

Borealis

The Newsletter of the



Alaska Native Plant Society

PO Box 141613, Anchorage, Alaska

February - March 2023

Join us at our Next Meetings!

Monday, Feb. 6, 7 PM [Zoom Only](#)

- **Main Topic: "Fire and ice: tundra fires in the Arctic"**
Speaker: **Dr. Amy Breen**
- **Medicinal Plants Mini-Botany:**
Oplopanax horridus, Devil's Club
Presenter: Beth Baker
- **Aquatic Plant Family –**
Potamogetonaceae (Potamogeton)
Presenter: Al Batten

Monday, March 6, 7 PM

- **Main Topic: "Lycopodium"**
Speaker: **Marilyn Barker**
- **Plant Families – Aquatic Plants**
Ruppiales (*Ruppia*) and **Najadales** (*Najas*)
Speaker: Justin Fulkerson
- **Medicinal Plants Mini-Botany:**
Artemisia
Speaker: Beth Baker
Virtual Meeting Link: [Join via Zoom](#)
Meeting ID: 938 2833 2935
Passcode: 362610
In-Person Meeting: [Campbell Creek Science Center](#), located at 5600 Science Center Drive in Anchorage
For the latest information about ANPS events and field trips, go to www.aknps.org/

Tundra Fires

Our February monthly meeting will feature a hot topic - tundra fires. From field and laboratory work to airborne campaigns and satellites, scientists are studying why boreal forest and tundra fires have become more frequent and powerful, and what that means for climate forecasting, ecosystems and human health.



Fire in Noatak National Preserve, 2010

Arctic wildfires differ from mid-latitude fires, such as those in California and Idaho. For one, fires in the lower 48 are often set by humans and are put out as fast as possible, since they are a risk to life and property. In the boreal forest and tundra, wildfires are mostly ignited by lightning strikes and are usually left to burn unless they threaten important infrastructures or human settlements. As a result, they often grow large and consume hundreds of thousands of acres of vegetation.

Also unlike lower-latitude wildfires, most of the carbon emissions from Arctic fires come from burned organic soil rather than burned trees and shrubs.

Arctic and boreal regions have very thick soils with a lot of organic material and because the soil is frozen or otherwise temperature-limited as well as nutrient-poor, its contents don't decompose much.

This thick, carbon-rich top soil layer acts as insulation for the permafrost. When you burn the soil on top it's as if you had a cooler and you opened the lid: the permafrost underneath thaws and you're allowing the soil to decompose and decay, so you're releasing even more carbon into the atmosphere.

A recent study found that a single fire season in Canada emitted so much carbon into the atmosphere that it offset half of all the carbon removed from the atmosphere through annual tree growth across all of Canada's vast forests. So not only are wildfires in the Arctic impacted by global warming, which is leading to warmer and drier summers that create dry, tinder-box conditions - they are also in turn contributing to more climate change. Be sure to tune in to Dr. Amy Breen on February 6 as she warms us to the subject!

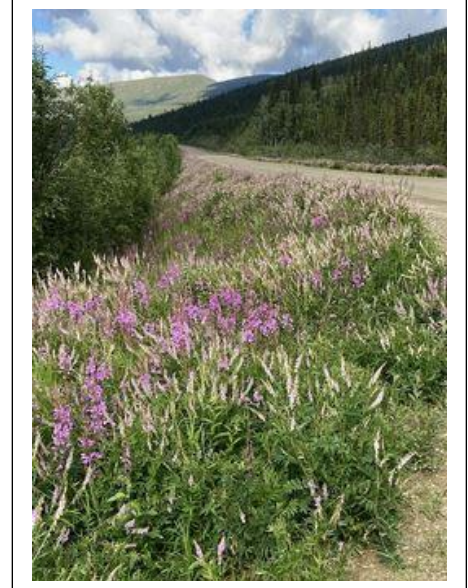
Missed A Meeting? Forgot what you heard? No problem.....

Did you miss January's meeting? Nearly 70 people tuned in and the recording is now available. We learned about aquatic species in the Zanichilliaceae (Horned Pondweed) and Zosteraceae (Eelgrass) families and the ins and outs of cultivating wildflower meadows in Alaska from UAF Professor of Horticulture Emeritus **Patricia Holloway**.

The meeting officially ended at about 2 hours and 23 minutes, but we continued to discuss native plant topics (e.g., voles eating alpine sweetvetch, pictured here) for a while longer. [Here's the passcode to access to the Zoom Recording:](#) %=0X?WNR

NOTE: The recording includes subtitles but that technology isn't yet perfected for this situation and it hasn't been edited, so while it could be helpful if you're hearing impaired, it is more hilarious than useful. You can turn off the subtitles by clicking the "cc" button at the bottom of the Zoom screen.

[Watch the Zoom Recording](#)



Looking for old Borealis Issues

- Glenn Brown

One of the advantages of being a 40-year-old organization is we have published many newsletters over the years. Collectively they show the activities of the ANPS, and along the way provide snippets of the way things were as well as timeless and evolving information on native plants. According to a field-trip report from 1988, somewhere in the "Matanuska Valley" there's a place where participants "were amazed to see *Cypripedium guttatum* so thick that you could not walk between them; and picturesquely blended with *Cornus Canadensis*!"

We've been exploring the idea of making past issues of *Borealis* available online. And for that, we, of course, need copies of all the old issues. We have some in our archives, and we've located a number of others at the Consortium Library at UAA. We're hoping readers of this newsletter can provide copies of at least some of the still missing issues.

Our best guess is that through 2022 there have been 238 issues of *Borealis*. With what we've found at UAA, we have 218 issues, so we're only missing about 20. They are:

1982—Apr or May, Oct	1996—Dec
1983—Jan, Mar, Apr	1997—Dec
1986—Apr, Dec	1998—Oct
1987—Feb	1999—Jan
1988—Jan, Feb, Mar, Apr, Nov, Dec	2012—Jan/Feb
1994—Feb, Apr	2015—Oct/Nov

Issues have been available electronically since 2010, so for the above two from 2012 and 2015, we're hoping someone still has access to an old email account or a folder where issues were saved. And if so, we'd also like an electronic copy of Oct/Nov 2012 as we only have a scanned copy of that issue.

If you find any of issues, please email them to me at gbrown@aknps.org. or if they are hard copy let me know and we'll discuss having electronic copies made.

SNAP This Up!

Scenarios Network for Alaska & Arctic Planning

Exploring the Futures of a Changing North

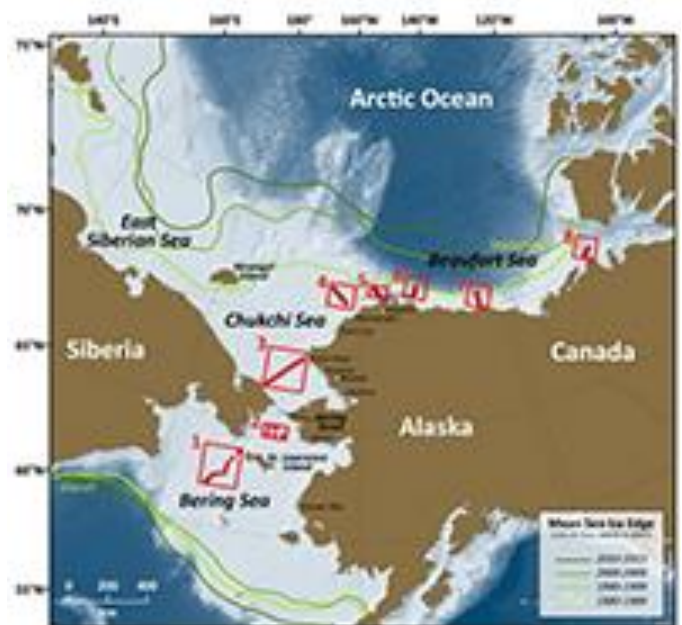
Climate and weather data – well, ANY kind of data - can be overwhelming for those of us who just want to see the big picture without having to work directly with large and complicated datasets. But now help is only a few snap-clicks away! Since 2007, a team of boreal ecologists, visual designers, and software developers at **the Scenarios Network for Alaska + Arctic Planning (SNAP)** based at the University of Alaska in Fairbanks, has been working with partners including University researchers, agencies at all levels, and residents of Northern communities to produce **useful products** tailored to all of us in regions and communities in Alaska and western Canada.

What is driving landscape change in Northern climates: In a word: **heat** – three forms of heat-related phenomena: warming temperatures, thawing permafrost, and increases in wildfire—are combining to change landscapes across Northern ecosystems.

The SNAP group has created a suite of web applications that even YOU can use to discover what's changing in your corner of the North—from wind to wildfire, and (almost) everything in between. They have collected all of the available past data and developed algorithms to project into the next century. Popular end products include maps, charts, and CSV files that can be freely downloaded for use in reports, presentations, and for further analysis.

Their toolbox includes:

- **Alaska Garden Helper** – growing season data and projections – what will be growing here in the future?
- **Alaska Wildfire Explorer/Fire Tally**
- **Arctic Environmental and Engineering Data & Design**
- **Community Climate Charts, Permafrost Data, Winds:** See temperature and precipitation projections through 2099 for over 3,800 communities in Alaska and western Canada. These projections show patterns and trends.
- **Historical Sea Ice Atlas** for comparison with future predictions and planning
- **Northern Climate Reports:** This tool uses climate data to construct a variety of possible futures for a warming North. Choose a location of interest by entering a name, latitude/longitude coordinates, or by clicking on a map. Data are displayed in narrative and graphical formats. Graph and data downloads available.



FROM OUR BOOKSHELVES



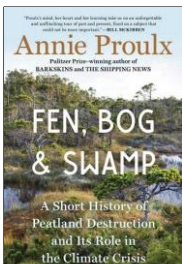
Lessons From Plants

Author: Beronda L. Montgomery
Harvard University Press (April 2021)
ISBN-13 : 9780674241282

We know that plants are important. They maintain the atmosphere by absorbing carbon dioxide and producing oxygen. They nourish other living organisms and supply psychological benefits to humans as well, improving our moods and beautifying the landscape around us. ***But plants don't just passively provide. They also take action.***

Beronda L. Montgomery explores the vigorous, creative lives of organisms often treated as static and predictable. In fact, plants are masters of adaptation. They “know” what and who they are, and they use this knowledge to make a way in the world. Plants experience a kind of sensation that does not require eyes or ears. They distinguish kin, friend, and foe, and they are able to respond to ecological competition despite lacking the capacity of fight-or-flight. Plants are even capable of transformative behaviors that allow them to maximize their chances of survival in a dynamic and sometimes unfriendly environment.

Lessons from Plants enters into the depth of botanic experience and shows how we might improve human society by better appreciating not just what plants give us but also how they achieve their own purposes. What would it mean to learn from these organisms, to become more aware of our environments and to adapt to our own worlds by calling on perception and awareness? **Montgomery's meditative study puts before us a question with the power to reframe the way we live: What would a plant do?**



Fen, Bog & Swamp

Author: Annie Proulx
Scribner Book Company (September 2022)
ISBN-13: 9781982173357

Pulitzer Prize winner Annie Proulx, author of “The Shipping News” and “Brokeback Mountain” is also a lifelong acolyte of the natural world. In *Fen, Bog & Swamp: A Short History of Peatland Destruction and Its Role in the Climate Crisis*, Proulx details three types of peatland: fens, which are fed by streams and rivers; bogs, fed by rainwater; and swamps, distinguishable by their trees and shrubs.

Only recently have we begun to realize the vitally important role wetlands play in preserving the environment--by storing the carbon emissions that accelerate climate change. Fens, bogs, swamps, and marine estuaries are crucial to the earth's survival, and in four illuminating parts, Proulx documents their systemic destruction in pursuit of profit.

In a vivid and revelatory journey through history, Proulx describes the fens of 16th-century England, Canada's Hudson Bay lowlands, Russia's Great Vasyugan Mire, and America's Okefenokee National Wildlife Refuge. She introduces the early explorers who launched the destruction of the Amazon rainforest, and writes of the diseases spawned in the wetlands--the Ague, malaria, Marsh Fever.

Proulx also reflects on her own childhood memories — wandering through wetlands in Connecticut, a swamp in Vermont — and describes how she, like writer Henry David Thoreau, finds beauty in these places. “It is ... possible to love a swamp,” she says.



FROM WHAT WE GATHER



Is there a link between climate change and plant nutrition?

A new study from researchers at Michigan State University underscores that we still have much to learn regarding how plants will function -- and how nutritious they will be -- as more carbon enters our atmosphere.

That same influx of carbon is helping drive climate change, meaning this new work, published in the journal *Nature Plants*, may be revealing an unexpected way this global phenomenon is reshaping nature and our lives.

"What we're seeing is that there's a link between climate change and nutrition," said Berkley Walker, an assistant professor in the Department of Plant Biology whose research team authored the new report. "This is something we didn't know we'd be looking into when we started."

Although elevated levels of carbon dioxide can be good for photosynthesis, Walker and his lab also showed that increasing CO₂ levels can tinker with other metabolic processes in plants. And these lesser-known processes could have implications for other functions like protein production.

"Plants like CO₂. If you give them more of it, they'll make more food and they'll grow bigger," said Walker, who works in the College of Natural Science and the MSU-Department of Energy Plant Research Laboratory. "But what if you get a bigger plant that has a lower protein content? It'll actually be less nutritious."

It's too early to say for certain whether plants face a low-protein future, Walker said. But the new research brings up surprising questions about how plants will make and metabolize amino acids -- which are protein building blocks -- with more carbon dioxide around.

Michigan State University. "Is there a link between climate change and plant nutrition? Research shows how elevated carbon dioxide levels affect plant metabolism." ScienceDaily. ScienceDaily, 3 January 2023. <www.sciencedaily.com/releases/2022/12/221222162410.htm>.

Producing 'green' energy - literally -from living plant 'bio-solar cells'

Though plants can serve as a source of food, oxygen and décor, they're not often considered a good source of electricity. But scientists are working in many different ways to "convince" plants to "lighten the load".

In one study, researchers showed that the aqueous solution found in the tissues of succulent plants can be used directly as a natural bio-photo electrochemical cell. The thick water-preserving outer cuticle of the succulent *Corpuscularia lehmannii* serves as the electrochemical container, the inner water content as the electrolyte into which an iron anode and platinum cathode are introduced. They produced up to 20 $\mu\text{A}/\text{cm}^2$ bias-free photocurrent.

A separate project coordinated by a research team based at IIT in Pontedera (Pisa, Italy), has shown that some plant leaves can create electricity when they are touched by a distinct material or by the wind. Some leaf structures are capable of converting mechanical forces applied at the leaf surface into electrical energy, because of the specific composition that most plant leaves naturally provide. The leaf is able to gather electric charges on its surface and these charges are then immediately transmitted into the inner plant tissue. The plant tissue acts similar to a "cable" and transports the generated electricity to other parts of the plant. Hence, by simply connecting a "plug" to the plant stem, the electricity generated can be harvested and used to power electronic devices. IIT's researchers show that the voltage generated by a single leaf may reach to more than 150 Volts, enough to simultaneously power 100 LED light bulbs each time the leaf is touched.

The researchers also modified a *Nerum* oleander tree with artificial leaves that touch the natural *N. oleander* leaves. When wind blows into the plant and moves the leaves, the "hybrid tree" produces electricity. The electricity generated increases the more leaves are touched. Consequently, it can be easily up-scaled by exploiting the whole surface of the foliage of a tree or even a forest.

Istituto Italiano di Tecnologia - IIT. "How plants can generate electricity to power LED light bulbs." ScienceDaily. ScienceDaily, 12 December 2018. <www.sciencedaily.com/releases/2018/12/181212093308.htm>.

Alaskan Wildflower Meadows – an Evolving Artform

Dr. Patricia Holloway, Professor Emerita at UAF School of Natural Resources in Fairbanks was the keynote speaker at our January 2023 meeting. “Pat” as most of us know her, is a long-time Alaskan who – through innovation, experimentation, creativity, and hard work – has pursued her passion for Alaska native plants and their propagation, to create a new and burgeoning industry in Alaska, and a center for horticulture research, education and outreach at UAF.

Pat’s topic this month was **Alaska Wildflower Meadows**, and she began by warning us that creating wildflower meadows in Alaska is extremely challenging and sometimes even successes are accidents. She then discussed the various definitions of the terms “meadow” and “wildflower,” and how important it is to decide what you mean before you decide to do it. Historically in our culture, meadows have been composed of grasses more than flowers and were originally animal habitat and places to keep wilderness at bay and provide warnings of potential enemies. It has largely been since 1965 when Ladybird Johnson was successful in getting the Highway Beautification Act passed that Americans have thought of “wildflower meadows.” The main intention of the act was to eliminate billboards along our highways but wildflowers came along for the ride. Preservation of trees and vegetation along highways had to be part of all interstate highway projects.

Reasons to build a wildflower meadow

Beautification
Hardiness
Alternative to manicured lawns
Reduce maintenance- mowing, irrigation, fertilizers
Reduce /eliminate use of herbicides

Erosion control. Roadsides, beaches, river stabilization
Revegetation: roadsides, mines, construction
Fire breaks around building, homes

Wildlife habitat
Insects, pollinators, birds, wildlife

In 1982 *Meadow in a Can Jr.® Wildflower Seed Mix* was introduced to the garden-loving public. It was a marketing coup and instant success. It was actually a double edged sword because, even though it promoted an interest in wildflowers, the seeds in the can weren’t necessarily for native plants and it turned out that they still required fertilizer, watering and lot of maintenance, mowing to keep the colors coming year after year – petered out after a while – many had annuals in them that never reseeded and cheap annual rye; it also included a lot of weed seed.

Denali Seed Company came up with their Alaska Wild Garden Mix. These plants, if they grew, produced eye-popping color – but not Alaska Native plants. Grasses are always a staple in these mixes. They don’t aid wildflower establishment, but add bulk for easier application, are cheaper than wildflower seeds, aid in early soil stabilization, decrease annual weed competition and provide shelter for developing seedlings.

In the 1990s, Pat and her staff at the Georgeson Botanical Garden in Fairbanks began researching ways to develop and commercialize Alaskan wildflower seed mixes for use in Alaska meadows. Their goals were to compare such characteristics as seed germination, vegetative propagation, blooming and regrowth of AK native wildflowers and grasses vs what was available in commercial mixes.

Their first seasons were discouraging. Germination of wild collected seeds was only about 23% compared to 64% for commercial mixes. Only 15% of flowers in the Alaska native mix bloomed first year vs 60% of

Advice from a Wildflower Meadow

Fall sow
Tilled then packed soils
25% bunching grass seed
Avoid sod forming grasses
Explore nearby fields, meadows
Slow down. Enjoy the journey!

First Year Color from seed 2+ years to bloom

First Year Color from seed	2+ years to bloom
Beautiful Jacob's Ladder	Arnicas (rigid, tall, meadow)
Jacobs Ladder	Asters, Leafy, Siberian
Strawberry Spinach	Bedstraw
Wild chamomile	Bluebells
	Burnet, Great, Silka
	Cinquefoil
	Dragonhead mint
	Fireweed, Tall
	Firebane
	Goldenrods
	Indian Potato
	Lupine, Nootka, Arctic
	Pussy Toes
	Wild Chives
	Wild Geranium
	Wild Iris
	Wild Larkspur
	Wild Rhubarb
	Wild Strawberry
	Wild sweet pea
	Yarrow, Common, Siberian
	Yellow Oxytropis
	Yellow Rattle



commercial mix. Since then they have learned a lot.

New Commercial Wildflower Source

St Isidore Farm, North Pole

Sarah Jansen & husband

Warren Smith

It's only a couple of years old, and it's called Saint Isador Farm, in North Pole, and it's still in a trial stages.

Listen to Pat’s talk on our website link and be sure to get a copy of *Wildflowers for Northern Gardens*, by Patricia Holloway and Virginia Gauss (2021). This book includes garden site preparation, plant growth characteristics, propagation and cultivation techniques and a guide to northern wildflowers suitable for planting in gardens and other landscapes. Hardcopies are available through AKNPS and other retailers including Amazon.

From the Archives

The following appeared in the December 1982 Newsletter:

PUT THIS IN YOUR PIPE AND SMOKE IT By John Wenger

Kinnikinnick (*Arctostaphylos uva-ursi*) has been smoked as a tobacco substitute for centuries. The name, kinnikinnick, meaning "mixture," apparently originated with the Algonkian Indians who combined several plant species and smoked them in a pipe.

A. uva-ursi, throughout its wide range in North America and especially in the northern regions, was a most common smoke, used by native peoples and early Russian explorers. Kinnikinnick remained popular until tobacco, with its more powerful kick, supplanted it.

My Latin translations are miserable deeds, but from the generic and specific names, I pull out something like "bear-grapes of the north." They are commonly called bearberries. Two other closely related species, *A. alpina* and *A. rubra*, also called bearberries, are native to Alaska but are not suitable for smoking.

In view of the Surgeon General's warning on cigarettes, possibly the alternative use of *A. uva-ursi* should again be considered. In scanning the literature on the chemical derivatives of kinnikinnick, I noted that it is free of nicotine and the carcinogenic tar of tobacco. In fact, a medicinal herb tea is made from the green leaves.

Personally I find tobacco too harsh to smoke but occasionally when I'm in a polluting mood, kinnikinnick makes the mildest "tobacco" I've ever smoked. Now, mind you, I am not advocating smoking! But if you smoke tobacco and are considering quitting (or have tried quitting but couldn't) then possibly kinnikinnick could be substituted.

Is it possible that the physiological dependency of tobacco could be overcome by slowly reducing the amount of tobacco with kinnikinnick? By collecting the plentiful plant, drying the leaves and "rolling your own" with a starting mixture of, say 75% tobacco to 25% kinnikinnick and periodically changing the tobacco proportion until one is smoking 100% kinnikinnick, you just might kick a chemical dependency on tobacco. If you simply feel a need for a cigarette in your hand and are not physiologically hooked, then the switch is much easier.

The plant is evergreen and can be collected anytime for smoking. Naturally, it is now snow covered but appears quite early in spring. Simply dry the leaves thoroughly and crush fine. Get a handroller and give mother nature's brand a try.

And if you succeed in switching from tobacco to kinnikinnick, I'd like to hear how it worked out. Good luck.

And Verna provided the following tidbits in the February 1983 Newsletter:

GOING BANANAS -- You might enjoy using a cup of *Vaccinium vitis idaea*, also known as Low Bush Cranberries or Lingonberries, that you have been storing in your freezer in your favorite banana bread recipe. -- Verna Pratt

OUT AND ABOUT -- A good place to do some late winter or early spring botanizing is along the Seward Highway against the side of the mountains just on the Anchorage side of Girdwood. This is an exceptionally warm spot and the plant life starts as soon as the snow leaves. I picked blueberry blooms there in early April last year. -- Verna Pratt

Add AKNPS meetings to your calendar: [Click here](#) to download an iCalendar invite (ics file) that will add AKNPS meetings from Feb-May 2023 to your personal calendar.

ANNUAL MEMBERSHIP APPLICATION/RENEWAL

The Alaska Native Plant Society was organized in 1982 by an enthusiastic group of amateur and professional botanists. It is a non-profit educational organization with the goal of uniting all persons interested in the flora of Alaska. Membership is open to any interested individual or organization. If you wish to join us or to renew, you can either use our convenient on-line method by going to <https://aknps.org/membership>, or fill in the form below, and mail it with the appropriate remittance to:

Alaska Native Plant Society
P. O. Box 141613
Anchorage, AK 99514

STATUS NEW RENEWAL

CATEGORY	E-Mail Newsletter	Snail-Mail Newsletter	Both Mail Deliveries
<input type="checkbox"/> Full-time Student	\$12	\$22	\$22
<input type="checkbox"/> Senior Citizen	\$12	\$22	\$22
<input type="checkbox"/> Individual	\$15	\$25	\$25
<input type="checkbox"/> Family	\$20	\$30	\$30

Name: _____

Address: _____

City _____ State: _____ Zip: _____

Telephone: (Home) _____ (Cell) _____ E-mail _____

PLEASE RENEW OR JOIN TODAY!
ANPS Membership is on a calendar-year basis.

Feb 6th Meeting in person at Campbell Creek Science Center or
Via Zoom: Meeting ID: 938 2833 2935 Passcode: 362610

Alaska Native Plant Society
P.O. Box 141613
Anchorage, AK 99514