



Plasmodial Slime Molds in Alberta

by Jim Posey



Fuligo septica growing on forbs
Photo D. & M. McIvor

Plasmodial slime molds sound lovely, don't they? Bob MacDonald, on Quirks and Quarks, characterized them as single-cell organisms the size of a pizza. That piqued my interest. If one species, *Physarum polycephalum*, had not

demonstrated the ability to navigate mazes or to find the shortest network of paths connecting multiple points efficiently, plasmodial slime might never have made the news, although *Fuligo septica*, or dog vomit slime mold, is popular on the Web and does occur in Alberta. Interesting!

I decided to ask how many of these species occur naturally here. I looked at the Alberta Conservation Information Management System (ACIMS) List of

All Elements—the most likely place for a definitive list—and could not find any. Turning to the Web, I found several references to an article by Richardson and Currah, “Myxomycetes of Alberta,” and on the University of Alberta Libraries website I finally tracked down a link to it. It turns out that seventy-some species have been collected here. It is likely that there are more, yet to be documented.

These Web resources stand out for the information they provide about these species:

- The Eumycetozoa Project at the University of Arkansas: <http://slimemold.uark.edu> (Jan. 18, 2013)
- Lado, C. (2005-2013). An online nomenclatural information system of Eumycetozoa. <http://www.nomen.eumycetozoa.com> Real Jardín Botánico, CSIC. Madrid © 2005-2013. (Jan. 18, 2013)
- Mushroom Observer species list of Myxomycota: http://mushroomobserver.org/species_list/show_species_list/58?js=on&_new=true (Jan. 18, 2013) [requires Javascript to be enabled]

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- Discover Life, IDnature guide to Mycetozoa: http://www.discoverlife.org/mp/20q?guide=Mycetozoa_GSMNP (Jan. 18, 2013)
- and not least: <http://www.cybertruffle.org.uk/cyberliber/59575/0037/0363.htm> (Jan. 18, 2013) where the first page and links to subsequent pages of “Myxomycetes of Alberta” are to be found.

Not surprisingly, The “Myxomycetes of Alberta” article is not a field guide. Discover Life provides an interactive identification guide that allows you to select whatever characters you are sure about and then displays a list of remaining possibilities with links to species pages that provide descriptions, references, distribution maps, and (often) photographs. If it asked more questions, and did not produce such long lists of possibilities when you’ve answered all the questions, this might be all you need if you have the specimen and access to the Web side by side, or if you have noted the relevant features.

If you have a photograph, you can post it to Mushroom Observer with your identification where other users can concur or comment, thus crowd-sourcing confirmation of your identification.

For devotees of paper, *Myxomycetes: A Handbook of Slime Molds* by Stephenson & Stempen, provides keys, descriptions, and drawings of the species most likely to be encountered in North America. It includes species that have not been recorded in Alberta (which could be a good thing—you might well find a new one), but does not include twenty-some of those that have been recorded.

Most resources use the taxonomy of Lado, including Species 2000,

Catalogue of Life, Global Biodiversity Information Facility (GBIF), and Encyclopedia of Life (EoL), but this scheme is not used universally. Slime molds have traditionally been regarded as fungi, but are now regarded as amoebzoa. Within the group, visually observable features determine the taxonomy and the keys in common use. This may not reflect their evolution. Never mind. You would not want a phylogenetic key to use in the field. Higher taxonomic trees ending at plasmodial slime molds include:

- Natura/Mundus/Naturalia/Biota/Eukaryota/Protozoa/Myxomycota/Myxomycetes (SN. Myxogastria)/ from Systema Naturae 2000
- Protozoa/Fossil Amoebozoa/Incertae sedis/Incertae sedis/Incertae sedis/Myxomycetes Renault 1895, Myxomycetes manginii Renault 1896, Myxomycetes shigaphagus Salimbeni 1920, Myxomycetes Mesch. 1898/ from Index Fungorum
- Cellular organisms/Eukaryota/Amoebozoa/Mycetozoa/Myxogastria/ from the US National Center for Biotechnology
- Protozoa/Mycetozo/Myxomycetes from Species 2000 & ITIS Catalogue of Life: May 2012

There are others. If you’re going to try to sort this out, you’ll be in good company.

Life as a Blob

When they are actively feeding and growing, Myxomycetes can become enormous single cells (plasmodia) with thousands of nuclei. They start life small, as a zygote with a single nucleus that divides, and divides again as the cell grows. Plasmodia are often buried in decaying vegetation, and can range

in size from a few millimetres to half a metre in diameter. A net of tubes arrayed something like veins in a leaf, capable of passing through openings as small as a micrometre is a typical form.

The cell is motile and moves slowly through the environment engulfing small particles of organic material including decayed plant material, bacteria, and fungi. Some tubes fan out in search of food, others retreat where none is found, and larger tubes efficiently exchange nutrients between locations of concentrated food sources. Species that occupy drier environments are sheathed in slime.

In some species at least, the plasmodium leaves a chemical trace of its passage (of slime or excreted waste) that the organism avoids, thus avoiding retracing its steps. This is how *Physarum polycephalum* is said to “remember” which paths have been explored in a maze. Why does it connect points efficiently? Since the protoplasm streams back and forth inside the cell, from one source of food to another, short paths conserve energy, and it makes sense that all but the shortest paths between points are abandoned. How it does this is another question. See <http://www.youtube.com/watch?v=mvBSkt6LhJE> for an example of a slime mold exploring its environment, finding food, and optimizing connections, or <http://www.youtube.com/watch?v=czk4xgdhdY4> for a slime mold initially filling a maze, then abandoning all but the shortest path between two food sources.

Slime Sex

The plasmodium can go into a sort of hibernation (called a sclerotium) from which it can recover, or transform into one of a variety of spore-bearing structures by differentiating into walled

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cells, some of which form support structures and die, and others of which become haploid spores that are released into the environment.

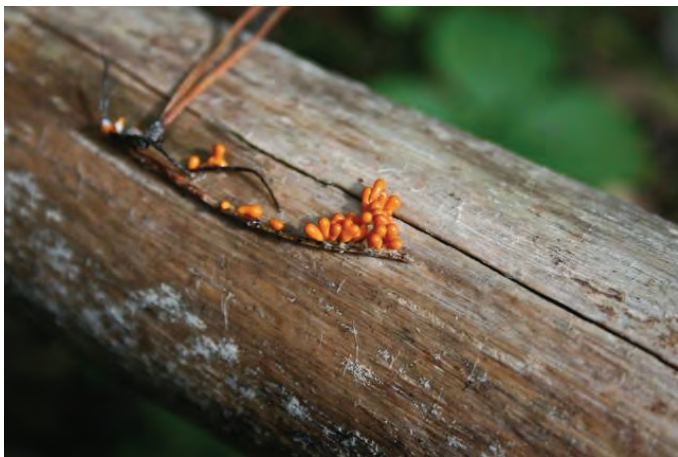
When the spores germinate they produce cells of two types: amoeba-like and flagellated. These haploid cells feed and divide, and can become cysts that can survive for extended periods. Or, they can fuse (this is where sex comes in) when they encounter one another, amoeboid with amoeboid, and flagellated with flagellated, to produce diploid zygotes that become plasmodia within which the nuclei divide and increase in number as the cell gets bigger, bringing the cycle back to the beginning. Spores, sclerotia, and cysts are durable and ensure survival when conditions are not favourable.

Myxomycetes are unusual among slime molds in that recognition is often possible in the field, from their spore-bearing structures (fruiting bodies or frutifications), plasmodia, and sclerotia. Other slime molds generally have to be cultured in the lab and identified using a bright-field microscope when they have produced spores. The frutifications often resemble mushrooms, but because they're generally 2 mm high, or less, appreciation of their structures requires a good hand lens, field microscope, or digital camera with high-resolution macro capabilities.

Where Slime Lives

The most common substrata are moist rotten wood and bark of dead trees and fallen logs, although a variety of other vegetation supports some species. Most species are believed to be widespread, although some are tropical. A distribution map usually says more about the distribution of observers and their favourite haunts, than about the distribution of a slime mold. Eastern and mid-western states in the U.S. have been more extensively studied than Alberta. As with distribution, not a lot is known about their ecology. The collections we have provide less information about habitat and substrate than might be desired. "Wood" is the most common substrate given, although logs of poplar, birch, pine, spruce, and (less often) fir are often mentioned, frequently "rotten," "moist," "shaded," or "decorticated." Leaves and leaf litter also figure as substrata. Some species are known to specialize, and most probably prefer a particular micro-habitat and substrate. In Alberta two species, *Licea eremophila* and *Licea tenera*, have been found only on cow dung. Another specialist, *Diderma niveum*, grows at the margins of alpine snowbanks as they retreat in spring and summer.

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Leocarpus fragilis
on twigs

Photo D. & M. McIvor

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If the Dog Vomit moves, don't panic

Slime molds appear to have little direct impact on people. Ropin' the Web says that *Physarum cinereum* is common in Alberta in lawn turf, after prolonged wet weather. *Fuligo septica* is sometimes seen on lawns or in urban gardens, resulting in unwarranted canine visits to the vet. If it slowly moves from one location to another, don't blame the dog. Elsewhere, species of *Fuligo*, *Mucilago*, *Physarum*, and *Stemonitis* have been reported on turf-grass. Chipped wood mulch will support slime molds, as will straw mulch around strawberries. Outside their natural environments, slime molds can be unsightly, but are harmless. Club root, *Plasmodiophora brassicae*, is not a slime mold. In the Mexican state of Veracruz, people traditionally collect, fry, and eat the plasmodia of *Fuligo septica* and fruiting bodies of *Enteridium lycoperdon*.

Tentative Species List for Alberta

The species listed here are all represented by collections (lodged in various herbaria) and, in a few cases, photos taken in Alberta. The species with ► to the left are described in the book, *Myxomycetes: A Handbook of Slime Molds*.

Order: Ceratiomyxales (or Protosteliales)

Ceratiomyxaceae

- *Ceratiomyxa fruticulosa* (Müll.) Mac.
- *Ceratiomyxa fruticulosa* (Müll.) Mac. poroid form [syn. *C. fruticulosa* var. *porioides* (Alb. & Schwein.) Lister]

Order: Echinosteliales

Echinosteliaceae

- *Echinostelium minutum* de Bary

Order: Liceales

Cribrariaceae

- *Cribraria argillacea* (Pers. ex J.F. Gmel.) Pers.
- Cribraria cancellata* (Batsch) Nann.-Bremek.
- Cribraria oregana* H.C. Gilbert
- *Cribraria purpurea* Schrad.
- *Cribraria rufa* (Roth) Rostaf.
- *Lindbladia tubulina* Fr.

Liceaceae

- Licea eremophila* D. Wrigley, Lado & Estrada
- *Licea tenera* E. Jahn

Reticulariaceae

- *Lycogala epidendrum* (L.) Fr.
- *Lycogala flavofuscum* (Ehrenb.) Rostaf.
- *Reticularia splendens* Morgan
- *Tubifera ferruginosa* (Batsch) J.F. Gmel.

Order: Physarales

Didymiaceae

- *Diderma cinereum* Morgan
- *Diderma crustaceum* Peck
- *Diderma globosum* Pers.
- *Diderma niveum* (Rostaf.) T. Macbr.
- *Diderma radiatum* (L.) Morgan
- Diderma simplex* (J. Schröt.) G. Lister
- *Diderma spumarioides* (Fr.) Fr.
- *Mucilago crustacea* F.H. Wigg.

Physaraceae

- *Badhamia affinis* Rostaf.
- Badhamia cinerascens* G.W. Martin
- Badhamia populina* Lister & G. Lister
- *Badhamia utricularis* (Bull.) Berk.
- *Craterium leucocephalum* (Pers. ex J.F. Gmel.) Ditmar
- *Craterium minutum* (Leers) Fr.
- Fuligo leviderma* H. Neubert, Nowotny & K. Baumann
- *Fuligo septica* (L.) F.H. Wigg.
- *Leocarpus fragilis* (Dicks.) Rostaf.
- Physarum albescens* Ellis ex T. Macbr.
- Physarum bethelii* T. Macbr. ex G. Lister
- *Physarum bivalve* Pers.
- *Physarum cinereum* (Batsch) Pers.
- *Physarum compressum* Alb. & Schwein.
- *Physarum contextum* (Pers.) Pers.
- Physarum leucopus* Link
- *Physarum luteolum* Peck
- *Physarum notabile* T. Macbr.
- Physarum nudum* T. Macbr.
- Physarum oblatum* T. Macbr.
- *Physarum pusillum* (Berk. & M.A. Curtis) G. Lister
- *Physarum rubiginosum* Fr. & Palmquist
- *Physarum serpula* Morgan
- *Physarum tenerum* Rex
- Physarum tessellatum* G.W. Martin & M.L. Farr
- *Physarum viride* (Bull.) Pers.

Order: Stemonitales

Stemonitidaceae

- *Comatricha nigra* (Pers. ex J.F. Gmel.) J. Schröt.
- *Enerthenema papillatum* (Pers.) Rostaf.
- *Lamproderma arcyrioides* (Sommerf.) Rostaf.
- *Lamproderma columbinum* (Pers.) Rostaf.

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- Paradiachea rispandii* (Hagelst.) Hertel ex H.
Neubert, Nowotny & K. Baumann
Paradiacheopsis acanthodes (Alexop.) Nann.-Bremek.
Stemonaria irregularis (Rex) Nann.-Bremek., R.
Sharma & Y. Yamam.
▶ *Stemonitis axifera* (Bull.) T. Macbr.
▶ *Stemonitis fusca* Roth
▶ *Stemonitis splendens* Rostaf.
Stemonitopsis aequalis (Peck) Y. Yamam.
Stemonitopsis typhina (F.H. Wigg.) Nann.-Bremek.

Order: Trichiales

Arcyriaceae

- ▶ *Arcyria cinerea* (Bull.) Pers.
▶ *Arcyria denudata* (L.) Wettst.
▶ *Arcyria ferruginea* Saut.
▶ *Arcyria incarnata* (Pers. ex J.F. Gmel.) Pers.
Arcyria insignis Kalchbr. & Cooke
Arcyria nigella Emoto
Arcyria obvelata (Oeder) Onsberg
▶ *Arcyria oerstedii* Rostaf.
▶ *Arcyria pomiformis* (Leers) Rostaf.

Trichiaceae

- ▶ *Hemitrichia clavata* (Pers.) Rostaf.
▶ *Metatrichia vesparia* (Batsch) Nann.-Bremek
ex G.W. Martin & Alexop
▶ *Perichaena corticalis* (Batsch) Rostaf.
▶ *Trichia contorta* (Ditmar) Rostaf.
▶ *Trichia decipiens* (Pers.) T. Macbr.
▶ *Trichia favoginea* (Batsch) Pers.
▶ *Trichia scabra* Rostaf.
▶ *Trichia subfusca* Rex
▶ *Trichia varia* (Pers. ex J.F. Gmel.) Pers.



***Ceratiomyxa fruticulosa* on very rotten wood in moist lodgepole/spruce woods**
Photo D. & M. Mclvor



***Physarum* sp. on moss**
Photo D. & M. Mclvor



***Stemonitis axifera* on dead aspen**
Photo D. & M. Mclvor



***Lycogala epidendrum* – wolf's milk**
Photo M. Wood

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Prospect Creek, Whitehorse Wildland Park and Beyond

by Alison Dinwoodie

Whitehorse Wildland Park (WWP) came into being partly as mitigation for the proposed Cheviot Mine after extensive public environmental hearings. It surrounds Cardinal River Operations (CRO) Cheviot and Prospect Creek pits on three sides, with the public Grave Flats Road, south of Cadomin, as the fourth side. The area, particularly Prospect Creek, had been recognized early on as a very important ecologically sensitive area with a wide diversity of wildlife and many unusual plants.

Active coal mining in Cheviot and Prospect pits will be nearing completion in the next two to three years. Off-Highway Vehicle (OHV) users are already actively pushing for renewed access to Prospect Creek. Premature arrangements for OHV access to this area would severely jeopardize the long-term viability of the WWP, both for ecological and wildlife concerns. In addition, it could also compromise CRO's efforts at reclamation and mitigation for the impacts of their mine.

OHVs had previously been recognized as a potential problem in this area because of disturbance to wildlife and incompatibility with other non-motorized users. An Access Management Plan (AMP) was developed in 1994 to address this issue. This AMP pre-dated the mine developments and, among other restrictions, recognized a particular designated route to access Drummond Ridge but limited going any further along the ridge.

The situation, geographically and ecologically, has changed markedly since the original AMP, so a revised access plan is required, looking at the area on

a more regional basis rather than at individual trails on an ad hoc basis.

Past experience in the area has shown that OHV users ignore many signs and Access Management conditions, particularly with illegal access on Drummond ridge and the upper alpine slopes of Prospect, Cheviot and Thornton Creeks. Adequate enforcement is not possible when the boundaries are indistinct and staff is very limited. These unofficial trails create permanent damage and increasing erosion in a fragile environment, destroying sensitive slow-growing vegetation, including a number of rare plants. Designated trails for OHV use also get progressively wider and more impassable in wetter areas, unless very extensive and expensive hardening is undertaken.

This cumulative and permanent damage is magnified by the marked increase in the number of OHV users in recent years (ten-fold at least in the Cardinal Headwaters, to several hundred per week). In addition to the damage these vehicles cause to the terrain, they have a much wider range than non-motorized users, thus extending their invasiveness and disturbance of wildlife, including increased possibilities for poaching. These considerations also impact the reclamation of the disturbed mine area and re-establishment of wildlife habitat, which because of the very harsh sub-alpine climate, will take a long time to recover.

Many other OHV trails exist in the Coal Branch area, so there are many alternatives for that activity. OHV activities in the important biologically diverse Prospect Creek–WWP area are clearly unsustainable in the future.

A suggested solution to improve the post-mining rehabilitation of the Prospect–Cheviot Creek mine disturbance is to: **Designate the Grave Flats Road as the boundary between non-motorized recreation on the west side (i.e., hiking, horse riding, and hunting, as at present) and motorized traffic on the east side of the road.** This clearly recognizable boundary would also result in better public understanding and compliance, as well as allow more practical enforcement of the regulations. A subregional plan such as this would also be compatible with the long-term Upper Athabasca Regional Plan.

Please show your support for this proposal by writing to your MLA, and to:

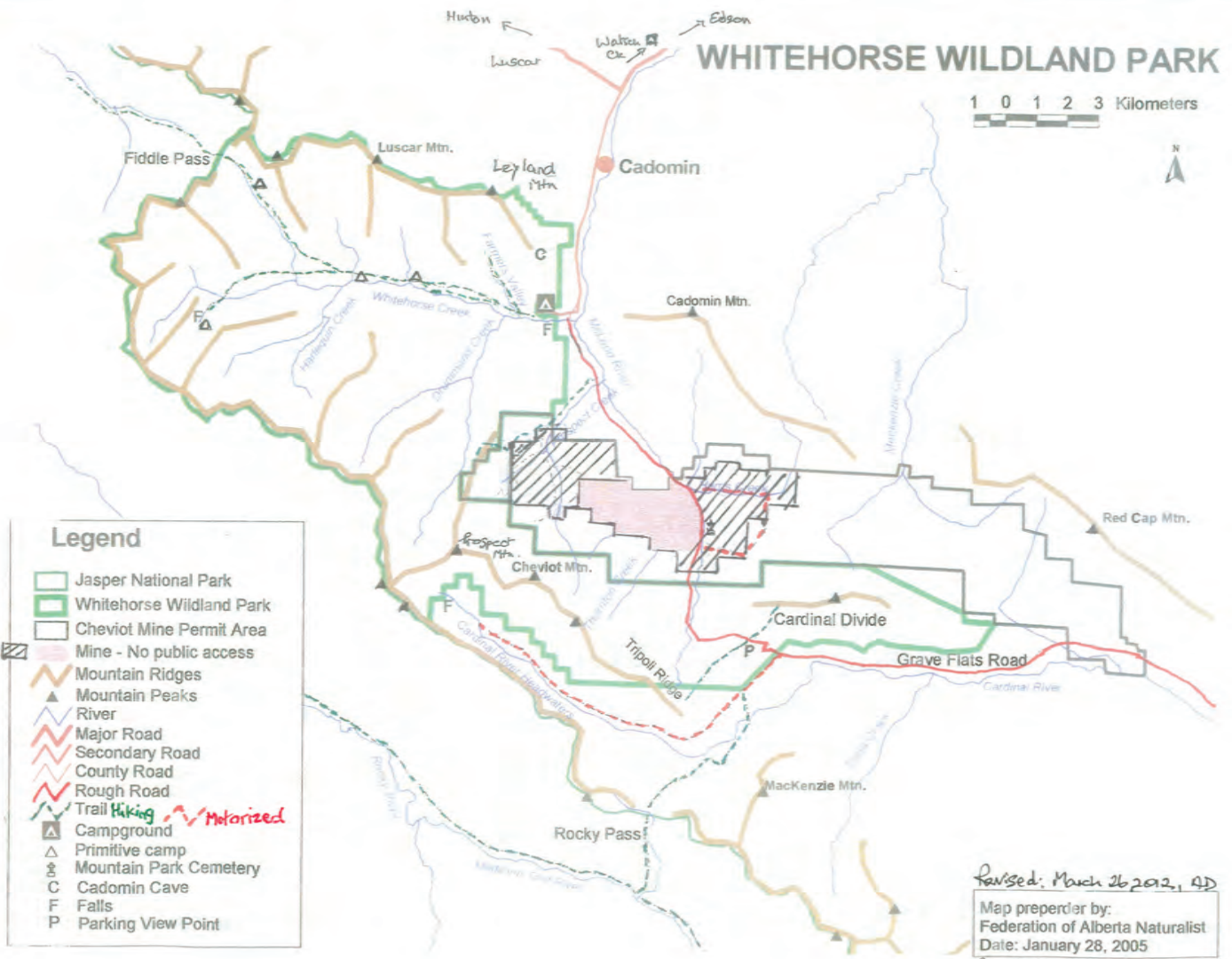
Andy Van Imschoot, Regional Director, West Central Region, Tourism Parks and Recreation, #1, 250 Diamond Avenue, Spruce Grove, AB T7X 4C7
email: andy.vanimschoot@gov.ab.ca

Sharad Karmacharya, Land Management Planner, Environment & Sustainable Resource Development, 3rd fl. Civic Centre, 131 Civic Centre Road, Hinton, AB T7V 2E6
email: sharad.karmacharya@gov.ab.ca

Brent Schleppe, Area Manager, Foothills Area, Environment and Sustainable Resource Development, #107 Provincial Building, 111 - 54 Street, Edson, AB T7E 1T2
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Please also send a copy to me, Alison Dinwoodie, adinwoodie@shaw.ca

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**Botany Alberta
 August 3 – 5, 2013
 Lake Louise**

This year, we're planning to explore the beauty of the mountainous Lake Louise area.

Accommodations will be at the beautiful and reasonably priced Lake Louise Hostel and the Lake Louise campground for those who prefer to tent.

We're planning a number of hikes in the area that will include sightings of whitebark pine, limber pine, numerous other rare plants—including bryophytes and lichens—and . . . incredible mountain views.

Botany BC will be held in nearby Golden and Revelstoke on the following weekend (August 8-11), so there's an opportunity to extend your trip or enjoy two botany weekends in a row.

Stay tuned to the ANPC website for more details. www.anpc.ab.ca

Photo K. McIsaac

A Rich & Rare Discovery: Impoverished Pinweed

by Sonya Poller

Reprinted with permission from Alberta Biodiversity Monitoring Institute. e-news. Issue 4, January 2013



***Lechea intermedia* var. *depauperata*, more commonly known as impoverished pinweed, was collected in 2012 for the first time in Alberta. Identification was made possible through the work of the ABMI and the Royal Alberta Museum.**

Photo Royal Alberta Museum

Many plant species are exceptionally common in Alberta. So common are species like aspen trees and dandelions that it is difficult to go for a 30-minute walk without seeing one. Other plants are exceptionally rare. Impoverished pinweed (*Lechea intermedia* var. *depauperata*) falls firmly into the exceptionally rare category. Despite intermittent efforts by researchers to re-locate known populations, it has been 32 years since this species was last seen anywhere on the planet. The Alberta Biodiversity Monitoring Institute (ABMI) and the Royal Alberta Museum (RAM) are pleased to report that we have found impoverished pinweed at one of our monitoring sites in the extreme northeastern region of the province near Lake Athabasca. Tim Chipchar, the ABMI's vascular plant specialist at the RAM confirmed this find, using a significant amount of ecological detective work. "I immediately recognized it as something unusual because I couldn't place it in one of the larger families found

in the province. Instead of keying it out immediately, I decided to look at information on species whose ranges are restricted to the Athabasca Sand Dunes. *Lechea* stood out as a probable identification."

After sending photos to a number of other experts in Alberta, Tim was eventually directed to Dr. Vernon L. Harms, Emeritus Professor of Botany at the University of Saskatchewan, who has done a great deal of work investigating the status of this plant in the region. He confirmed Tim's suspicions. Tim said, "It was really satisfying to be able to report a new species for inclusion in the flora of Alberta. The fact that so little is known about impoverished pinweed makes the story even more interesting."

Our collection of the *Lechea* is the sixth ever (worldwide) for the variety, and it's been found only at four other sites, all located within Athabasca Sand Dunes Provincial Park in Saskatchewan. Very

little is known about this taxon and its COSEWIC (Committee on the Status of Endangered Wildlife in Canada) designation remains "indeterminate." It is also a very poorly studied species, and there is a great deal more to learn about its distribution patterns. Tim also points to important questions that ABMI and RAM are pursuing with continued rigorous monitoring and specimen identification: "Why has impoverished pinweed proven so elusive? What other Lake Athabasca south shore species have yet to be found in Alberta?"

Despite the remaining mysteries, the ABMI's finding represents quite a significant range extension for the species and adds a new member to the known flora of Alberta. The specimen will soon be submitted to the Royal Alberta Museum Herbarium where it will be mounted. It will also eventually be accessible to researchers and the public.

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In 2012, *Lechea intermedia* var. *depauperata*, also known as impoverished pinweed, was collected for the first time in Alberta through the work of the ABMI and Royal Alberta Museum.

Photo Royal Alberta Museum

“It’s not really a looker, although the deep red colour of the flowers (seldom seen) is kind of nice. It looks like nothing else known in the province. It’s unusual and incredibly elusive; that’s probably its main appeal for me.”
Tim Chipchar, Vascular Plant Specialist, Royal Alberta Museum

Profile: Impoverished Pinweed

Biodiversity Notes

The south shore of Lake Athabasca is a unique landscape. The region is home to one of the largest areas of active sand dunes in North America, formed from glacial deposits following the last ice age. Living amongst the shifting sands is an equally unique gathering of flora that includes ten vascular plants prevalent only in this area. These plants are uniquely adapted to survival in this challenging ecosystem and are found nowhere else in the world. Of these rare ten, one seems to stand out as being particularly elusive—the inconspicuous *Lechea intermedia* var. *depauperata*, also known as impoverished pinweed. An air of mystery seems to surround this drab little herb, which makes its collection at an ABMI site in the 2012 season all the more interesting.

Scientific Name: *Lechea intermedia* var. *depauperata*

Family: Cistaceae, The Rockrose Family

Species Range: Populations of this variety appear significantly distinct from all others within the species, occurring only along the south shore of Lake Athabasca. Its nearest known kin (var. *intermedia*) can be found in southeastern Manitoba and the species ranges through the Great Lakes region to the Atlantic coast.

Habitat Preference: Disturbance seems to be key for survival for this species, with other populations found in moist sandy soils where recent fire or flooding has occurred. However, little is known for certain about this species.

Description: Small (5–10 cm), tufted, sparsely hairy perennial herb with non-showy flowers, their three reddish petals

seldom seen. It’s known to form dense local colonies and is believed to be largely self-fertilizing.

Alberta has a long history of botanical exploration. In spite of this, every year new discoveries are made that broaden our understanding of the flora of our environment. The collection of impoverished pinweed highlights the fact that there is still much to learn, especially in the most remote regions of this province.

References:

V.L. Harms. 1996. COSEWIC Status Report on Impoverished Pinweed (*Lechea intermedia* var. *depauperata*) in Canada. The W. P. Fraser Herbarium, Department of Crop Science and Plant Ecology, University of Saskatchewan, Saskatoon, SK. ♦

Puzzling Pairs: Rare chickweed or simply common?

by C. Dana Bush

Short-stalk Mouse-ear Chickweed and Nodding Chickweed

In the dry prairie of southeastern Alberta, in sandy soils with moist swales, we find a small annual chickweed not listed in the *Flora of Alberta* – *Cerastium brachypodum* (short-stalk mouse-ear chickweed). In some places there may be several hundred plants, so although it is small, it cannot be ignored. This chickweed is also rare (S1)—another reason not to pass it by.

Cerastium brachypodum (Figure 2) looks similar to the common *C. nutans* (nodding chickweed) (Figure 1), but it appears almost umbellate with short compact cymes and short straight pedicels. It is usually smaller than *C. nutans*, although some specimens are more elongate and looser, looking more like *C. nutans*. I prefer the key from *Gray's Manual of Botany* to distinguish the two:

- Pedicels, at least the lower ones, 1–5.5 cm long, hooked at tip, much longer than the capsules – *Cerastium nutans*
- Pedicels, 2–10 mm long, not hooked at tip, shorter than to slightly longer than the capsules – *Cerastium brachypodum*

References:

- Fernand, M.L. 1970. *Gray's Manual of Botany*, 8th edition, corrected printing 1970. D. Van Nostrand Company, New York.
- The Great Plains Flora Association. 1986. *Flora of the Great Plains*. Edited by Ronald L. McGregor & T.M. Barkley. University Press of Kansas, Lawrence, Kansas.
- Morton, John K. *Cerastium* in Vol. 5 of *Flora of North America North of Mexico*.



Figure 1
Cerastium nutans
nodding chickweed
Note the long hooked
pedicels.



Figure 2
Cerastium brachypodum
short-stalk mouse-ear
chickweed
Note the short straight,
and umbellate pedicels.

Wanted: Writers

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and we have ideas to
get you started!

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danabush@telus.net

The University of Lethbridge Herbarium Digitization Project is complete

The collection currently includes over 20,000 specimens of vascular plants and remains an important research tool for botanists, students, and the general public.

<http://digitallibrary.uleth.ca/cdm/landingpage/collection/herbarium>

ANPC Board Positions Up For Re-election in 2013

The following Board Positions are up for re-election:

- President
- Secretary
- Northern Director
- Southern Director



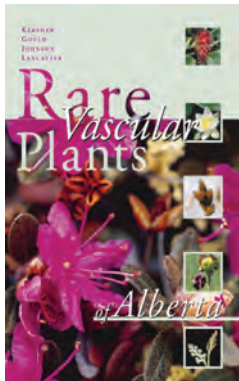
We are now accepting nominations.

If you are interested in joining the ANPC Board, please send an email to Laurie Hamilton, ANPC Secretary, at laurie@zanshinenvironmental.com or phone at (403) 483-2476. Please include the position that you are interested in and your contact information.

The following lists the current slate of nominees for Board positions up for re-election:

- Marsha Hayward for Northern Director

Voting will take place at the Annual General Meeting, which is being held in conjunction with ANPC's 26th Annual Workshop on April 13, 2012, in Olds, AB. Visit the website (www.anpc.ab.ca) to check out workshop program updates and download the registration form.



Addenda for the **Rare Vascular Plants of Alberta** are now available!

For information, drawings, and range maps of rare vascular plant species of Alberta not found in the *Rare Vascular Plants of Alberta* (Kershaw et al. 2001) please visit the Alberta Native Plant Council's website at www.anpc.ab.ca under Publications. This is an ongoing project with plant species added as the pages are completed.



Past issues of *Iris* are now available online at www.anpc.ab.ca



Iris is published three times a year by ANPC. The Council aims to increase knowledge of Alberta's wild flora and to preserve this diverse resource for the enjoyment of present and future generations.

If you have an announcement, article or other item, you are invited to submit it to the editor for publication. Items concerning native plants will be given highest priority.

The editors reserve the right to edit submissions, but will review changes with the authors whenever possible. Disputes will be resolved in favour of the audience.

Copyright remains with the authors except where noted. Permission to reprint is generally granted, but please contact the editors for details.

Submission deadline for the next issue:

October 1, 2013

A subscription to *Iris* is included with membership in the ANPC. To join, contact the secretary, or check our website, www.anpc.ab.ca.

Love plants? Want to rub shoulders with other botanists?

Come to a Plant Study Group

Edmonton Plant Study Group

Location: J. Percy Page Centre, 11759 Groat Road, Edmonton, Room # 8, Enter via the back door of the Centre and sign in. The security guard will let you in.

Time: 7:30 p.m. Free and open to all!

Monday, March 11th, 2013

Speaker: Angela Hobson, Ecological Planner, City of Edmonton's Office of Biodiversity

Title: Protecting and Managing Biodiversity in an Urban Centre: Challenges and Opportunities

Monday, April 15th, 2013

Speaker: Nicole Kimmel, Chair, Alberta Invasive Plant Council and Weed Specialist, Alberta Agriculture and Rural Development

Title: Politically correct xenophobia: invasive alien plants you should know and not tolerate!

Central Alberta Rare Plant Study Group

Location: University of Alberta Herbarium, Biological Sciences Building (east end), Room B-319 (3rd floor), or B-521 (5th floor), Saskatchewan Drive, Edmonton

Date: last Tuesday of the month, October to April inclusive

Time: 6:00 to 9:00 p.m.

Facilitator: V. Crisfield – vcrisfield@gmail.com

Comments:

- Specifics will be emailed a week before the meeting
- Volunteers welcome to give presentations, facilitate seminars, lead study sessions



Southern Alberta Rare Plant Study Group

Location: University of Calgary Herbarium, Biological Sciences Basement

Date: first Saturday of the month; November to April inclusive

Time: noon to 4:00 p.m.

Facilitator: H. Blakely – enzian44@shaw.ca

Comments: topics and presentation details will be announced

Medicine Hat Rare Plant Study Group

Location: Medicine Hat College Herbarium (L155)

Date: third Saturday of the month; November to April inclusive, except February

Time: noon to approximately 3:00 p.m.

Facilitator: C. Linowski – Clinowski@mhc.ab.ca

Comments: topics and presentation details will be announced

Join Our Volunteers

Are you looking to get more involved with the ANPC? There are many positions available that suit a variety of interests.

Please send an email to info@anpc.ab.ca or contact Janine at 403-478-2911 for further information.

City of Calgary Biodiversity Project Needs Volunteers

Our involvement as a participant city of the ICLEI Local Action for Biodiversity (LAB) Project (Visit <http://www.icleicanada.org/> for more information) is at the stage where we are currently preparing a list of native plant species historically known to occur in Calgary. This data, which was compiled using multiple sources, will be the baseline for future monitoring comparisons. In effect, we will then be able to answer questions about the state of native species and to take appropriate steps where necessary to ensure their protection. Volunteers who choose to review the spreadsheet can help by letting us know which species are rare or no longer known to occur in Calgary.

If you can help, contact:

David Hayman, M.Sc.

The City of Calgary | Parks | Natural Parkland Management

T: 403-221-4686 | C: 403-899-6521 | F: 403-974-1936

E: dave.hayman@calgary.ca | www.calgary.ca/parks

P.O. Box 2100, Stn M | Calgary, AB | T2P 2M5 | #75 ♦

News on the New Flora of Alberta

Dr. John Packer and Dr. Joyce Gould continue to work on the new Vascular Plants of Alberta. This new flora will consist of three parts with the first, the Ferns, Fern Allies and Monocots, to be published by the University of Calgary Press in the next few months. Work continues on the other two parts. Descriptions are being included only for those taxa that are new to the province or for those that are new as a consequence of changes in classification. This was done not only because of the amount of information already available, but to reduce book size for use in the field. Keys incorporate all known taxa, native and introduced, and general descriptions of habitat and distribution are provided, as are synonyms where appropriate. Nomenclature closely follows the *Flora of North America*, and taxa are arranged alphabetically. Drs. Gould and Packer hope that this new flora will be of great use to all who have an interest in the vascular plants of our province. ♦

Foothills Restoration Forum Wins Environmental Award

The Alberta Chamber of Resources (ACR) has selected the Foothills Restoration Forum (FRF) as their recipient for this year's ACR Environmental Award for the *Guidelines for Wind Energy Development and Reclamation on Grasslands*. Marilyn Neville, FRF coordinator, and Cheryl Bradley (ANPC rep) facilitated the process to define the wind energy guidelines. Awards were presented at the ACR annual conference in Edmonton in February. (For more information on the ACR, check their website at www.acr-alberta.com.)

Changes within government to address regulatory and policy gaps for wind energy development are proceeding slowly. The last input by FRF and PCF (Prairie Conservation Forum) to the Alberta Utility Commission's review of the wind power regulatory process was in late October 2012.

Cheryl Bradley and Laurie Hamilton represent the ANPC on the Foothills Restoration Forum, and Cheryl Bradley and Tony Blake represent ANPC on the Prairie Conservation Forum. ♦

Slime Molds, from page 5

References:

- Bisby F., Roskov Y., Culham A., Orrell T., Nicolson D., Paglinawan L., Bailly N., Appeltans W., Kirk P., Bourgoin T., Baillargeon G., Ouvrard D., eds (2012). *Species 2000 & ITIS Catalogue of Life, 2012 Annual Checklist*. Digital resource at <http://www.catalogueoflife.org/col/>. Species 2000: Reading, UK.
- Richardson, K.A. and Currah, R.S., "Myxomycetes of Alberta" *Mycotaxon* Vol.37, pp 363-378, April-June 1990.
- Schnittler, Martin, "Ecology and Biogeography of Myxomycetes" Post-doctoral Thesis, Friedrich Schiller University, Jena, 2010.10.15.
- Stephenson, S.L. and Stempen, H. 1994. "Myxomycetes: A Handbook of Slime Molds". Portland, Oregon: Timber Press, Inc. 183 p. ISBN 0-99192-439-3.
- Stephenson, S.L. "An Introduction to the Morphology and Taxonomy and [sic] of Myxomycetes" [PDF] <http://slimemold.uark.edu/pdfs/MORPHOTAX.pdf> (accessed Jan 22, 2013).
- Swanson et al, "Taxonomy, slime molds, and the questions we ask", *Mycologia*, 94(6), 2002, pp. 968-979. ♦

Alberta Native Plant Council (ANPC)
26th Workshop and Annual General Meeting

The Role of Vegetation in Alberta's Wetlands

Saturday, April 13, 2013
Olds College, Olds Alberta



Please join us in Olds to explore the role of vegetation in Alberta's wetlands. Potential topics include:

- Wetland indicator plants
- Aquatic, submerged and emergent wetland plants
- Non-vascular wetland plants
- Rare wetland plants
- Rare wetland ecological communities
- Plants used in wetland restoration/construction
- Using plants for monitoring wetlands
- Wetland stewardship sites

The workshop program is currently being developed. **Please visit www.anpc.ab.ca for regular updates.**

Workshop registration includes the one-day workshop, program handout, buffet lunch and coffee breaks. A dinner banquet is also planned after the AGM. Please indicate on the registration form if you will be attending the dinner banquet.



After the workshop, the ANPC will hold its Annual General Meeting. Everyone is invited to attend. Learn about ANPC activities, consider a position on the Executive and/or volunteer for committee work.

For information on the workshop and registration please contact:

Laurie Hamilton
Phone: (403) 483-2476
E-mail: laurie@zanshinenvironmental.com



The daytime workshop, annual general meeting and banquet will take place at the DMP 101 Lecture Theatre at:
Olds College

8:00 am – Check-in and registration
8:30 am – Workshop presentations begin
4:30 pm – Annual General Meeting
6:15 pm – Dinner banquet

Registration:

Fill out the following registration form and mail it to:

2013 ANPC Workshop
c/o Janine Lemire
2404B 1st Ave. NW
Calgary, AB T2N 0B9

Deadline:

Early registration is up to and including **March 15, 2013**.
After that a late registration fee will be applied.

Registration Form

Name _____

Affiliation _____

Address _____

City _____ Province _____

Postal Code _____

Phone _____

E-mail _____

Early Registration (tick one as applicable, enter amount on line below)

- Member (new or current) \$75.00
- Non-Member \$90.00
- Student \$35.00
- Senior..... \$35.00

Late Registration **after March 15th, 2013**

- Member (new or current) \$90.00
- Non-Member \$105.00
- Student \$45.00
- Senior..... \$35.00

Dinner Banquet \$50.00

Workshop Registration Total \$ _____

My diet is restricted (please describe below):

New Membership or Membership Renewal enclosed:

- Individual... \$15.00 Family..... \$25.00
- Senior \$10.00 Student..... \$10.00
- Corporate... \$50.00 Life..... \$500.00

Tax deductible donation.....\$ _____

where needed conservation action educational programs

Total Enclosed \$ _____

Include a cheque or money order payable to:

Alberta Native Plant Council

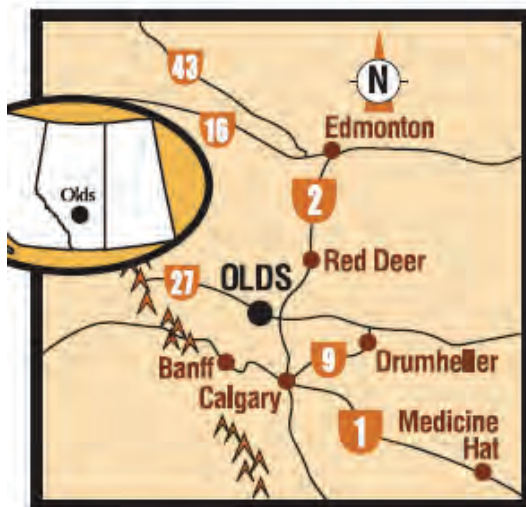
We cannot accept other forms of payment.

Accommodations:

Please note that due to the location of this year's workshop, we have not secured a block of hotel rooms for the delegates. Some hotel options in Olds can be found half way down the page of the following link: <http://www.oldscollege.ca/programs/ContinuingEducation/hortweek/guest-information.htm>

Venue:

Olds College, 4500 – 50 Street, Olds, AB



See the following page for an Olds College campus map





OLDS COLLEGE

WELCOME
Students and Visitors

Room Series
100, 200

CAMPUS BUILDINGS

- 1 Duncan Marshall Place (Administration Building) – DMP Coffee House
- 300 2 James Murray Building
- 300 3 Dr. Robert Turner Research Centre
- 1000, 1100 4 Land Sciences Centre – Greenhouses – Cactus Cafe
- 5 Bank of Montreal Landscape Construction Pavilion
- 6 John Deere Training Centre
- 400 7 W. J. Elliott Building (Agricultural Mechanics)
- 8 Campus Facilities (Ship/Receive)
- 500 9 Metals Building
- 600 10 Animal Health Technology Labs
- 600 11 Lachlin McKinnon Building (Animal Science) – Meat Lab
- 12 Industry Training Centre
- 700, 800 13 Learning Resource Centre – Library & Student Services – Bookstore
- 14 Student Alumni Centre
- 900 15 Bell e-Learning Centre

□ Symbiotic Envirotek Industries

College Rental Gardens



- 16 BioIndustry Resource Centre
- 17 College Court Townhouse Res.
- 18 Frank Grisdale Hall (Residence) – Gymnasium – FGH Cafeteria
- 19 Fine Arts & Multi-Media Centre/ TransCanada Theatre
- 20 Ralph Klein Centre/Olds High School – Health & Wellness Centre – Centre Court (food services)
- 21 Chinook's Edge Bus Maintenance Facility

FARM BUILDINGS

- 22 Livestock Centre
- 23 Cold Barn
- 24 Beef Centre
- 25 Steer-A-Year Facility
- 26 Riding Arena (South)
- 27 McClellan Arena (North)
- 28 Equine Centre/Farrier Lab
- 29 Foaling Barn
- 30 Sheep Barn
- 31 Small Animal Research Facility
- 32 Grounds Maintenance Shop
- 33 Farm Offices and Shop
- 34 Composting Technology Centre – Biofuel Technology Centre

Demonstration and Applied Research Plots

Future Botanic Garden III Treatment Wetlands

Highway 27

Highway 2A

Ball Diamond

Football Field

A B C D E F

PARKING LOTS

Permits are required
Monday to Friday, 5:00 am – 5:00 pm

Temporary permits can be obtained from
the Cashier in Duncan Marshall Place (1)

STUDENT – Permit

Non Plug-in Lots – F, FF, GG, H, I, J, R
Plug-in Lots – A, DD, G

STAFF – Permit

Non Plug-in Lots – AA, I, J, L, M
Plug-in Lots – A, AA, B, C, DD, K, L

VISITOR (metered)

Main Designated Lot – **D**
Metered Lot – A, C
Stock Trailer Lot – T