

# Borealis

The Newsletter of the



Alaska Native Plant Society

PO Box 141613, Anchorage, Alaska

April- May 2020

## Join us at our Next Meetings!

### Monday, April 6, 7:00 PM

Main Topic: "The Flora of Sheep Mountain"

Speaker: Anjanette Steer

Mini-Botany – Beringian Endemics  
*Artemisia senjavinensis*

Speaker: Glenn Brown

Plant Family: Roseaceae: *Disaphora*

Speaker: Tom Choate

### Monday, May 4, 7:00 PM

Main Topic: "Angelica"

Speaker: Elizabeth Bluemink

Mini-Botany – *Rumex beringensis*

Speaker: Beth Baker

Plant Family: Roseaceae: *Spiraea*

Speaker: Zoe Meade

PLEASE NOTE: April and likely May monthly meetings will not be held in public but via computer and teleconference. It may take a while for all of us to get on board, but if you can, please try it out.

For the latest information about ANPS events and field trips, go to [www.aknps.org/](http://www.aknps.org/)

## Signs of Spring

As this newsletter goes to press (or whatever you call publication these days!), we're experiencing the earliest Vernal Equinox in 124 years. It is another one of those changes we're going to have to get used to, it seems because even though next year the spring equinox will return to March 20 in much of the country, it will begin on March 19 every leap year for the rest of this century, and the time of the spring equinox in non-leap years will move earlier and earlier. By the end of the century, the spring equinox will fall on March 19 most years. It's all to do with the difference between our calendars and actual earth's actual solar orbit.

Here in Alaska, that actual date doesn't mean much, but it gives us hope that we'll soon be seeing visible signs of spring.



Walking in the western woods in springtime, from Alaska to California, you may notice flashes of brilliant yellow coming from what look like big flowers. What you are seeing is *Lysichiton americanum*, commonly known as swamp lantern or western skunk cabbage. Both names for these spectacular plants are highly appropriate. But wouldn't you rather call it a

lantern?

"Erect above the saturated soil or standing water, the flowering parts of *Lysichiton* beam out their yellowness, truly like lanterns in the swamp. And from a closer distance, their slightly acrid odor is unmistakable. Though neither intense nor excessively unpleasant, the odor is vaguely reminiscent of skunk. It is but one of over two thousand species in its family, the overwhelming majority of which are tropical. It attracts its beetle pollinators by the combination of its distinctive odor and its characteristic brightness (or its yellow color, or both, we really don't know!). The beetles themselves benefit from nutritious pollen and from finding mates. And we humans are able to appreciate one of nature's manifold wonders, living out its life before our very eyes. Contemplate this gift as you enjoy walking through the spring woods!"

Read more about how we know what we know at <https://naturesdepths.com/lanterns-of-the-western-woods/>

# BE AWARE – The Most Dangerous Plant in the World?

By Walter Fertig – US Forest Service

Spotted or poison hemlock (*Conium maculatum*) is the “hemlock” that knocked off the ancient Greek philosopher Socrates. Its relative, water hemlock (*Cicuta maculata* or *Cicuta douglasii*) does not occur in southern Europe but could have been pressed into duty. Ethnobotanist H.D. Harrington once wrote that Water hemlock “has gained the reputation as being the most poisonous plant in the North Temperate Zone.” Its toxin, called cicutoxin, can cause delirium, nausea, convulsions, abdominal pain, seizures, and vomiting within 60 minutes of ingestion – frequently leading to death.



Taxonomists sometimes recognize two species of water hemlock in North America. *Cicuta maculata* (spotted water hemlock) in the strict sense occurs over most of North America but is replaced by *Cicuta douglasii* (western water hemlock) in the northwestern United States and western Canada. Both species are similar in having umbels of small white flowers borne on tall stems (up to 6 feet in height) above once to thrice pinnately compound, fern-like leaves. The leaflets of *Cicuta* can be distinguished from similar, non-toxic species in the parsley family (Apiaceae or Umbelliferae) by having veins that fork at their tips, with one branch ending at the tip of the leaflet and the other in the V-shaped sinus between adjacent leaflet lobes. All parts of water hemlock are toxic, but the poison is especially virulent from the roots. The lower stem and upper roots of *Cicuta* contain numerous internal partitions or air spaces that can be revealed if sliced lengthwise. Would-be natural food gourmands are well advised to avoid parsley-like plants with this combination of leaflet and root characteristics.

True to its common name, water hemlock occurs primarily on wet soils associated with ditches, stream banks, pond margins, and marshes. Water birds often eat the corky, rounded fruits of water hemlock without ill effect, though anecdotal reports suggest that humans who eat these same birds during migration can be sickened second-hand.

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## ALASKA NATIVE PLANT SOCIETY

### State and Anchorage Chapter Officers

|                |               |
|----------------|---------------|
| President      | Dennis Ronsse |
| Vice President | Zoe Meade     |
| Secretary      | Ginger Hudson |
| Treasurer      | Mary Stella   |

### Anchorage Chapter Program Coordinators

|              |               |
|--------------|---------------|
| Membership   | Mary Stella   |
| Plant Family | Timm Nawrocki |
| Mini-Botany  | Timm Nawrocki |
| Field Trips  | Dennis Ronsse |

### Newsletter ("Borealis")

|        |             |
|--------|-------------|
| Editor | Ginny Moore |
|--------|-------------|

*Borealis* is published bi-monthly, fall through spring. Articles may be sent to Ginny Moore, , Anchorage, AK 99516. Phone or FAX: , E-mail: [elfinwood@gmail.com](mailto:elfinwood@gmail.com)



**IT WORKS!**  
**IN 2018-2019 ANPS EARNED ALMOST \$400**  
**FROM MEMBERS SHOPPING AT FREDDY'S!**  
**WON'T YOU JOIN US?**  
**IT DOESN'T AFFECT YOUR OWN REWARDS POINTS.**

Fred Meyer is donating \$2.5 million per year to non-profits in Alaska, Idaho, Oregon and Washington, based on where their customers tell them to give. Here's how the program works:

- Sign up for the Community Rewards program by linking your Fred Meyer Rewards Card to (non-profit) at [www.fredmeyer.com/communityrewards](http://www.fredmeyer.com/communityrewards). You can search for us by our name or by our non-profit number **GC263**.
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- If you do not have a Rewards Card, they are available at the Customer Service desk of any Fred Meyer store.
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# FROM WHAT WE GATHER



## Forestry Webinars – a way to learn while being sequestered

**The Webinar Portal**, a product of [Southern Regional Extension Forestry \(SREF\)](#) and winner of the [2011 USDA Forest Service's Two Chiefs' Partnership Award](#), is a "multi discipline" web platform used to promote and deliver live and on-demand webinars focused on forestry, conservation, climate science and other natural resource disciplines. You can search their library of on-demand webinars to view at any time, or participate in a live webinar where you can ask questions and chat with other participants.

**View Live and On-Demand:** Whatever your interest - from improving wildlife habitat to understanding forest taxation to addressing sustainability and climate – they have over 700 free live and on-demand webinars that can keep you up-to-date on the latest best practices and research.

**Earn Continuing Education Credits:** All webinars are FREE to view and most, both live and on-demand, provide the opportunity to earn continuing education credits from professional accrediting organizations such as the Society of American Foresters, the International Society of Arboriculture, the Wildlife Society and others.

### Upcoming Live Webinars Already Scheduled – More to come

| Date       | Title   |
|------------|---|
| 04/08/2020 | <a href="#">Laurel wilt biology, monitoring, and management</a>   |
| 04/14/2020 | <a href="#">Biochar Production Technologies</a>   |
| 04/14/2020 | <a href="#">Non-timber forest products in the United States: access, production, markets, and market values</a> |
| 06/11/2020 | <a href="#">Tips for Choosing the Right Yard Tree</a>   |
| 07/27/2020 | <a href="#">Tree Identification Procedures</a>  |
| 09/29/2020 | <a href="#">Tree Pruning</a>  |
| 11/24/2020 | <a href="#">Tree Hazard Awareness</a>   |
| 12/15/2020 | <a href="#">Urban Forestry: Pests, Diseases, and Solutions</a>  |

Here's a sample of an On-Demand webinars that you can view any time, through this same portal.

### Introduction to Plant Identification

Participants will be provided a framework for determining the identity of plants.

The goal of this webinar is to provide participants with a basic understanding of plant ecology and a framework for determining the identity of plants. Participants will learn about the major groups of plants, traits that they should be looking for to distinguish plant groups, when to look for distinguishing traits, how to collect and preserve plant specimens, resources available to determine plant identification, operation of a simple plant key, and limits on the precision of plant identification. This webinar will also identify additional resources/training available to further develop skills.

- **Plant Identification Using Family Traits presentation slides.pdf** (18830Kb)
- **Family Characteristics of Plants to Assist in Identification.pdf** (150Kb)
- **The Digital Plant Press - Plant Identification in the Cyber Age.pdf** (23Kb)
- **2017.02.23 - Questions and Answers.pdf** (26Kb)

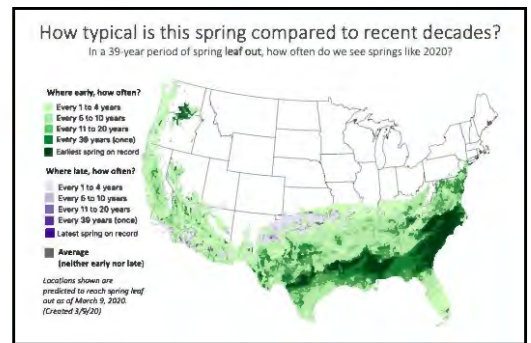
This webinar is presented by USDA NRCS Science and Technology.

# Following Spring North - In the Lower 48

How do you know when spring has begun? Is it the appearance of the first tiny leaves on the trees, or the first crocus plants peeping through the snow? The USA National Phenology Network <https://www.usanpn.org/news/spring> has produced a set of time-track maps to let you follow the advent of spring from the southernmost states to the north.

The maps show:

- When did spring arrive at locations across the country? **First Leaf** and **First Bloom** Indices measure these early season events in plants, based on recent temperature conditions
- How does this spring compare to "normal"?
- How often do we see a spring this early or late?



These models were constructed using historical ground-based observations of the timing of first leaf and first bloom in a cloned lilac cultivar (*S. x chinensis* 'Red Rothomagensis') and two cloned honeysuckle cultivars (*Lonicera tatarica* 'Arnold Red' and *L. korolkowii* 'Zabelii'). These species were selected because they are among the first woody plants to leaf out and bloom in the springtime and are common across much of the country.

## Utquagvik Creates Northern Heritage Tundra Garden

ANCHORAGE (KTUU) - At 71 degrees North - the approximate latitude of Utqiagvik, Alaska - it is too cold and windy for any species of berries to fruit. The growing season gives just a few short weeks for the knee high willows to add a few millimeters of new wood to their mangled branches, and the wildflowers bloom briefly before fading back into the ruddy tones of the tundra.

So why did the community of Utqiagvik decide to build a botanical garden in a barren patch of permafrost? It turns out that a lot of the plants that are native to the tundra have a rich tradition of culinary use, but one that's been largely forgotten.

"Elders told us that they really like going out on the land, and they liked harvesting plants," said Diana Solenberger of Iliisagvik College, a partner in the project since its inception four years ago, "but they didn't have a Honda, or they didn't have transportation to get out there anymore. And so the idea was to bring the plants to the elders, bring the plants to the community."

In response to this need, Iliisagvik College's Cooperative Extension Program has been actively working on the Heritage Tundra garden for the last five years. The work season is incredibly short in the Arctic; each summer provides about a one-month window in which to make progress. A crew of teens was employed to assist with building the Tundra garden. In the wild, the tundra has dry spots and low spots where water gathers. Certain plants like being wet, whereas others prefer to be drier.

To make sure all the plants were happy and would grow in their new home, they needed to recreate tundra mounds. This included cutting sod from the ground in a method traditionally used to build sod houses, laying the sod aside, using hand wheelbarrows to bring in dirt, and finally using the sod previously cut out of the ground to re-sod the mound. Once that was completed, the plants gathered from around the tundra were transplanted into the sod. "What people will never realize is how much work has gone into this project. Those students have worked tirelessly," says Lorene Lynn, the tundra ecologist who guided the project.

Currently, there are over 70 different plant varieties in the garden. The vast majority of them were collected from around Utqiagvik, although a few were collected up to 60 miles away. "We stuck mainly to the edibles, but we also put in some pretty flowers for the elders to enjoy from their windows at the senior center," says Lynn.

# Seeing Red!

Last year several hikers along Rabbit Creek in the Anchorage pointed out an interesting phenomenon that they had not seen before. There are a number of places along the creek where there were bright red plant features displaying almost at water level. As you can see from the photo, they really stand out and are quite pretty at least in the autumn. The first time that we saw them we convinced ourselves that they were the roots of a sedge that were growing down through the moss. But there weren't sedges at any of the other sites, so that's not a very convincing explanation. There was moss at all the sites where we saw the roots, but I've never heard of a moss with root-like growths like that. An on-line search gave us possibilities of these being willow, alder or cottonwood roots.



We eventually realized that there were cottonwood trees near all the sites, and by fording the creek and getting closer, at one place we could see a thicker tree-like root that was attached to some of the red ones, so that seems like a more convincing story. But, there are lots of cottonwood trees along the creek that don't have any red roots, so it led us to wonder what is going on. And why have we never noticed this before? We contacted many “experts” who gave us all kinds of answers, including hemoglobin and iron oxide.

It was Kitty LaBounty, a University of Alaska botanist in Sitka AND an ANPS member, who finally explained that the red roots are likely a function of anthocyanins. Anthocyanins?? What are they? Of course that opened the door to more research on what is going on here and why we don't see it always.

Anthocyanins are the water-soluble, vacuolar flavonoids responsible for violet, blue, and red colors in various plant organs. Berries, currants, grapes, and some tropical fruits have high anthocyanins content. Red to purplish blue-colored leafy vegetables, grains, roots, and tubers are the edible vegetables that contain a high level of anthocyanins. The colored anthocyanin pigments have been traditionally used as a natural food colorant. The color and stability of these pigments are influenced by pH, light, temperature, and structure. In acidic condition, anthocyanins appear as red but turn blue when the pH increases.

**Benefits for Plants** - Anthocyanins accumulate when either environmental or developmental changes render plants more sensitive to the environment.

- Facilitate plant reproduction as they attract pollinators and seed dispersers by imparting bright colors
- Protect plants from several biotic and abiotic stresses which may provide them a better adaptation to climate change
- Provide photo protection by absorbing excess visible and UV light and scavenging free radicals - often accumulate in young vegetative tissues and sun-exposed side of fruits to protect them from photo-inhibition and photo-bleaching under light stress without significantly compromising photosynthesis
- Reduce the infestation of insects and pathogens.

There have been relatively few studies on the nature and function of anthocyanins in roots. Based on the studies of other plant organs, we're guessing that the red is most likely related to photosensitivity of the roots. But is it seasonal or something we'll see again in the spring once the snow is gone; is it related to young fragile roots specifically, or to exposed roots; are there other environmental stresses that might be causing it? We'll keep watching and looking for more scientific research, and let you know next fall if we've learned any more. Meanwhile if you have knowledge or comments you'd like to share, please do!

- Ginny Moore

# Origin and Diversification of the Sunflower Family

From [Plant Press, Vol. 22, No. 3](#), July 2019. – a quarterly newsletter of the US National Herbarium

A study that explores the origin and diversification of Asteraceae, the sunflower family, was recently published in *Proceedings of the National Academy of Sciences* (<https://dx.doi.org/10.1073/pnas.1903871116>). Asteraceae, composed of an estimated 25,000-30,000 species, accounts for nearly 10 percent of all flowering plants. Global in distribution, the family occupies nearly every type of habitat on Earth and is marked by a complex inflorescence exemplified by the North American sunflower, in which individual flowers are clustered to mimic a single, large flower to lure pollinators. The origins, migration routes, and patterns of diversification that led to the family's ecological success remain unclear.

Floral diversity of tribes in the Asteraceae family. A recent study suggests the family originated in the Late Cretaceous Period in South America and later migrated to Africa where it diversified rampantly. (A) Barnadesieae; (B) Famatinantheae; (C) Stifftieae; (D) Mutisieae; (E) Hecastocleideae; (F) Pertyeae; (G) Cardueae; (H) Vernonieae; and (I) Heliantheae. (Image courtesy of [PNAS](#))

Using phylogenetic analysis of nearly 1,000 genomic locations in around 250 species, Jennifer Mandel (University of Memphis) and colleagues, including **Vicki Funk** (Smithsonian Institution), found that the family likely originated around 83 million years ago in the Late Cretaceous Period in southern South America. The earliest diversification out of South America may have occurred around 50 million years ago, during a period of dramatic climate change. Subsequently, the family rampantly diversified during the middle-to-late Eocene epoch, 42-37 million years ago, a period marked by global cooling, resulting in more than 95% of existing species.

Biogeographical analysis suggests that the family migrated to North America, south and central Africa, and Asia, with ancestral range estimates suggesting different possible dispersal routes out of South America. Regardless of the route, the family's prolific diversification and global colonization likely began once it reached Africa around 42 million years ago.

According to the authors, the findings illuminate the evolutionary processes underlying the wide reach and vibrant diversity of a major group of flowering plants.

## Asexuality as a Detour, Not a Dead End

From [Plant Press, Vol. 22, No. 1](#), January 2019.

Historically, asexuality has been seen by evolutionary biologists as a short-term solution to a long-term problem, with any temporary competitive advantages derived from eschewing sex eventually overshadowed by the absence of mechanisms to increase genotypic diversity. Yet, despite its ostensible limitations, asexuality is a widespread reproductive strategy, especially among ferns where it is generally manifested as apomixis. Apomictic ferns deviate from the typical fern sexual life cycle in two ways: 1) the production of unreduced spores through meiosis, and 2) the development of an adult fern (sporophyte) from the somatic tissue of the free-living gametophyte without the fusion of sperm and egg. For the few fern lineages that have been adequately studied, approximately 10% of species have been found to be apomicts. Across angiosperms, the incidence of apomixis is markedly lower, with fewer than 1% of species understood to exhibit this reproductive mode. With both the potential evolutionary pitfalls of asexuality and the broad disparity between ferns and angiosperms in mind, it seems only natural to ask why apomixis has played such an outsized role in fern diversification.

Studies across plant and animal taxa suggest asexual species are more likely to occupy expanded ranges, tolerate more extreme environmental conditions, and more readily establish island populations than their sexual counterparts. In addition to being overrepresented in island floras overall, ferns display clear patterns of habitat differentiation between sexual and asexual populations. Using digitized collection records, we will estimate range sizes for each taxon included in our spore survey and explore the relationship between reproductive mode, ploidy level, and various environmental gradients.

# FROM OUR BOOKSHELVES



## **The Earth in Her Hands**

by Jennifer Jewell

Timber Press - March 2020

**From the Publisher:** In this beautiful and empowering book, Jennifer Jewell—host of public radio’s award-winning program and podcast *Cultivating Place*—introduces 75 inspiring women. Walking through profiles of women doing current and innovative work in all fields horticultural – botany, environmental science, landscape design and architecture, floriculture, agriculture, social justice, plant seeking and breeding, seed science, gardening, garden writing and garden photography, public garden administration, research, and public policy – we see how they often represent larger issues or shifts in our world.

Profiled women include flower farmer Erin Benzakein; codirector of Soul Fire Farm Leah Penniman; plantswoman Flora Grubb; edible and cultural landscape designer Leslie Bennett; Caribbean-American writer and gardener Jamaica Kincaid; soil scientist Elaine Ingham; landscape designer Ariella Chezar; floral designer Amy Merrick, and many more. Rich with personal stories and insights, Jewell’s portraits reveal a devotion that transcends age, locale, and background, reminding us of the profound role of green growing things in our world—and our lives.

Focusing in a wholly unique way on how horticulture intersects with our everyday world and on women whose work has enriched and expanded these intersections in the last 25 years, Jewell explores and celebrates how the plant world is improved by not only greater representation of women generally but also by diversity amongst those women. She chronicles how working in the world of plants is a more viable and creative career path for women than ever before and how the plant-work world is demonstrating greater social and environmental responsibility, in large part due to women’s contributions.



## **The Seaweed Chronicles**

By Susan Hand Shetterly

Workman Publishing 2018

**“You might not expect unfettered passion on the topic of seaweed, but Shetterly is such a great storyteller that you find yourself following along eagerly.” —Mark Kurlansky**

“Seaweed is ancient and basic, a testament to the tenacious beginnings of life on earth,” writes Susan Hand Shetterly in this elegant, fascinating book. “Why wouldn’t seaweeds be a protean life source for the lives that have evolved since?” On a planet facing environmental change and diminishing natural resources, seaweed is increasingly important as a source of food and as a fundamental part of our global ecosystem.

In *Seaweed Chronicles*, Shetterly takes readers deep into the world of this essential organism by providing an immersive, often poetic look at life on the rugged shores of her beloved Gulf of Maine, where the growth and harvesting of seaweed is becoming a major industry. While examining the life cycle of seaweed and its place in the environment, she tells the stories of the men and women who farm and harvest it—and who are fighting to protect this critical species against forces both natural and man-made. Ideal for readers of such books as *The Hidden Life of Trees* and *How to Read Water*, *Seaweed Chronicles* is a deeply informative look at a little understood and too often unappreciated part of our habitat.

# 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, please indicate the category of membership you desire, 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, so  
Check your mailing label to see if it says 2020 or later!**