. Foremost, about 1.2 hours to the northwest, is the nearest sizable population centre with about 600 occupants.

The Onefour substation, encompassing some 17,000 hectares, is the largest ranch operated by the Canadian government. A herd of several hundred animals is maintained primarily for research on beef genetics and range management. A core staff of federal employees live at the ranch headquarters. The headquarters is surrounded by shelterbelts and consists of a main office building, several houses, a maintenance shop, cattle-handling facilities, and a community hall for use with permission of the Onefour ranch manager.

Much of the Onefour property is comprised of native grassland, with lesser areas of badlands associated with the Lost River valley, which joins with the Milk River valley just south of the U.S. border. Because of its relatively pristine state, portions of the property combined with the

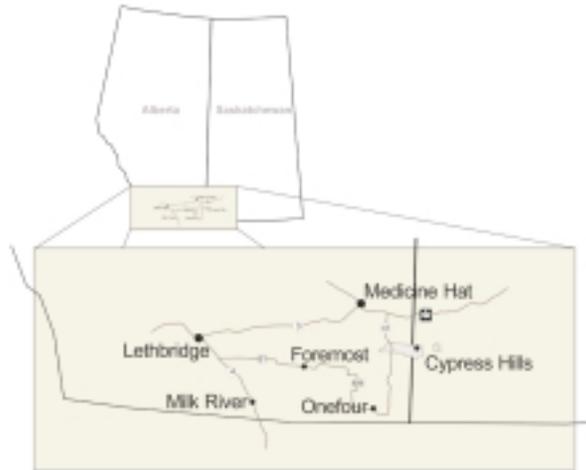
neighbouring Pinhorn and Sage Creek Provincial Grazing Reserves were designated in December 2001 as the Onefour Heritage Rangeland (111.65 km²) by the Alberta government (see inset).

The Onefour Heritage Rangeland is representative of Alberta's Dry Mixedgrass Subregion, which is the warmest and driest part of the province. Its continental climate has cold winters, warm summers and low precipitation. Warm temperatures and a high average wind speed promote a high rate of evaporation during summer months. Mean maximum summer temperatures average 24 °C with mean minimum winter temperatures of -13 °C. This pattern explains why Onefour occasionally appears in the national spotlight as Canada's daily hot or cold spot. Total precipitation averages 272 mm for the year.

Habitat can best be described as extensive grassland and ephemeral wetlands with minor badlands and riparian shrublands along streams. Numerous species of rare plants have been reported with some of the only populations of yucca in Canada growing on the Onefour property. Rare

What is a "Heritage Rangeland"? Heritage Rangelands are a class of protected area under Alberta's 'Special Places' program. This program preserves areas representative of the province's natural regions and subregions.

The classification permits grazing by local ranchers and public access with the permission of leaseholders. Use of motorized vehicles and bicycles is generally banned, as is commercial tourism and the establishment of recreation and camping facilities. Existing infrastructure associated with surface access to mineral deposits is phased out and no new surface access is granted. Existing pipeline right-of-ways are honoured, and may be expanded if no other reasonable alternatives can be identified.



species of birds reported for the area include the mountain plover, bobolinks, Baird's sparrow, ferruginous hawks, burrowing owls, loggerhead shrikes, and sage grouse. Swift fox have been released in the vicinity and deer are common.

With part of the property now designated as a "Heritage Rangeland", the federal government has an increased responsibility to ensure that its activities at Onefour do not adversely affect rare or endangered species of arthropods. However, management practices to ensure this outcome cannot be implemented until a comprehensive survey of arthropods has been completed. This survey is currently being performed under the direction of Dr. Dan Johnson of the Lethbridge Research Centre (see inset). Selection of Onefour as the Survey's first location for a grassland arthropod survey was partially to assist in this endeavour.

The expedition!

To accommodate diverse schedules, entomologists were invited to Onefour during the last week of June and the first week of July. Several folks stayed at Elkwater and travelled to Onefour during the day. Hardier souls tented at the ranch headquarters, making good use of the community hall for meal preparation and insect sorting. Ian Walker, the Onefour ranch manager, and his staff were the perfect hosts. Not only did they provide directions and maps to 'prime' collecting habitat, several people were given guided tours of the

property and Ian even greeted new arrivals with a large windscorpion (Arachnida: Solifugae). Several other specimens of these critters, absent in most of Canada, were later collected.

Upon arrival, participants checked in at the main office building and signed the guest book. With this administrative duty out of the way, folks had considerable freedom to collect with only a few restrictions. Visitors were asked to drive only on roads, to stay out of pastures with

Grassland insects at Onefour (short grass), Stavely (fescue), and Suffield (National Wildlife Area), AB

Dan Johnson has collections of arthropods from Onefour obtained using pitfall traps, yellow pan traps and sweep netting. The most recent collections were made weekly during summer months in 2000 and 2001. He also has periodic collections from fescue grassland at Stavely, in the foothills of the Rocky Mountains, and Suffield (1993-94, and current).

Identifications of a few arthropod groups are complete, but many remain. Dan is interested in communicating with others collecting in grassland, and especially with people interested in collaborating on detailing the biodiversity at these and other grassland sites. If you are interested in particular groups, arrangements could be made for collections or sorting. Phone (403) 317-2214, fax 382-3156, or e-mail at: JohnsonDL@em.agr.ca



cattle, and to close all gates. After three years of drought and several previous fires on the property, everyone also was asked to take extreme precautions to avoid starting grass fires. In 2001, precipitation at Onefour was 50% of the long-term average with mean daily temperatures 2 °C above normal.

Despite the dry conditions, there was much to see. Yucca moths were observed on their host plants, and long-horned milkweed beetles (Cerambycidae: *Tetraopes* sp.) were abundant on common milkweed in the Milk River valley. Several species of mites were recovered, including a first report for Canada (see inset). Observations of macrofauna included antelope and rattlesnakes, and even a few dinosaur fossils.

Depending upon individual objectives, efforts were made to collect arthropods with yellow pan traps, sweep nets, soil cores, black lights and even aquatic dip nets in the few places where water could be found. A thunderstorm early one evening provided a spectacular light show, much needed moisture, and a local power outage. Undaunted by muddy roads and further showers, the

Unexpected mite at Onefour

Graham Osler, Derrick Kanashiro and Linda Hamilton came in search of soil mites, but they weren't expecting to recover a species of *Alycosmesis* (Terpnacaridae). The first report of this genus in North America was from New Mexico early in 2001. Its recovery at Onefour is the first report for Canada.

The species seems to be unique to sand dunes or dry sandy areas. Its recovery at Onefour was from an area of active sand dunes.

more avid collectors set out black light traps later in the evening with considerable success.

The following day, a small troop of people drove 25 kilometers west of Onefour to the Pinhorn Provincial Grazing Reserve. There, in the span of about an hour, the previous night's storm had started a grass fire, hailed, and then extinguished the fire with rain of almost biblical proportions. Whereas a respectable 13 mm of rain fell at Onefour, an impressive 50+ mm fell on the Pinhorn reserve. Individuals skeptical of this total quickly were convinced by wading through pools of water on previously arid pasture.



Badlands near Onefour.



At the request of Manitoba visitors, a “Restricted Research and Collection” permit was obtained in advance to allow participants of the Onefour expedition to collect arthropods in Cypress Hills Interprovincial Park. The park straddles the Alberta/Saskatchewan borders and contains areas of fescue grassland and mixedgrass prairie. However, it is most renowned as a montane oasis characterized with lodgepole pine forest and a vegetation understory more normally associated with the Rocky Mountains 300+ km to the west.

All in all, the expedition was a great success. Many specimens were recovered to aid in developing a comprehensive inventory of Canada’s prairie arthropods. Attendees were able to exchange ideas and form new contacts. Perhaps the best outcome, however, was a renewed appreciation for Canada’s grasslands as expressed by T. Mousseau’s first impressions of Onefour.

“Miles and miles of dry, barren grassland nothingness enclosed the lonely agricultural sub-station of Onefour. Above this thirsty, echoing landscape, a blue sky stretched with no ending. This perceived emptiness, however, was nothing more than a mirage, as the surrounding area was filled with exceptional beauty of both scenery and life, nothing like I had ever seen before. As someone who grew up on the coast of BC, Onefour offered me a unique experience over and above the opportunity to collect insects.”

Unfamiliar flora and fauna were discovered as the Onefour area was explored. The last trickling droplets of the Lost River had seen its time of carving the fossil-filled valley slopes above. Along these mild cliffs were Yucca plants, with the last of their petals falling at the end of bloom. With careful observation and to much pleasure, the true Yucca moth, Tegeticula yuccasella and the cheater moth, Prodoxus were seen. Squishing fingers around in sodden, sappy cattle dung gratefully produced both adults and larvae of many different species of dung beetles. These are just a few of the interesting memories I have of Onefour.”

T. Mousseau

Participants on the Onefour experience included: Greg Pohl, Jason Machney and Doug Macaulay (Canadian Forest Service, Edmonton), Ernest Mengersen (Olds College, Olds, AB), Steve Marshall (University of Guelph, Guelph, ON), Robert Gordon (Smithsonian Institute, retired), Derrick Kanashiro, Linda Harrison, Graham Olson and Kevin Floate (AAFC, Lethbridge), Rob Roughley, Keegan Roughley, David Wade and Tonya Mousseau (University of Manitoba, Winnipeg, MB), Joe Shorthouse (Laurentian University, Sudbury, ON) and Robb Bennett (B.C. Ministry of Forests, Saanichton, BC).

Related links:

Alberta’s Special Places program: http://www.cd.gov.ab.ca/preserving/parks/sp_places/index.asp

Alberta’s Dry Mixedgrass Subregion: <http://www.cd.gov.ab.ca/preserving/parks/anhic/drymxgrs.asp>

Cypress Hills Provincial Park: <http://www.cypresshills.com/>