

Borealis

The Newsletter of the



PO Box 141613, Anchorage, Alaska

April - May 2023

Join us at our Next Meetings!

Monday, April 3, 7:00 PM

Via Zoom Only

- **Main Topic: "Forest Loss & Gain in a Changing Climate"**
Speaker: Lauren Oakes

- **Medicinal Plants Mini-Botany:**

Urtica dioica (Nettle)

Presenter: Lorene Lynn

- **Aquatic Plant Family –
Juncaginaceae (Arrowgrass) family**

Presenter: Glenn Brown

Monday, May 1, 7:00 PM

- **Main Topic: "Flora of Chugach State Park"**

Speaker: Aaron Wells

- **Plant Families – Aquatic Plants
Alismataceae (Water Plantain) family**
Speaker: TBD

- **Medicinal Plants Mini-Botany:**

Rhodiola integrifolia

Speaker: Elaine Hammes

Virtual Meeting Link: [Join via Zoom](#)

Meeting ID: 938 2833 2935

Passcode: 362610

For the latest information about ANPS events and field trips, go to www.ak-nps.org/

How Climate Change Impacts Forests

We often focus on the negative effects of global warming, including the loss of species. But what about the ecosystem itself? How do forests cope with the decline and loss of their namesake species?

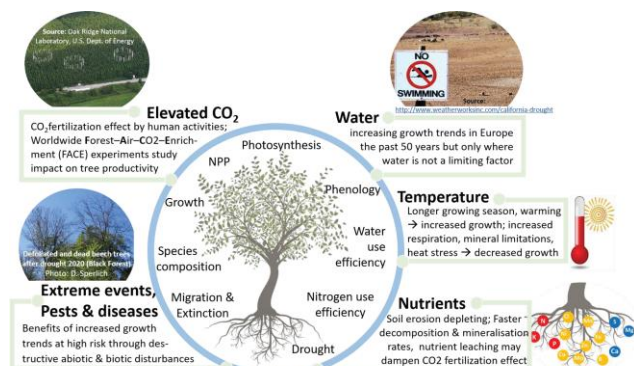
In her book *In Search of The Canary Tree: The Story of A Scientist, a Cypress, and a Changing World*, published in 2018, (reviewed in Borealis Nov-Dec 2018) Lauren Oakes described how she and her research team worked in remote coastal areas of Southeast Alaska to capture a statistical picture of warming forests.

Her basic research question was "What happens in forests when yellow-cedars die off? How are the forests affected by what is happening to the yellow-cedars? Oakes wanted to "get a sense of what was surviving, regenerating, or perhaps taking over," and whether any positive news could be found among the alarming signals.

She learned that Western hemlock trees often move in, embracing with their branches the dead trunks of yellow-cedars and reshaping the forest canopy. In addition, shrubs flourish even as mosses and ferns reduce in number. The positive news, then, doesn't involve the yellow-cedars themselves, but the ability of the forest to adapt and change as the climate changes.

Lauren will be our guest speaker at our April 3 monthly meeting, where she will be discussing forest losses and forest gains in a changing climate.

Summary of major ecological and eco-physiological factors associated with climate change and their impacts on various biological processes in trees From:
<https://www.mdpi.com/2225-1154/8/12/141#B19-climate-08-00141>



Weird, Wacky & Beautiful Plants of Shemya Island

Last summer, ANPS member Justin Fulkerson was lucky enough to spend some time botanical research on Shemya Island in the Aleutian Islands. At our ANPS monthly meeting in March he shared his favorite plant from the trip – many of them!

Justin began his discussion by reminding us that Shemya is even in a different time zone from the rest of Alaska, the Aleutian-Hawaiian Time Zone. Shemya is located near the western end of the Aleutian chain, 1,259.2 nautical miles away from Anchorage. The island of Attu is 34.8 nautical miles NW from Shemya, while Agattu is just off to the west and can be seen from Shemya on a clear day. In 1995, after 50 years of being a haven for U.S. military personnel and contractors, Shemya was turned over to caretaker status to be operated by a DoD contractor firm. The Island is now a strategic refueling stop for military aircraft as well as link in the United States' long-range early warning radar system, but is virtually unavailable to the general public.

When you think about Aleutian Islands vegetation you might think of tundra grasses and willows, but Justin was fortunate enough to be there at the height of the flowering season – and flowers there were! It was more like a garden! Orchids and Monkeyflowers and Monkshood – oh my! Justin did not have permission to publish his amazing photos so these you see here are stock internet photos and nowhere near as stunning.



Aconitum maximum

Some highlights:

- *Parasenecio auriculatus* occurs chiefly from northern Japan and Manchuria northward; it barely enters the flora area in the western Aleutian Islands, as far east as Kiska Island.
- *Artemisia stelleriana* – this may be the only naturally occurring specimen in North America; not included in early Hulten, but in 1968 version.
- Several *Picea sitchensis* were brought in by military families

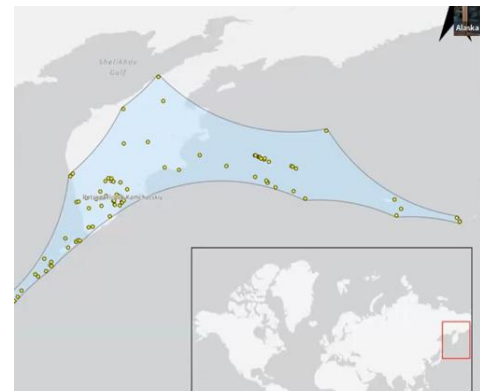
The one thing most of the plants Justin highlighted had in common was their global distribution range – they were basically limited

to the Kamchatka Peninsula of Russia and the Far Aleutians.

The team found one specimen of one species, *Salix caprea*, that is native to Europe and parts of Asia, and this may be the only individual plant that has yet been found in North America.



Parasenecio auriculatus



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

Did you miss the March meeting? Or wish you could remember more of the information presented by our illustrious speakers? Nearly 70 people participated in person or via Zoom, and the recording is now available. You can even learn the interesting details of the Alaska Native Plant Society's 2022 Income and Expense Statement – where did our income come from? How did we spend your membership dues?

[Watch the Zoom Recording](#)

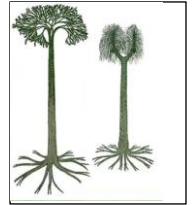
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More Weird and Wacky Plants - Lycophyta

ANPS society member and former President, Dr. Marilyn Barker delved into the world of a very unique group of plants, the Lycophyta. Lycophytes, also known as the 'fern allies', are a clade of vascular plants similar to ferns but have unique leaves called microphylls. They are primitive herbaceous plants that lack seeds, wood, fruit and flowers, but do have stems, roots and "leaves" (actually microphyll). Marilyn says that when she began planning for this talk, there were 3 genera represented in Alaska, but 7 genera are now included, depending on which reference you use.

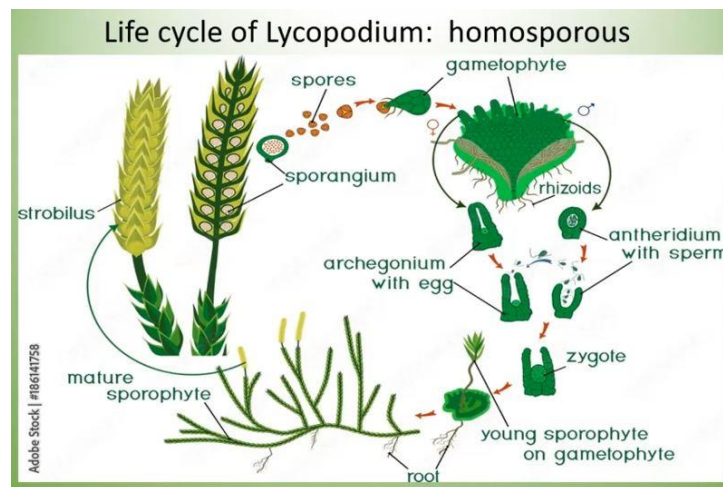
Lycophytes are believed to be the oldest living lineage of vascular plants. Estimates of their evolution date back to more than 400 million years ago during the Silurian Period, long before gymnosperms and angiosperms. The vast majority of species are now extinct but with more than 1200 species still currently living on Earth, the lycophytes have a tremendous ability to adapt to the constantly changing environments on Earth.

About those extinct species – could they be responsible for global warming? Marilyn reminded us that the burning of coal has been the major source of global warming. The vast majority of coal beds were formed as a result of the decline and decay of the tree-like lycophytes of the Carboniferous era.



Lycophytes include:

- **Club mosses**, with about 700 species mostly in a single genus, *Huperzia*,
- **Quillworts**, mostly in a single genus, *Isoetes*
- **Spike mosses** a single genus, *Selaginella*, which has a total of around 700 species. Spike mosses grow on other plants as epiphytes and on the forest floor. They often resemble club mosses although they have two distinct types of spores and a small scale-like growth at the base of their leaves.

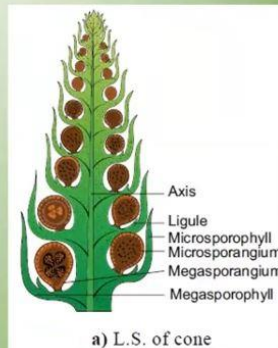
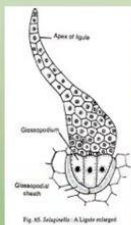
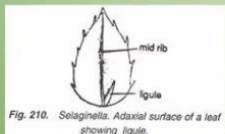


Selaginellaceae one genus Selaginella 700 species Alaska has "4" species

Selaginella shares all the features of the Lycopodiaceae
Microphylls, herbaceous.

Differences:

1. each microphyll has a ligule on its upper surface
2. plants are heterosporous



Isoetaceae

Life cycle similar to Selaginella,
BUT plants are aquatic



Crossroads of Beringia

Crossroads of Beringia, a new exhibit at the University of Alaska Museum of the North (UAMN) explores the past, present, and future of the flora of the North through the eyes and adventures of UAMN Herbarium researchers.

Crossroads of Beringia is curated by Steffi Ickert-Bond, Professor of Botany and Curator of the Herbarium, in collaboration with the UAMN's Exhibit Department, and reflects the broad range of work encompassed by the herbarium. Fieldwork and research rooted in botany are critical in understanding the future of the Arctic. Humans and plants have a complex relationship extending far back into our joint evolutionary history. Our deep relationship with, and understanding of, plants have enabled us to harness their nutritional, medicinal, and aesthetic benefits. Only through a better understanding of plants will we be able to develop new technologies and better products combating climate change, and build climate change resiliency in Alaska and across the globe.



The ALA collection contains more than 280,000 plant specimens from the turn of the century to the present, and is the largest herbarium in Alaska, used for teaching and research. These deep spatial and temporal collections allow us to look at environmental change over time, and make predictions about the future of the North. Plant migration, habitat change, and the way people use plants have large impacts on the state's subsistence culture, its cultural communities, agriculture, horticulture and future as a tourist destination.

The *Crossroads of Beringia* exhibit has eight thematic foci, presented broadly by the different cases in the collection's gallery:

Case 1 New Habitats for Ancient Travelers

Case 2 Life Zones: Altitude is Latitude

Case 3 Early Explorers of the Alaska Flora

Case 4 Monkey Flower and the Human Bridge

Case 5 Fieldwork Knows no Borders

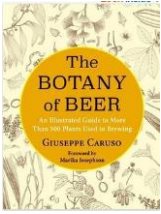
Case 6 Wild Harvests and Subsistence

Case 7 How does your Garden Grow

Case 8 Changing Forest



FROM OUR BOOKSHELVES

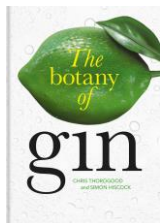


The Botany of Beer

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

From mass-produced lagers to craft-brewery IPAs, from beers made in Trappist monasteries according to traditional techniques to those created by innovative local brewers seeking to capture regional terroir, the world of beer boasts endless varieties. The diversity of beer does not only reflect the differences among the people and cultures who brew this beverage. It also testifies to the vast range of plants that help give different styles of beer their distinguishing flavor profiles.

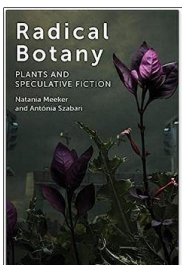
This book is a comprehensive and beautifully illustrated compendium of the characteristics and properties of the plants used in making beer around the world. The botanical expert Giuseppe Caruso presents scientifically rigorous descriptions, accompanied by his own hand-drawn ink images, of more than 500 species. For each one, he gives the scientific classification, common names, and information about morphology, geographical distribution and habitat, and cultivation range. Caruso provides detailed information about each plant's applications in beer making, including which of its parts are employed, as well as its chemical composition, its potential toxicity, and examples of beers and styles in which it is typically used. The book also considers historical uses, aiding brewers who seek to rediscover ancient and early modern concoctions. This book will appeal to a wide audience, from beer aficionados to botany enthusiasts, providing valuable information for homebrewers and professional beer makers alike. It reveals how botanical knowledge can open new possibilities for today's and tomorrow's brewers.



The Botany of Gin

Authors: Authors: Chris Thorogood and Simon Hiscock
University of Oxford Bodelyn Library November 2020
ISBN-10: 1851245537

Not into beer? How about another botanical beverage – gin? With this volume, Chris Thorogood and Simon Hiscock provide an account of how gin has been developed and produced. A diverse assortment of aromatic plants from around the world have been used in the production of gin over the course of several centuries, and each combination of botanicals yields a unique flavor profile that equates to more than the sum of its parts. Understanding the different types of formulation, and the main groups of plants used therein, is central to appreciating the drink's complexities and subtleties. Garnished with sumptuous illustrations of the plants that tell the story of this complex drink, this enticing book delves into the botany of gin from root to branch. As this book's extraordinary range of featured ingredients shows, gin is a quintessentially botanical beverage with a rich history like no other.



Radical Botany

Authors: Natania Meeker and Antónia Szabari
Fordham University Press – December 2019
ISBN-13: 978-0823286621

The trajectory of speculative fiction which this book traces offers insights into the human relationship to animate matter and the technological mediations through which we enter into contact with the material world. Plants profoundly shape human experience, from early modern absolutist societies to late capitalism's manipulations of life and the onset of climate change and attendant mass extinction.

A major intervention in critical plant studies, *Radical Botany* reveals the centuries-long history by which science and the arts have combined to posit plants as the model for all animate life and thereby envision a different future for the cosmos.



FROM WHAT WE GATHER



BUMBLEBEE WATCH

Spring has started to arrive in parts of the continent and with the first flowers come the first bumble bees! The gynes—mated queens—are emerging from hibernation, foraging on early-blooming plants, and beginning to search for nest locations to start their colonies.

To thrive and produce offspring, we know that queens need a healthy, diverse diet of pollen and nectar. Yet, vast knowledge gaps still exist about which spring flowers queens feed on, how this varies geographically, and whether or not species exhibit different spring foraging preferences.

You can easily help us fill in these gaps by contributing your photographs [Bumble Bee Watch](#)! By now you've likely heard of the power of community science; community science programs provide local opportunities for people to get involved in wildlife monitoring and conservation, all while gathering valuable data. Integrating [Bumble Bee Watch](#) into community science programs has proven to not only be possible, but successful with now over 120k bumble bee observations documented.



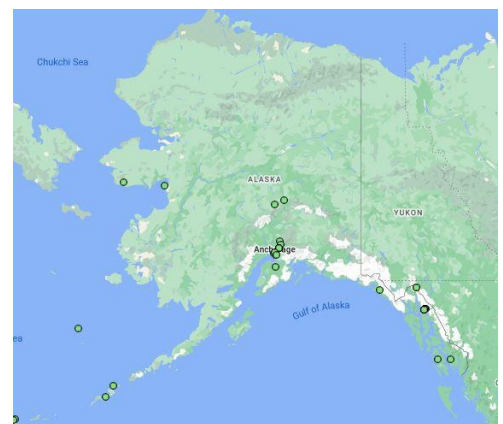
As you take your daily walk along your neighborhood trail, putter in your garden weeding and planting, or sip your coffee on an outdoor patio, keep your eyes and ears open and your camera handy. If you spot a bumble bee foraging or crawling around on the ground, take a photo a few photos!

Then submit your photos to bumblebeewatch.org, along with the date and location of your sighting. If possible, include the scientific or common name of the plant it was feeding on (both wild and cultivars are accepted). This will help us build a database of information about when queens first emerge from hibernation, what they feed on, and how emergence and foraging varies by species or habitats—urban, suburban, rural, etc.— across the United States and Canada.

At bumblebeewatch.org you can access a map of Alaska and other locations around the world where individuals have reported sightings of bumblebees in past years. You'll see when and where each species has been spotted and reported. Bumble Bee Watch is a collaborative effort to track and conserve North America's bumble bees.

You can also find more information about how to create bumble bee habitat at www.xerces.org/bumblebees.

Spread the word! Many people are afraid of bumble bees and other insects. Let your friends and family know how important they are and encourage them to take photos too!



Arctic Botanical Gardens

Only three botanical gardens in the world today are located above the Arctic Circle, and they are not in Alaska. Two are in Norway and one is in Russia. From a quick look at a map, you can see that their locations are not that far apart. Due to the proximity of the warm Gulf Stream the climate in that area is more favorable than in other polar regions. But we've been talking a lot about global warming. So, what do you think Utqiagvik? Nome?



The oldest garden in the Arctic

The **Polar-Alpine Botanical Garden-Institute** (abbreviated as PABSI in Russian) is the oldest of the three. It is located seven kilometers from the town of Kirovsk in the Murmansk Region of Russia and was opened on Aug. 26, 1931. It was created by botanist Nikolai Avrorin, who spent a great deal of time on scientific expeditions, collecting plant specimens in different countries. In the 1960s, he also helped set up a botanical garden in Yakutsk, the largest city built on permafrost. In his articles, Avrorin described the botanical garden on the slopes of the Khibiny as the "northern outpost of Soviet botany." His main interests were the search for new northern plants and acclimatization of species that are unusual for these latitudes. The institute's botanists even continued their work during World War II and grew medicinal plants for Red Army soldiers. The scientists also figured out how to extract glucose from lichens and even set up a small production plant.

The arboretum is divided into six sections: Siberia (Yakutia, Western and Eastern Siberia, Mountains of Siberia), Northern Europe (North of Fennoscandia, Mountains of Europe), Kamchatka, Rare and Endemic Species, Mountains of Asia (Mountains of Central and Southeast Asia) and North America (Boreal Region and Rocky Mountains).

While visiting the botanical garden, you can also immerse yourself in an authentically tropical environment in the form of hothouses where plants that are exotic for this region happily flourish. The Mexican agave, the African crinum lily, the date palm and large tropical ferns and cacti grow in Kirovsk. There is even an Arabica coffee tree that produces coffee beans!

<https://www.rbth.com/travel/334154-arctic-botanical-garden>

The Northernmost Botanical Garden

The world's northernmost botanical garden is located in the Norwegian city of Tromsø. The flowering season normally starts during the first days of May, while there is still quite a bit of snow in depressions of the Garden. At this time, the purple saxifrage (*Saxifraga oppositifolia*) and its relatives, as well as yellow cushion plants (whitlow grasses/*Draba*), pasqueflowers (*Pulsatilla*) and various bulbs dominate.



Flowering continues until snow arrives, normally some time into October. Some gentian species continue flowering even after a couple of weeks of October snow. The autumn sees even beautiful colors, such as the pink or white berries of shrubby rowan (*Sorbus*) species contrasting their reddish foliage.

The new rock landscapes and surrounding evergreen shrubs are attractive even during the peak of winter. However, if the snow cover is deep, you will have to bring your skis.

Some collections are defined systematically according to plant families, and those of saxifrages, primulas and gentians are particularly rich in species. <https://www.visitnorway.com/listings/arctic-alpine-botanic-garden/126909/>

Svanhøvd Botanical Garden, the 3rd botanical garden located north of the Arctic Circle, is in Finnmark the northernmost and easternmost county in Norway. The garden demonstrates the diversity of trees, shrubs, roses, perennials, new plants and summer flowers that can grow in a continental climate subarctic. Here visitors can expand their knowledge about the flora and horticulture or just stroll around and enjoy the sight of hundreds of plants in blossom.

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.

April 3 Meeting
Via Zoom: Meeting ID: 938 2833 2935; Passcode: 362610

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