Harebells, *Campanula alaskana,* and blanketflower, *Gaillardia aristata,* July 2020

From Your Editor:

Welcome to the Wildflower News for August.

Finally! Some summer weather. Hope you're enjoying the sun and heat as much as the native plants - they seem to be blooming like crazy everywhere!

In This Issue:

Letters:

Hello, I'm a new subscriber and happened upon it quite by accident but oh so glad that I did!
I am in the process of trying to absorb as much information as I can regarding native plant life to Edmonton and Alberta. I found this months newsletter very informative. Is it possible to be sent the links to previous newsletters? Is there a collection somewhere that I could have access to in order to increase my plant knowledge?
Looking forward to hearing from you,
R. C.

We're also happy that you found us! For anyone else who might be interested in reading back copies, here's the link to our archived Wildflower News: http://edmontonnativeplantgroup.org/wildflower-news-archive.htm

Native plants in local gardens:

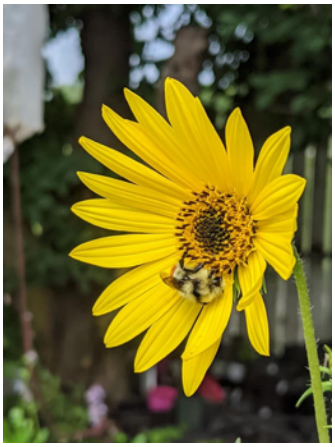
From Loni Anne: I love the fireweed inside along my fence that I planted in the cracks of the cement slabs, and outside the fence in the alley.

WN: This is beautiful and what a great idea for the alley. The bees must be loving it!

From Patrick Kyle:
Mulgedium pulchellum, blue lettuce, in my garden.

WN: How lovely that you grow this, as it's fairly uncommon in most native plant gardens.

From Manna Parseyan: Some of the native wildflowers blooming now in my garden - *Solidago lepida*, western Canada goldenrod; *Achillea millefolium*, common yarrow, and *Artemisia ludoviciana*, prairie sage, behind it; *Agastache foeniculum*, giant hyssop with *Solidago lepida*, western Canada goldenrod behind it; *Helianthus nuttallii*, common tall sunflower (just started blooming) and guest.



WN: What a luscious native garden!

From Sandra McLaren Boos:

My lovely native beebalm ❣️ purchased from the Edmonton Native Plant Society last year.

WN: Wonderful to see it growing so well, and nice that you enjoy it!
Monarda fistulosa, beebalm, wild bergamot.

EVENTS - if you would like us to list your event that involves native flowers, please email us at engedmonton@gmail.com by the 25th of the previous month.

NEWS... If you have a news item involving native plants that you would like posted, please email us at engedmonton@gmail.com

Defend Alberta Parks from CPAWS Northern Alberta

The Government has not been transparent about their intent for the parks they are removing from the system. Documentation received by CPAWS through a Freedom of Information and Privacy (FOIP) requests clearly states that the sale of lands was part of the plan, that over 100 parks were never intended to be transferred to partners but left as unprotected vacant public lands, there may be no budget savings, and that the Optimizing Alberta Parks plan does not line up with the overall intent of the parks system.
For a full summary of the FOIP document and its implications, visit: https://cpawsnab.org/concerning-new-details-about-the-plan…/ or https://cpawsnab.org/wp-content/uploads/2020/07/What-you-havent-been-told-Combined-File.pdf?fbclid=IwAR2Dn9KTByFU2RK4I61lt2Oh0-5MwVTD9Hpk5N2Hm2ZzL2ZcQNW8EyiiM1Y

WN: So, what we suspected all along is true, there IS a hidden agenda. Parks AREN'T being closed or sold to save money. They're being given/sold to resource extracting corporations.
See also https://edmonton.ctvnews.ca/mobile/documents-reveal-doubts-on-alberta-plans-to-close-deregulate-parks-1.5035645?fbclid=IwAR359bAyh7PZ5565wpS9GAvLh23J5GOTH_-e1o-YxJb_qS_r9QAw0-tU96Q
Please keep up the pressure on the Minister of Environment and your MLA to let them know that you do not support their plan:
https://action.cpaws.org/page/57187/action/2

As a side note, Alberta Parks has removed the page that listed all Parks, Rec. Areas, and Natural Areas slated for closure or otherwise from their website. ??

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Lady Flower Garden BioBlitz *by Cherry Dodd and Rocky Feroe. Photos by Kaleigh Greidanus.*
A bioblitz was held on July 18th at Lady Flower Gardens (LFG) and Jubilee Old Growth Forest to determine what species grow in the area.
LFG is the community development arm of The Edmonton And Area Land Trust (EALT)'s latest easement. Jubilee is the attached old growth forest.
There was a tutorial given on the data collection methods before everyone headed off into the lovely forest, carefully stepping over moose scat and watching the butterflies and bees scatter about.

About 39 people, including a number of Edmonton Native Plant Society volunteers, helped and an excellent start was made on the species list for the old growth forest; further opportunities will be available to finish the survey.

An observer named and counted the species in the square, while a recorder wrote them down.

(Lady Flower Gardens: https://www.ladyflowergardens.com)

Carnivorous Plants 101: in Alberta and elsewhere by Patsy Cotterill

Local Carnivorous Plants

Carnivorous (insectivorous) plants hold great fascination for humans, presumably because they so obviously turn the tables on the usual mode of heterotrophic nutrition: plants eating animals as opposed to animals eating plants! August is the month when our local invertebrate-eating plants come into flower. Wagner Natural Area hosts at least four species of carnivorous plant in its peatlands: two sundews (*Drosera* spp.), up to three bladderworts (*Utricularia* spp.) and one species of butterwort (common butterwort, *Pinguicula vulgaris*). Unfortunately, only the butterwort can be readily seen by the public, along the Marl Pond Trail; the sundews and bladderworts occur commonly in the fens to the south.

Sundews, *Drosera* species (family Droseraceae)

Anyone who has seen a sundew understands immediately the aptness of its common name (its Latin name is derived from the Greek for dewdrop). The leaves are covered in tentacle-like glandular hairs whose tips glisten with secreted mucilage; this sweet mucilage attracts insects, entraps them and contains the enzymes that will digest them. Smaller stalkless glands will help absorb the products of digestion. The tentacles are also touch-sensitive and can bend and move to entangle prey. Our three (Albertan) species all have similar, small, white flowers on leafless stalks that nod at the tip; they are held well above the rosette of leaves, possibly to ensure that pollinating insects do not get caught! Consequently, species are distinguished by leaf shape. Round-leaved sundew (*D. rotundifolia*) has broad, round leaves about one cm across; those of English sundew (*D. anglica*) are strap-shaped but broader or spoon-shaped towards the tip and up to 3 cm long; linear-leaved sundew (*D. linearis*), a much rarer plant, has even narrower leaves up to 5 cm long. Round-leaved sundew should almost invariably be looked for in hummocks of sphagnum moss in fens or bogs, with the rosette of leaves becoming apparent in June; the other two species grow in moss mats in the fens and marl ponds.

L: Round-leaved sundew on Sphagnum hummock; Anthony Henday fen (199 Street), 7 July 2007.
C: English sundew in Wagner Natural Area fen, 16 July 2006
R: English sundew in Clyde Fen, 2013. Photo by David Fielder.

The genus *Drosera* has a wide-ranging distribution across the world. However, since most of us associate Droseras with bogs and fens it is hard to imagine that the hot, dry continent of Australia is the largest centre of diversity (i.e., has the most numbers of species) for the genus, followed by South America and South Africa (note that these were all once part of the ancient supercontinent of Gondwanaland). Figures vary in the literature but one estimate puts the number of Australian species at 240, with a huge concentration in south-west Western Australia. Admittedly, some of these Australian species are of very limited distribution. The temperate species (including, of course, ours) survive the winter only as buds, tight clusters of unopened leaves. In Australia they have a different problem, surviving summer drought. The so-called pygmy sundews are reduced to a dense tuft of white hairs at the centre of the rosettes, and then in the winter or spring regenerate from bud-like gemmae; other perennial forms die back and persist only as tubers.

Drosera coomallo, southwest Western Australia, September 2019.

Butterworts, *Pinguicula* species (family Lentibulariaceae)

Anyone who sees the yellow-green rosette of leaves and feels their greasy texture understands why butterwort is so called (wort is old English for plant). The Latin name comes from *pinguis*, Latin for fat. The leaves trap insects in mucilage secreted by stalked glands; stalkless glands then produce the enzymes that digest them. In Alberta, of the 80 species in the world, we have one widely distributed species, common butterwort, *Pinguicula vulgaris*, and a smaller, glandular-stalked species, hairy butterwort, *P. villosa*, more or less confined to the northeast. The temperate species range across the northern hemisphere, including North America, but the greater number of species are found in Central and South America. Australia has no *Pinguicula* species, presumably because butterworts, having a thin, perforated skin to allow absorption of prey nutrients, need a continuously moist environment. Apparently, the leaves of butterworts can also digest pollen. Towards the fall the shallow roots and leaves of common butterwort wither and the plant spends the winter as a winter bud.

Locally, common butterwort occurs in calcium-rich habitats such as rich fens and tufa channels. The two-lipped blue flowers, typical of the Lentibulariaceae family, appear in June and are held aloft on leafless stalks, presumably so that pollinating insects do not become entrapped in the sticky basal leaves. Plants can spread by offshoots as well as seed. Photo. J. Derek Johnson

Bladderworts, *Utricularia* species

Our bladderworts, in family Lentibulariaceae, are mostly floating, submersed plants that capture their prey by means of tiny bladders borne on their vegetative parts. When a prey species brushes against trigger hairs on the bladder's trapdoor it opens, water (containing the prey) is sucked in, and the door closes again. The prey is digested by enzymes secreted by the bladder cells and the plant then uses energy to pump the water from the bladder and re-set the trap.

The bladderworts also have a world-wide distribution, although here South America outdoes Australia in having the highest number of species. Of these, 20 percent are aquatic, the rest are terrestrial, although some grow as epiphytes in rainforests. Temperate species form winter buds as in *Drosera*, but many Australian species spend the dry season as tubers, growing only in the wet season; others are annuals reproducing by seeds.

We have four species of bladderwort in Alberta, with common bladderwort (*Utricularia vulgaris*), a species of ponds and lakes, and flat-leaved bladderwort (*U. intermedia*), found in rich fens, being much commoner than the other two. Horned bladderwort (*U. cornuta*) the only terrestrial species, living in wet soil, is confined to northeast Alberta; the equally delicate small bladderwort (*U. minor*) is in local fens but is likely often overlooked. Like all members of the family, the flowers (yellow in our species) are showy and two-lipped, and emerge above the water surface on long, leafless stalks. Flat-leaved bladderwort is very common in the calcium-rich fen pools of Wagner Natural Area and similar peatlands, where its fern-like, bright-green, flat-segmented leaves can form extensive carpets. Its bladders are borne on thin, transparent, leafless branches. By contrast, common bladderwort is a coarser plant with numerous, round leaf segments on which the bladders are borne directly. The plants of all species die back in the fall, sinking to the bottom of the pond as winter buds, floating to the surface when the leaves unfurl in the spring.



L: Common bladderwort, Wagner Natural Area, 6 August 2014
C: Flat-leaved bladderwort in fen pool, Wagner Natural Area, August 2014.
R: Flowers of flat-leaved bladderwort, Marten River. Lesser Slave Lake, 29 July 2009.

Pitcher plants, *Sarracenia* species (Sarraceniaceae)

We have but one pitcher plant in the province, *Sarracenia purpurea*, whose typical distribution is northeastern Alberta but which can be seen only an hour's drive from Edmonton at Clyde Fen Natural Area and vicinity. The "pitchers" are large, tubular, basal leaves with a lid to prevent their filling with rainwater. Insects are lured by nectar on the leaf rim; if they fall into the pitfall trap of the pitcher they are unable to get out, confined by its slippery sides, downward-pointing hairs, etc. Their body contents are digested by enzymes and absorbed, but their exoskeletons accumulate, to be finally composted when the leaves wither in the fall. The single large, red-and-yellow, umbrella-like flower appears in late June but persists until late summer.

Pitcher plants belong primarily to the Old World family Nepenthaceae (*Nepenthes*, with about 100 species) and the New World (North and South America) family Sarraceniaceae (*Sarracenia*, the trumpet pitchers). For a detailed description of *Sarracenia* and the structure of the flower of *S. purpurea*, check https://en.wikipedia.org/wiki/Sarracenia The article also provides information on conservation efforts to protect these beautiful species in the U.S., threatened by habitat loss and poaching.

Above: Pitcher plant at Clyde Fen Natural Area, 3 July 2008 (photographer unknown)

Carnivory as a survival strategy

So, what do all these carnivorous plants have in common? Answer: they all grow in nutrient-poor habitats. Over evolutionary time they have adapted to life in these environments by ingesting small invertebrate animals or their products as a supplemental source of nitrogen, phosphorus and other minerals. In the waterlogged soils of bogs or fens, low decomposition rates mean slow nutrient recycling; in the ancient landscapes of southwestern Australia the soils have been leached of their nutrients over millennia. Indeed, some sundews cannot absorb nitrates from the soil, and fertilization with nitrogen is toxic to them. Pitcher plants generally grow in nutrient-poor, acidic soil.

We think of carnivory in plants as being extraordinary, but in fact it is relatively common; it has evolved many times

in different taxonomic groups, a convergent evolutionary response to a single environmental feature, nutrient scarcity. It may have arisen first as a defensive mechanism, with plants secreting mucilage to deter harmful insects. The ability to secrete digestive enzymes and so utilize animal nitrogen followed, allowing these plants to survive in substrates low in nitrogen. Readers of my article in the February WN may recall the idea that some of our plants equipped with glands such as white cinquefoil, night-flowering catchfly and *Cerastium* species may be protocarnivorous, that is, on their way to full carnivory. The picture is even more complicated by research done on bladderworts in some U.S. institutions. This suggests that they are also digesting the algae, diatoms and bacteria in the water that enters the bladders. Bladderworts may thus add to their autotrophic (photosynthetic) nutrition herbivory as well as carnivory - in other words, they are true omnivores!

As evolution proceeds, will John Wyndham's "The Day of the Triffids" ever come to pass? It would seem that viruses are still our biggest threat! Unless some plant as big as a tree develops carnivory, I think we have no need to worry, we can only wonder at plants' amazing ingenuity for feeding themselves.

For a fun delve into the complex and fascinating subject of plant carnivory I recommend this website: The Carnivorous Plant FAQ – Barry Rice: http://www.sarracenia.com/faq.html

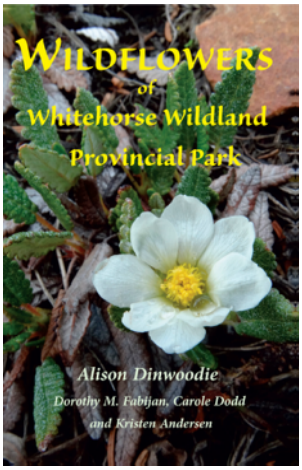
References:

https://en.wikipedia.org/wiki/Drosera
https://en.wikipedia.org/wiki/Utricularia
https://en.wikipedia.org/wiki/Pitcher_plant

For some fascinating stories check: https://www.abc.net.au/news/science/2018-04-01/carnivorous-plants-drosera-insect-killers/9596170?nw=0

Moss, E.H. 1983. Flora of Alberta, 2d ed. edited by J. G. Packer. Toronto, University of Toronto Press.

Recommended Reading:



Wildflowers of Whitehorse Wildland Provincial Park - Alison Dinwoodie

Hot off the presses! A brand new publication is available through the Alberta Native Plant Council.
Whitehorse Wildland Provincial Park is an excellent representative of the Northern Front Ranges of the Rocky Mountain Region, situated next to Jasper National Park. A wide range of alpine and subalpine plants are found there.
This field guide includes detailed species descriptions, comparisons with visually similar plants, plus information on habitat and natural communities. Each species is identified by a common and scientific name, and thumbnail photos enable easy initial identification by colour.

You may purchase this book by filing out the form below with payment through PayPal. The book cost is $20 (which includes postage) and will be shipped upon receipt of payment.

Wildflowers of WWPP Book Order Form

Website of the Month:

Going wild: Naturalization grows across Edmonton as city trades mowing for native species
This was on the front page of the Edmonton Journal, July 27.

https://edmontonjournal.com/news/local-news/going-wild-naturalization-grows-across-edmonton-as-the-city-trades-mowing-for-native-species/wcm/5b23fe59-3de4-4a7a-89ec-c0def8e244d7/?fbclid=IwAR2D_nnF9KPZS2FwfvhVee69H2oMy_ihrxHIfe_4Q5lnB1J9M4wxb_RVAGE

Took a walk along the path on Friday, July 31, and, sure enough, some of the native rhombic-leaved sunflowers, *Helianthus pauciflorus* subsp. *subrhomboideus* that ENPS planted there are coming along quite nicely:

Aims of the Edmonton Native Plant Society:

Promote knowledge of the Edmonton area native plants.
Conserve our native plant species and their habitats.
Preserve native plant species and habitat for the enjoyment of present and future generations.
Educate individuals, business and local governments about native plants.

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Native wildflower planting at the John Janzen Nature Centre