

No. 93 Fall Winter 2024

Iris

The Alberta Native Plant Council Newsletter



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Look for more information
on the ANPC's website.
anpc.ab.ca



Cover photo: Marsha Hayward
Bog cranberry or lingonberry (*Vaccinium
vitis-idaea*) growing on a bed of big red stem
(*Pleurozium schreberi*) moss, Cold Lake area,
Alberta.

McClelland Lake Wetland Complex: A Tale of Two Fens

Sherry Heschuk

The relatively unknown plant life of wetlands in the north seems to catch the attention of only a few people. The McClelland Lake wetland complex is located north of the Athabasca oil sands and contains McClelland Lake and interconnected peatlands that include large groundwater-fed patterned fens. The significance of this unique area, which contains numerous rare plant species, has been recognized in environmental reports since at least 1990. Now the fen has become more vulnerable because of a large-scale open pit mine that is being developed in the future on this fen.

To pursue our interest in and concern for the fen, a small group from Alberta Wilderness Association (AWA) and Alberta Native Plant Council (ANPC) arranged to visit McClelland Lake fen with the help of the Borealis Paddling Club from Fort McMurray. AWA and ANPC members travelled from Calgary, Edmonton and St. Albert for a field visit on September 9, 2023. Paddling club members provided guiding and logistical support for the urban visitors, and they accompanied the visitors in kayaks and canoes on the lake.

Heading out on the lake from the camp was not as easy as we had originally

expected because just getting to the camp was an adventure in itself. Our canoe trailer that was loaded with our club boats ended up getting stuck enroute. This meant that by the time our truck and trailer were free, we had about an hour of sunlight left to find our campsite and also pitch our tents. Accomplishing this in the waning daylight required us to keep our wits about us as bears were everywhere. Fortunately, blueberries were also plentiful, and we saw that the road we had been stuck on was lined with them. I imagined the berry gods had become



Paula Evans (left) and Sherry Heschuk (right) paddling on McClelland Lake.

Amy Tucker

See **McClelland Lake**, page 2

McClelland Lake, from page 1

Amy Tucker



The slow work of getting the truck unstuck on the sandy road to the campsite.

our allies, and Paula made good use of the sweet treats. Our camp was located in a fairly remote place, but we later saw other recreational paddlers coming through the camp and using the lake, indicating that McClelland Lake is valued and used by local people.

Amy Tucker



Paula Evans enjoys blueberries picked along the road to the campsite.

Sherry Heschuk



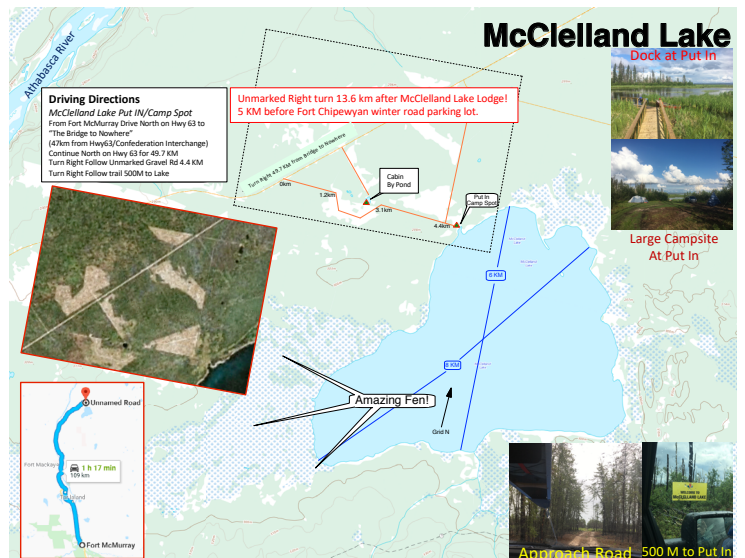
Bog rosemary (*Andromeda polifolia*) in mat of *Sphagnum* moss.

Sherry Heschuk



Water smartweed (*Persicaria amphibia*).

Location of McClelland Lake and the adjacent fen
Source: AWA



Water arum (*Calla palustris*) at edge of McClelland Lake.

Amy Tucker

Sherry Heschuk



Fruits of water arum (*Calla palustris*).



Wild rice (*Zizania aquatica*) growing in the shallows at McClelland Lake.

Sherry Heschuk



Grains of wild rice (*Zizania aquatica*) collected at McClelland Lake.

Amy Tucker



Leaves of marsh cinquefoil (*Comarum palustris*).

Amy Tucker

See **McClelland Lake**, page 3

McClelland Lake, from page 2

Lower Athabasca Regional Plan Disturbance to the Fen

For Paula Evans and me, both members of ANPC, seeing the native plants inhabiting the McClelland Lake wetland was a chance to become informed about aspects of the Lower Athabasca Regional Plan (LARP). Implemented in 2012, the LARP guides the Government of Alberta's environmental management, addresses growth pressures, and supports economic development in the Lower Athabasca region.

For specifics of the LARP, see the following resources:

- **The Lower Athabasca Regional Plan (LARP).**
- **Lower Athabasca Regional Plan 10-Year Review Part 3: LARP's Management Frameworks, David Laidlaw, December 20, 2022.**

There is a **Fort McKay First Nation Position Paper on the Lower Athabasca Regional Plan Frameworks (June 2015)** that criticizes LARP for failing to consult and protect Indigenous peoples and their rights in the planning region and that mentions the LARP's Biodiversity Framework (see pages 30 to 42 of the report).

As part of the 10-Year Review of the LARP, feedback is being gathered from the public in the form of a Summary Survey "to assess the ongoing relevancy and effectiveness of the existing plan in supporting the long-term vision for social and environmental needs in the region."

AWA has compiled **comments and recommendations to assist people who participate in the survey.**

And you can complete the online survey [here](#).

Activity of the petroleum extraction industry in the McClelland Lake area continues unabated. Suncor's operational plan for the wetland complex contains experimental mitigation that includes a long concrete wall extending many metres down and separating the fen into two parts. In this unfolding tale of two fens, disturbance to the whole fen seems inevitable once mining occurs in part of the fen.

During our time at McClelland Lake, in an area near the mouth of a creek, Amy Tucker (from AWA) left her canoe and waded into a vegetated area of the fen. She came back with soaked shoes and the knowledge she had been walking on a floating part of the landscape. Water and water movement are vital factors supporting the health and biodiversity of this wetland complex. This tale of two fens may include disruption of water flow and water characteristics, disappearance of rare plants, lost habitat for birds and wildlife, and irrevocable changes to the biodiversity of the fen.



Sherry Heschuk

Phillip Meintzer (left) and Amy Tucker (right) from AWA. Amy is about to step from her canoe for a short walk in the fen.

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The Ecological Buffalo: On the trail of a keystone species

Reviewed by Cheryl Hendrickson

The Ecological Buffalo: On the trail of a keystone species
By Wes Olson and Johane Janelle
280 pp, 10"x11", University of Regina Press, 2022

We cannot claim to understand any of the present day distributions of rare or common native plants and animals in Alberta without understanding the profound impact the great slaughter of 30 million plains bison across the continent had on them.

Plains bison shared their historic range of 5.4 million square kilometres with 3,000 vertebrate animals, 19,000 plants and tens of thousands of invertebrate species. As co-author Wes Olson states: "The ecological devastation that resulted from their slaughter was profound".

Before all of the other factors we identify that contribute to current distribution and rarity of grassland species (like European settlement, agriculture, urbanization, fire suppression, and more recently invasive plants, climate change and industrial disturbance like oil and gas), we need to look at the role of this keystone species to begin to understand how its absence shifted prairie ecology before any of these modern stresses. The plains bison co-evolved with all biota and impacted every abiotic factor in its former range. What we think of as "normal" or "pre-disturbance" distribution is only that of a post-slaughter prairie environment missing its keystone species.

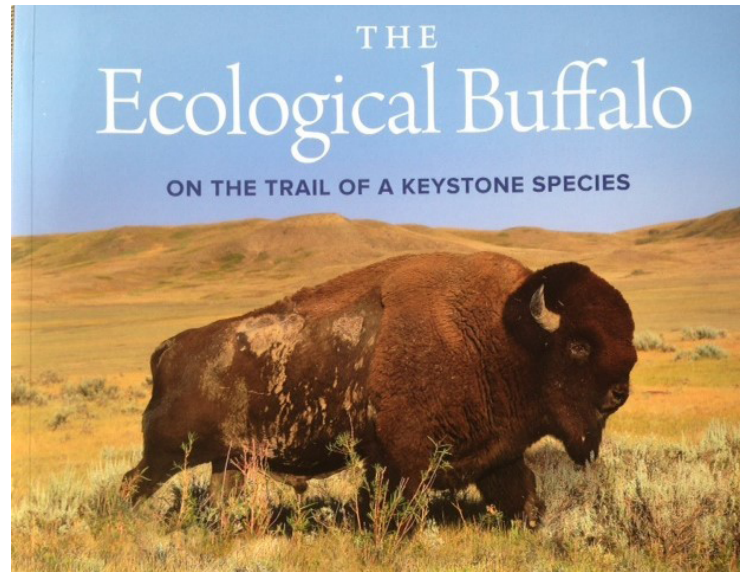
The Ecological Buffalo brings the reader around to the fascinating, integral and profound piece that plains bison played in the trophic web, and on the land itself. It is endorsed by celebrated international conservationist Harvey Locke in the Foreword, while Alberta Order of Excellence recipient Dr. Leroy

Little Bear follows up with the Afterword.

The volume is both authoritative and accessible, helpfully educating (or refreshing) the reader on many ecological concepts around which the book and each chapter are structured. With the authors' more than 40 years' experience working with bison in almost every habitat they occupy in Canada and every major reintroduction, we can turn the pages of this book confidently knowing that we are being authoritatively and wisely guided.

It unfolds and informs through Olson's text, illustrations and research, and Janelle's photographs of their fieldwork together. How many seeds can cling to a bison face? Uncountable, but we can see the image in their chapter on seed dispersal. The photos show many species interactions because they were there to observe and capture, opportunities that only years of field observation can provide.

The scope of this book is impressive for organizing the information – which by its nature is circular and interconnected – through the trophic web. But let's look at the role of plains bison on vegetation through disturbance and seed dispersal and establishment – a function they fulfill that is directly linked to the interests of field botanists.



Bison, soil and seeds

Bison reintroduced to Banff National Park have been tracked moving an average of 4 kilometres per day, with a maximum of 21 kilometres per day for one bull. Olson calculates a bison hoof exerts 75 psi (pounds per square inch) of pressure with each stride, which creates microscale disturbances that facilitate water and nutrient absorption in the soil by breaking up hard surface crusts, mulching litter and increasing aeration, while pushing surface-laying seeds into the soil.

Although there is no specific information on what plant species are carried on hair and ingested and dispersed in manure, Olson estimates that given the average frequency and size of manure dropping, a herd of 100 animals could cover over 12 hectares with dung every year. Each animal disperses approximately 1.3 kilograms of hair annually over the three-month shedding season. Both of these seed dispersal mechanisms, combined with their wandering habits described above, mean that the seed load carried internally and externally is distributed

See **Ecological Buffalo**, page 5

Ecological Buffalo, from page 4

minimally over 360 kilometres of travel in the shedding season alone.

Besides the nutrient deposition of both dung and urine which benefit plants, he describes dung patties as “ephemeral habitats” providing food and shelter for a separate trophic level of arthropods, insects and rodents (some of which also play a role in seed dispersal), which subsequently influence the abundance and distribution of insectivorous and predatory birds.

Buffalo wallows are created by bulls during the rut on grazed lawns (patches of continuously grazed grass) that have become desiccated, exposing the soil. They were used by all of bison society for generations, even hundreds of years. They act as vernal pools supporting herpetofauna, and provide moist, exposed soil for germination (as I have speculated about the SARA-threatened slender mouse-ear-cress (*Halimolobos virgata*) (Hendrickson 2019)). Olson has recorded 20-30 wallows per hectare in the northern mixed-grass prairie and 4.4 wallows per hectare for plains bison in Elk Island National Park. *Halimolobos* has been recorded in vernal moist sites, and in pre-settlement times it is plausible that the seeds were carried from one wallow to the next and might have functioned as a “wallow obligate”, and thus been far more common when active wallows were maintained.

Tracks left in the dust show that wallows are used by every mobile species, including insects, rodents and lagomorphs, ungulates and canids, for dusting and temporary shelter from the sun and wind.

There are thousands of remnant wallows across the prairies last used in the 1880s before the great slaughter, and Olson cites work that they currently support higher diversity of arthropods than the surrounding landscape.

In historic populations, with a conservative estimate of a mortality rate of 5 per cent, 1.5 million carcasses could have decomposed annually.

Historical accounts describe hundreds to thousands of carcasses due to fire and other extreme weather events. Six stages of decomposition provide food for a host of meat-eating scavengers from flies, beetles and other insects, to avian and mammalian scavengers. The corpses release minerals, nutrients and carbon back to the soil that benefit soil microbes and their processes. Carcass decay favours forbs, and their biomass has been recorded as 15 times higher on carcass sites.

Modern cattle occupy most of the former bison range and do provide a surrogate for some of the ecological function lost when bison were exterminated. But there are exceptions: they do not provide the level of mortality and the effects of carcass decay and opportunities for scavengers; they do not have or shed the amount of hair biomass that provides a resource for birds and rodents, and is a medium for seed dispersal. Cattle do not wallow and therefore do not leave these features and their benefits on the landscape. And because they are confined and not free roaming, they occur at lower densities than historical bison populations, and neither do they occupy and vacate a grazing site as did free roaming herds.

By 1883, plains bison were extirpated across the majority of their range, with the last wild plains bison shot in 1879 in Canada. By the late 1880s, there were 281 plains bison remaining in North America, most of which were in zoos.

The Ecological Buffalo shows us the ecological dynamics of plains bison through current populations – estimated to be approximately 500,000 confined, free roaming and ranches – that graze 0.0009 per cent of their historical range. It invites us to consider the next step of imagining the 30 million at a regional or continental scale when plains bison “flowed like a massive brown tsunami of living flesh and fur”.

The will, technology and infrastructure to be able to restore and rewild plains

bison represent the best of what humankind can accomplish to make right the wrongs of our predecessors. While Olson and Janelle show us the connections between bison and their environment based on the dynamics of modern herds, we must also bear in mind the pre-settlement multitudes that dumbfounded the observers of the day. It is up to us as field botanists to integrate the vastness of ancient herds in our imagination with the dynamics presented in *The Ecological Buffalo* to begin to grasp the magnitude of the loss in the grasslands in which we work.

References

Hendrickson, Cheryl (2019). “Plains Bison and Slender Mouse-Ear-Cress (*Halimolobos virgata*): Disturbance and Dispersal” *Iris*, no. 1, February 2019, pp. 8-10.

Cheryl Hendrickson is the President of LandSaga Biogeographical. ♦



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.

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Submission deadline for the next issue:
May 15, 2024

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

McClelland Lake, from page 3

Information and Resources on McClelland Lake Wetland Complex

AWA has put together numerous articles, press releases and reports to educate people about the conservation value of McClelland Lake wetland complex and the industrial development plans that threaten it. AWA requested that the Alberta Energy Regulator (AER) “reconsider and revoke” their approval of Suncor’s submitted McClelland Lake Wetland Complex Operational Plan, pursuant to Section 42 of the Responsible Energy Development Act. Phase 1 of the AER’s Reconsideration Process was completed at the end of July 2023, encompassing submissions from AWA and Suncor.

For more information, see the following resources:

- **Don’t Mine McClelland.**
- **Wildland Area of Concern: McClelland Lake.**
- **Don’t Mine McClelland Lake – Live AWA Talk with Phillip Meintzer, November 4, 2023.**
- **Newsletter: We’re going to McClelland Lake, in Wild Horizons 13th Edition, Amy Tucker Outreach and Communications Specialist, August 23, 2023.**
- **AWA Concerns with the McClelland Lake Wetland Complex Operational Plan, Phillip Meintzer, April 3, 2023.**
- **A Review of Suncor’s McClelland Lake Wetland Complex Operational Plan for the Fort Hills Oil Sands Project, April 2023.**
- **Where Are the Approval Conditions for Suncor’s Expansion into Alberta’s Irreplaceable McClelland Lake Wetland Complex?, January 6, 2023.**
- **Destruction of McClelland Lake Wetland Complex Flies in the Face of Our Climate Change Commitments, Phillip Meintzer, AWA Conservation Specialist, April 4, 2022.**



Amy Tucker

Above: Morning light on McClelland Lake and the adjacent wetlands.

Right: Shrub birch (*Betula* sp.) at the edge of the patterned fen.



Amy Tucker



Amy Tucker

Above: Sherry Heschuk in her canoe on McClelland Lake.

Below: Campsite during the field visit to McClelland Lake.



Amy Tucker

Thank you to Willi Winston, canoeist and president of the Boreal Paddling Club, and to the paddlers of the club who made this trip amazing in spite of us getting stuck in the sand on the almost impassable roads enroute to the McClelland Lake camp. And a big thanks to Phillip Meintzer, Conservation Specialist for AWA, and Amy Tucker, Outreach and Communications Specialist for AWA, who shared these adventures and their photos from the trip. It was a highlight for me to meet other ANPC members at the talk on McClelland Lake wetland complex, hosted by AWA in November 2023. ♦



News and Events

SALMTEC Training

Seminar Series – Preliminary Wetland Boundary Delineation

Date: Wednesday, May 22, 2024 at noon

Location: Online

In the final Desktop Investigations series—Preliminary Wetland Boundary Delineation seminar—wetland identification and preliminary boundary delineation tools and approaches will be discussed, and applied to case studies. Tools include historical air photos, satellite images, contours, digital elevation models, hydrology maps, geology maps, soils and surficial geology maps, as well as climate data, hydrology data, land cover mapping and many other tools! For more information, and [to register click here.](#) ♦

Biophysical Bootcamp

Date: Thursday, May 30, 2024

Location: Bragg Creek, Alberta

The Biophysical Bootcamp Field Training Course will prepare environmental field staff, of all levels, with crucial field skills that they will need in the upcoming field season. Training includes (1) digging and characterizing soil pits, such as colouring, texturing, measuring and attributing, (2) identifying plants and using identification tools, (3) classifying and applying an ecological land classification in the field (Alberta's Grassland Vegetation Inventory), and (4) collecting wetland data inputs for the Alberta Wetland Rapid Evaluation Tool-Actual (ABWRET-A), focusing on the wildlife habitat function. For more information, and [to register click here.](#) ♦



From the cover: Bog cranberry or lingonberry (*Vaccinium vitis-idaea*) growing on a bed of big red stem (*Pleurozium schreberi*) moss.



Email botanyab@anpc.ab.ca to register.

Plans for the event include:

- **Friday afternoon trip** to a rich fen ecosystem if there is enough interest.
- **Saturday Lily Lake Trail:** This highly recommended hike is one of our prime activities for the weekend. The trail offers a who's-who example of boreal clinal variation from Boreal Upland (with some lower foothills species) – where you can see lodgepole pine, mountain ash, red elderberry and the notorious devil's-club – down through a beautiful elevation change (complete with several wooden bridges and boardwalks) and forests of balsam fir, thick growths of lady fern, oak fern and lots of beautiful mosses. The trail winds down to a beautiful boreal treed fen complete with peat moss, and to a gorgeous, trout-stocked lake with yellow pond-lily and ribbon grass. One unique rare plant on this walk is the northern beech fern (*Phegopteris connectilis*).
- **Saturday Evening Social:** Held at the **Boreal Centre for Bird Conservation**.
- **Sunday Shoreline Walk on Devonshire Beach:** This beautiful beach stretches more than 3 kilometres along the eastern shore of Lesser Slave Lake, with large stands of sand-holding willows and shallow wave-generated wetland complexes where you can find lots of tadpoles, small-bodied fish and spring peepers. There are also beautiful treed dunes with unique and rare xeric grass-loving species. Bald Eagles sit in the tall pines along the edge of the dune and shoreline habitat waiting for fish, creating fantastic photo opportunities! Rare species to be found along the beach habitat are Sitka willow (*Salix sitchensis*), Canada rice grass (*Piptatheropsis canadensis*) and the beautiful flat-topped goldenrod (*Euthamia graminifolia*). There are some rare sedges, prairie grasses and *Selaginella* sp. within the dunes, as well.

More information on the trips and accommodations is available on the [ANPC website](#).

News and Events

Under Pressure: Threats to Alberta's Native Plant Communities — Webinar Series

Nurturing Alberta's Native Bees: The Alberta Native Bee Council's Approach to Conservation

This is the fifth and last webinar in the mini-series. Megan Evans returns to provide an inspiring bookend to close out the series. Learn about the status of Alberta's native bees and what the Alberta Native Bee Council has been working on to help protect them as well as how participating in ANPC's very own Native Plant Garden Challenge can help!

Join us on Zoom on May 15, 2024 at noon MDT. [Please register here.](#) ♦

Forging Unexpected Alliances to Save Native Plants

Native plant advocate Blake McNeill, co-founder of Alberta Native Plant Rescue, shares some of the innovative salvage projects the group has undertaken to rescue native flowers and grasses from roadways and development sites prior to demolition.

The video recording of this webinar from the mini-series is now up on the ANPC members-only portal. [Visit the website.](#) ♦

McClelland Lake Wetland Complex

The third webinar in the mini-series featured Phillip Meintzer (Conservation Specialist, Alberta Wilderness Association) on March 12, 2024.

Phillip spoke about the McClelland Lake Wetland Complex, an ecologically significant wetland area in northeastern Alberta that is important wildlife habitat, stores millions of tonnes of carbon, and is of cultural importance to local Indigenous communities.

The video recording of this webinar from the mini-series is now up on the ANPC members-only portal. [Visit the website.](#) ♦

2024 ANPC Native Plant Garden Challenge

The Challenge runs from March to November 2024.

Current ANPC members can sign up for the challenge on the ANPC members page. Access the [members page here.](#)

New ANPC members can register to join the challenge after completion of the membership form. Join ANPC online or by cheque and mail (pdf form) or (downloadable doc) file.

Participants receive:

- a Toolkit with information on creating and maintaining a native plant pollinator garden
- access to a private Facebook group
- opportunities to share and meet up virtually
- printable signs for display in your garden
- help and advice if needed

Schedule:

March: Registration opens

March to May: Plan and prepare

May Long Weekend: Start planting

First of Each Month: Share your yard

September to November: Collect your seeds/Seed share events/Plant more seeds

Winter Wrap-Up: Stories/Share events posted on social media ♦

Peace River Plant Study Group

You can join us at NAIT Centre for Boreal Research, 8102 – 99 Avenue, Peace River, AB (beside Northern Lakes College). Parking is free in front of the building.

Regularly scheduled meetings take place year round on the first Thursday of the month from 6:30 pm to 8:30 pm, with indoor meetings during the winter months and outdoor plant walks in the summer months.

Please contact Melanie (mbird@nait.ca) to attend or for more information. ♦



A Guide to the Common Mosses and Liverworts of Alberta by Brittney Miller

This guide to the common mosses and liverworts of Alberta will help you learn about the miniature leafy world around you and put a name to your discovered plants. The photos, details, and explained technical terms in this guide will make bryophyte identification accessible to all who want to discover the beauty of bryophytes!

This field guide includes:

- 170 of the most common Alberta mosses and liverworts
- An illustrated key to help you find the names of the plants you find
- Species descriptions with field features in non-technical and technical botanical terms
- Habitat information and maps of regions where you could find each plant growing
- A list of species that each plant could be easily confused with
- Field photos, watercolour drawings, and leaf images showing the features needed for identification

Purchase your copy [on the Blurb website.](#)

