

Douglasia

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Journal of the
WASHINGTON NATIVE PLANT SOCIETY

To promote the appreciation and
conservation of Washington's native plants
and their habitats through study, education,
and advocacy.



Editorial Notes

by Jim Kling, Editorial Committee Chair

This *Douglasia* should be arriving just as summer is starting to peak. I hope the warm weather finds you active and well. This issue has plenty to inspire you.

Our series on the 50th anniversary of WNPS continues with at the history of WNPS conservation funding. It highlights projects like Point Wilson Beach on the Olympic Peninsula and Seattle's Discovery Park that have helped restore Washington's wild places and ensure a home for native plants to be enjoyed now and, we hope, in perpetuity.

Ever wonder what it's like doing seasonal botanical work, or are you considering such employment? A former seasonal worker outlines the types of jobs out there and the typical challenges and rewards associated with them.

We've got research, with a study of the distribution and systematics of the carnivorous western false asphodel. Learn the history of Piper's anemone and its connection to Lewis and Clark. Read a review of the fascinating book *How Flowers Made Our World*. Get a view into Bonaparte Meadow in Okanagan County, a rare alkaline fen that hosts an unusual ecosystem and habitats, and which a group of partners hopes to purchase and preserve.

To inspire your summer adventures, have a glance at photos from another great year of Botany Washington and Study Weekend, then learn about the award recipients honored at the latter event. Wrap up your summer reading and learn a bit of science with whimsical looks at fungus in a backyard tree and the pigments in black cottonwood.



Information for Contributors

Members and others are invited to submit material for publication in *Douglasia*. We now accept scientific manuscript submissions that will be peer-reviewed. Other articles, book reviews, poetry, photography, or illustrations are welcome. All materials submitted should relate to the study of Washington's native plants. Acceptance will be based on space and appropriateness, and materials are subject to copyediting (substantive editing with author's permission). Contributors are reminded that the *Douglasia* audience ranges from the professional botanist to the interested enthusiast. For more information about how to contribute, see: wnps.org/douglasia/contribution.

Email submissions to Douglasia@wnps.org.

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* The WNPS Arthur R. Kruckeberg Fellow is the highest honor given to a member by our society. This title is given to those who have made outstanding contributions to the understanding and/or preservation of Washington's flora, or to the success of WNPS.

** Deceased

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On the cover: Piper's anemone (*Anemone piperi*). ILLUSTRATION: CRYSTAL SHINN

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President's Message: The View from Here

by Casey Leigh

Dear WNPS Members,

WNPS has been buzzing with activity this spring. Five WNPS chapters (Central Puget Sound, Koma Kulshan, Salal, South Sound, and Northeast) held very successful plant sales in response to the growing demand for native plants. Kudos to the volunteers who made it happen!



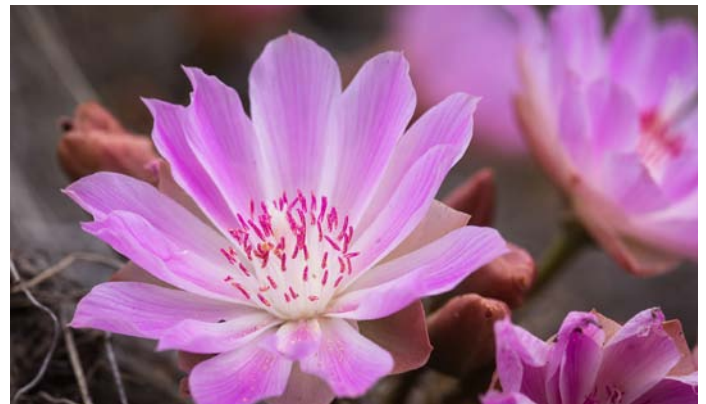
Ninety native-plant enthusiasts spent an enjoyable, educational weekend at Botany Washington in the shrub-steppe habitat of the Columbia River Basin. Attendees enjoyed two days of field trips and workshops in perfect botanizing weather at peak flower blossoming time. Tara Callaway of the US Fish and Wildlife Service and David Giblin, Collections Manager and Research Botanist at the University of Washington Burke Museum Herbarium gave engaging presentations in the evenings. An equally successful Study Weekend drew 180 WNPS members to the Wenatchee Valley and surrounding areas for a weekend of botanizing and enjoying bluegrass music, sampling Mexican cuisine from a popular local restaurant, meeting new friends, and catching up with old friends. A slide show of pictures taken during the field trips played in a loop during dinner Saturday night, followed by a fact-filled and humorous presentation by the Chelan-Douglas Land Trust's Stewardship Director Sam Jordan on big sagebrush (*Artemisia tridentata*) communities.

Three WNPS Awards were presented at Study Weekend as well. The WNPS Outstanding Partner Award—"presented annually to an agency, organization or individual which has made significant contributions to native plant conservation, research, or education in Washington"—went to Janneke Petersen. WNPS members Susan Saul of the Suskordfia Chapter and Heather Wendt of the Columbia Basin Chapter each received a Mentzelia Award, given annually to WNPS members "who have made a significant contribution to native plant conservation, research, or education in Washington." See the article in this edition of *Douglasia* to learn more about the accomplishments of this year's awardees.

Work continues to implement our strategic plan. Chapter and committee chairs have begun following guidance provided by the Strategic Implementation Plan Committee. Stay tuned for progress reports.

Last but not least, two at-large positions are coming open on the state board this fall. We are now in the process of recruiting nominees and we are open to recommendations/suggestions from our members. If you would like to learn more about what service on the board entails, email me at President.Leigh@wnps.org. I'd love to hear from you, even if you aren't interested in joining the board just yet but believe you might want to in the future.

I hope you can make time to hit the trails to see what beauty our native plants have in store for us this time of year.



Bitterroot (*Lewisia rediviva*) on Burch Mountain during the Study Weekend. PHOTO: MARK TURNER

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Celebrating 50 years

C. V. Piper's Discovery of Lewis and Clark's Forgotten Plant: The Story of *Anemone piperi*

by Donovan Tracy

Snowfall in the Bitterroot Mountains was especially heavy during the winter and spring of 1806. The Lewis and Clark Expedition was headed east on their homeward journey and anxious to get over the mountains after a miserable winter at Fort Clatsop near the mouth of the Columbia River. Their trading partners—the Nez Perce Tribe, from whom they obtained pack horses—urged them to wait for better conditions. Heeding their warnings, they waited 27 days for the snow to melt, camping in the Weippe Prairie—a place Meriwether Lewis called “quawmash flats” in reference to its broad blue fields of common camas (*Camassia quamash*) (Adelman 2026). One historian who chronicled the expedition surmised that at this point in their journey “the expedition’s energy was as tight as a coiled spring, ready to vault itself over those mountains, in an agony of anticipation of being released” (Ambrose 1996).

On June 15, they were finally underway on the Lolo Trail and making steady progress. They managed to travel 22 miles the first day and made camp on Eldorado Creek near the mouth of Lunch Creek. As he had throughout the journey, Lewis continued to make collections and record journal entries. On the 15th, he collected beargrass (*Xerophyllum tenax*), purple trillium (*Trillium petiolatum*), and shrubby penstemon (*Penstemon fruticosus*). He noticed a plant—probably at the edge of melting snow—that he may have recognized from back East. It was an elegant little anemone (*Anemone*), an early spring flowering plant. Had the expedition not been delayed, it surely still would have been dormant, buried in snow. He added it to his collection, thinking it was a wood anemone (*A. quinquefolia*), also known as the common eastern nightcap (Phillips 2003).

President Jefferson had given the expedition specific instructions: In addition to searching for a water route to the Pacific, they were to undertake detailed mapping and to conduct scientific observations of flora and fauna. Upon his return, Lewis had the responsibility of cataloguing the expedition’s findings and writing a report detailing the natural science aspects of the expedition. Jefferson directed Lewis to Benjamin Smith Barton, a fellow member of the American Philosophical Society, to oversee identifying, naming, and illustrating the plants. Lewis knew Barton, the author of *Elements of Botany*, and had met with him prior to the expedition for basic training in collecting and pressing specimens. After Lewis’s appointment as governor of the Upper Louisiana Territory, he left the job to Barton. However, after two years there was little progress. The task then fell to the ambitious German botanist Frederick Pursh.

Pursh was in the occasional employment of Barton—and since he was more of an herbarium taxonomist than a field botanist, he seemed a perfect fit for the job. Most botanists of the

era were eager to examine new plants, receive naming credit, and publish them under their own authorship, and Pursh was no exception. Hands-on experience with Lewis’s plants of the West certainly contributed substantially to his seminal work on the flora of North America, *Flora Americae Septentrionalis*, published in 1814 (Adelman 2026).

Lewis died in 1809 and never witnessed the completion of Pursh’s work. Much had been accomplished, with Pursh assigning new species status to 94 of the plants and naming three new genera—two in honor of Lewis and Clark, *Lewisia* and *Clarkia* (Phillips 2003). However Pursh never assumed that the anemone was anything other than *A. quinquefolia*, the eastern wood anemone. And that is where it stood for nearly a century.



Piper's anemone (*Anemone piperi*). ILLUSTRATION BY CRYSTAL SHINN

The taxonomic history of the collected anemone took a turn when Charles Vancouver (C.V.) Piper arrived at Washington Agricultural College in Pullman (now Washington State University). Fresh from receiving his Master of Science degree from the University of Washington, Piper became a Professor of Botany and Zoology in 1892. In addition to his academic work, he assisted farmers and ranchers with forage crop problems. Later, when he went to the U.S. Department of Agriculture, he became a world-renowned expert in soil management and crop production. He was also ideally situated in Pullman to assist local botanists—including William Cusick and Wilhelm Suksdorf—with their collections.

Piper had been an avid plant collector at an early age, and his collecting continued throughout his 10-year tenure at the college. Twice he collected Lewis’s wood anemone—the first time on June 16, 1893, and the second time in 1902 when he made a five-week packhorse trip over the Lolo Trail following

the path of the Lewis and Clark Expedition (Beattie 1928). On June 30 of that year—on Moscow Mountain in Idaho, approximately 20 miles east of Pullman but not on the Lolo Trail—he made his second recorded collection of what he presumed was *A. quinquefolia*, and labeled his herbarium sheet as such.

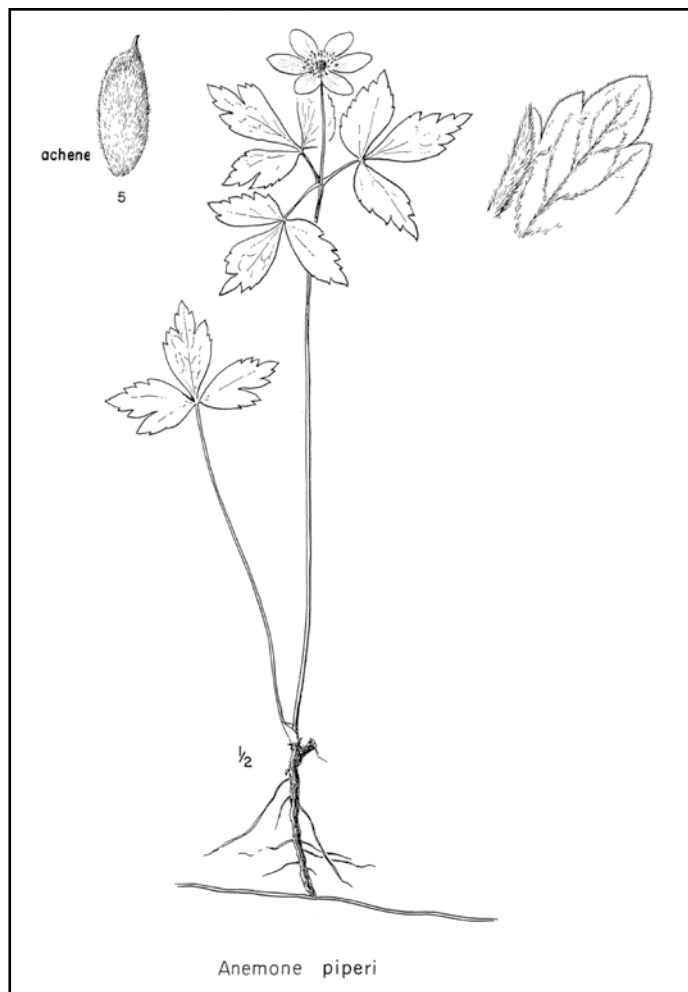
He felt compelled to submit his 1902 collection to higher authority for examination. Perhaps he noticed minor differences in what he observed and what had been described in the scientific literature. For example, the leaves differed slightly from previous descriptions. Nathaniel Lord Britton, a foremost botanist and taxonomist who founded the New York Botanical Garden, wrote a description of Piper's plant, describing the differences between it and *A. quinquefolia*. But it was actually Per Axel Rydberg, the first curator of the New York Botanical Garden Herbarium, who validly published the name *A. piperi*, and Piper's 1893 collection was selected as the type specimen.

Piper prepared several floras during his time in Pullman. His master work, *Flora of the State of Washington*, was published in 1906 by the Smithsonian Institute after he moved to D.C. Interestingly, his treatment of "his" plant in the *Flora* questions whether it was really a new species, using *A. quinquefolia* as the primary heading and *A. piperi* secondarily, and stating that "the western form of *A. quinquefolia* is considered by Doctor Britton a distinct species, but the apparent differences are very slight" (Piper 1906). Despite his humble reservations, we know the plant today (per the Britton and Rydberg declarations), as *A. piperi*, aka Piper's anemone.

Anemones are members of the buttercup family (*Ranunculaceae*), a large family of over 2,000 species in 43 genera distributed worldwide. Washington State's flora includes nine species of anemones. *Anemone piperi* is found primarily in the southeastern portion of the state. While not rare, its range is rather limited to the easternmost part of the state, northeast Oregon, Idaho, and western Montana. It is usually found in shady woods at moderate elevations (400–1900 m). In contrast, *A. quinquefolia* has an expansive range that includes eastern and upper-midwestern U.S. and most of southern Canada east of British Columbia, and is common at low to mid-elevations (Dutton et.al. 2026).

Anemone flowers are considered 'incomplete' in that they lack one of a typical flower's four concentric whorls (sepals, petals, stamens, and pistils). The petals are actually the missing feature and the look-alike 'petals' are actually sepals, the outermost whorl. The sepals number 5–7 and are predominantly white, but like many anemones they may also present as pinkish or bluish. Each flower is borne singly on a stem ranging 10–35 cm in height. In the center of the flower are numerous pistils, each with a single straight, glabrous style that typically is about 0.5–1.0 mm long. Each style is surrounded by 35–55 pollen-producing stamens.

The plant's trifoliate (divided in three) leaves are a key identification feature of the plant, as are the basal leaves that have long petioles (stalks) and a flowering stem that is naked



Anemone piperi, illustration by Jeanne Janish, used by permission of UNIVERSITY OF WASHINGTON PRESS.

except for a whorl of leaves below the flower similar to the basal leaves (Burke Herbarium Image Gallery 2026). Another key distinguishing characteristic of Piper's anemone (albeit one not visible unless the plant is collected) is the plant's root system, which are rhizomes (modified underground stems). These rhizomes grow vertically, whereas most anemones (including *A. quinquefolia*) grow and spread horizontally.

Although Piper relied on Britton and Rydberg to properly identify his anemone, over the course of his career he became a prominent taxonomist and published 1057 plant names (IPNI 2026). We think of Piper as a scientist, academic, systematic botanist, and hard-working bureaucrat. However, in the words of his colleague at Pullman, R. Kent Beattie, "Professor Piper was not primarily a laboratory and herbarium man. He was a field botanist. He knew and loved plants as they grew out of doors. ... A surprisingly large number of the plants cited in the *Flora of the State of Washington* were collected by himself and he had explored personally perhaps a hundred localities in all parts of the State in securing them." (Beattie 1928).

At Mount Rainier, Piper discoveries abound, including elegant Jacob's ladder (*Polemonium elegans*), cliff paintbrush (*Castilleja rupicola*), large mountain monkey-flower (*Erythranthe caespitosa*) and rock penstemon (*Penstemon newberryi*)

var. *rupicola*, now *P. rupicola*). Other plants were named for Piper, including the Olympic bellflower (*Campanula piperi*), and Rydberg named a genus of orchids *Piperia* in his honor.

In 1903, Piper left Pullman for a position with the U.S. Department of Agriculture in Washington, D.C., where he established his identity as a highly respected agronomist and became world-renowned in several fields of crop production. In addition to his official duties, he was involved in the Lewis and Clark Herbarium and encouraged the publication of journals of early plant explorers of the Northwest, such as Archibald Menzies and David Douglas. Charles Vancouver Piper died on February 11, 1926, at the age of just 59. He is buried in a family plot at Lakeview Cemetery near Volunteer Park in Seattle, Washington. His little anemone is just one reminder of why we should be grateful for his substantial contributions to botanical science. We are indeed fortunate to share in his appreciation and enjoyment of the native plants of the Northwest.

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Donovan Tracy is a member of the Central Puget Sound Chapter. This is the third article he has written for Douglasia on botanical exploration in the Northwest. His website is www.flower-sofrainier.com.



Bonaparte Meadows: the Rarest of Conservation Opportunities

Bonaparte Meadows is a distinctive site in Washington State, with a calcareous fen, several rare plant species, and numerous Species of Greatest Conservation Need—and local groups are working hard to acquire and permanently protect it.

by Julie Vanderwal and Josh Wozniak

In northcentral Washington, every wetland is important for wildlife, biodiversity, and water storage—particularly as winters bring rain instead of snow and summer weather starts earlier, ends later, and becomes hotter. Large wetlands have a disproportionate significance, and a large calcareous fen such as Bonaparte Meadows at the base of Bonaparte Mountain in Okanogan County is a rare treasure.

Every year, hundreds of outdoor enthusiasts enjoy camping and recreating in and around Bonaparte Lake, and many have found themselves passing by this large wetland on the way to the lake. The passersby might have pulled over on the side of Bonaparte Lake Road to look and listen for some of the count-



The Bonaparte Meadows team envisions engaging local students in baseline data collection, restoration, monitoring, and making the site available for educational uses in the future. Students and researchers from around the state will continue to study ecological conditions and restoration impacts, adding depth to the team's understanding of baseline and post-restoration conditions that will guide restoration planning, implementation, and adaptive management. Educational signage is also planned. Pictured here: Erica Heinlen, US Forest Service Botanist, shares her knowledge with Sustainability Pathways students from Western Washington University students and other botany survey participants, onsite.

PHOTO: JULIE VANDERWAL

less wildlife species that rely on this wetland for food, water, and shelter, and to take in the lush plant life.

Imagine if they knew they had the opportunity to help conserve this wetland forever. In fact, a grassroots coalition of partners is currently working together to raise three million dollars to acquire the wetland and surrounding upland forest and establish a stewardship fund. See the end of the article for more details.

What Makes Bonaparte Meadows Special

Bonaparte Meadows is an ecosystem of statewide significance. The influx of groundwater and the movement of water through the site make this wetland a fen, making it different from a bog (which is primarily fed by rain or runoff and does not have an inlet or outlet). This fen is fed by mineral-rich groundwater, making the site alkaline instead of acidic like a bog and setting the stage for unusual plants to grow. Even though the peat naturally produces acids, the groundwater buffers this acidity with its plentiful dissolved cations, and creates pH-neutral and alkaline conditions.

Imagine a peat wetland with high pH, mineral-rich water running through it, continuously replenishing dissolved calcium, magnesium, and bicarbonate. It is distinct from the typically acidic and low-nutrient-availability conditions associated with many peat soils. This difference creates the ecologically exceptional habitats at Bonaparte Meadows. The calcium-rich environment of these wetlands can support an unusually diverse flora and rare plants that thrive in low-oxygen and low-nutrient conditions. The distinctive geologic and hydrologic conditions that make Bonaparte Meadows a calcareous fen are unique to this site. Because this alkaline wetland is formed by its unusual combination of calcium-rich bedrock, abundant upwelling of groundwater, and peat formation over millennia (among other site-specific factors) these habitats can be protected and restored, but cannot be re-created elsewhere. This wetland is irreplaceable.

More Rare, Sensitive, and Priority Species with Every Survey

Plant, bird, butterfly, bumblebee, amphibian, and other biological specialists have been working to detect and document the biodiversity of the site. The property's unique conditions support several rare and critically imperiled plant species. Botanical and wetland surveys were conducted in 2025 by a team of specialists including Erica Heinlen, United States Forest Service (USFS) West Zone Botanist; Mack Laverick, then-USFS Botany Resource Assistant; Joe Rocchio, WDNR Natural Heritage Manager; Josh Wozniak, Professional Wetland Scientist; George Thornton, retired USFS botanist; Dana Visalli, botanist; and Julie Vanderwal, Ecological Restoration Practitioner. The survey documented 152 vascular plant species

and 13 non-vascular species. An additional 18 non-vascular species were collected by Erica Heinlen in 2020.

The surveys documented three plant species classified as Critically Imperiled (S1) in Washington State:

- In the upland, Erica Heinlen found Richardson's ricegrass (*Achnatherum richardsonii*).
- The team found northern bog aster (*Symphyotrichum boreale*)—a calcareous fen indicator—throughout the wetland, including an almost half-acre patch in which it grew as a dominant species!
- Marsh arrow-grass (*Triglochin palustris*), another indicator of calcareous conditions, was also found.

The surveys also documented northern blue-eyed grass (*Sisyrinchium septentrionale*), a species classified as Vulnerable in Washington State. This small member of Iridaceae is adapted to cold groundwater-influenced areas and is often found in calcareous wetlands. At Bonaparte Meadows it is at the southern limit of its range in Washington State.



The diverse habitat at Bonaparte Meadows ranges from a large area dominated by bog birch and slender sedge with interspersed mature willows, to open water ponds with fringe marsh habitat, to upland forest. This degree of habitat diversity allows for a commensurate diversity in flora and fauna. PHOTO: JULIE VANDERWAL

The potential presence of additional rare plant species is currently being investigated. Botanists interested in helping with the ongoing plant inventory are invited to reach out to Julie Vanderwal (contact info below). In addition, *Betula glandulosa*/*Carex lasiocarpa* Shrub Fen plant community was observed in large patches at Bonaparte Meadows, and is awaiting an ecological assessment to be documented and recorded. The *Betula glandulosa*/*Carex lasiocarpa* community is ranked as a Critically Imperiled (S1) plant association in Washington State and occurs very infrequently in northcentral Washington and in no other regions of the state.

This site is also crucial habitat for a wide variety of wildlife species, including critical habitat for 13 wildlife Species of Greatest Conservation Need and/or Washington State Priority Species: Bald Eagle, Barrow's Goldeneye, Cinnamon Teal, Columbia spotted frog, Common Loon, Golden Eagle, Lesser



Bog birch/Slender sedge (*Betula glandulosa*/*Carex lasiocarpa*) Shrub Fen at Bonaparte Meadows, awaiting confirmation through an ecological integrity assessment. *Betula glandulosa*/*Carex lasiocarpa* plant communities are ranked as a critically imperiled (S1) peatland association in Washington State. PHOTO: JULIE VANDERWAL

Scaup, Lewis's Woodpecker, mule deer, northwestern white-tailed deer, rainbow trout, silver-bordered fritillary, and western toad. Both amphibians on this list are also candidates for state listing, as is the silver-bordered fritillary and the Golden Eagle. Together, the plants and wildlife contribute to overall ecosystem function through nutrient cycling, redistribution of energy in the system, and connectivity between habitats.

Crucial Ecological Functions

The wetland also has the ecologically significant function of storing carbon on-site in previously formed and currently forming peat. Peat has gradually accumulated in this wetland over thousands of years, as plants converted atmospheric carbon into plant tissue, and organic plant materials partially decayed under low oxygen conditions. This process sequesters more carbon than all other vegetation types in the world combined (IUCN 2021). Peat filters and stores water—the latter of which has become more important as the climate shifts toward hotter

and more intense summers and more rain (rather than snow) falls in winter. As the largest peat wetland in Okanogan County by a significant margin (about 25 times bigger than the next largest peat wetland), Bonaparte Meadows provides critical climate resilience. Protecting the largest peat wetland in Okanogan County is a natural climate solution. And as a headwater wetland, its capacity to absorb, hold, and slowly release water benefits the whole watershed.



Symphyotrichum boreale, found throughout the wetland. PHOTO: JULIE VANDERWAL

The Ecological Threat vs. the Conservation Potential

Some sections of the site have been affected by water table drainage, peat extraction, and grazing. Peat was extracted from the site from about 1978 to 2023, leaving swaths of wetland exposed. Other areas remain intact. Interestingly, rare plants and WDFW Priority Species exist in both altered and minimally disturbed areas. Protecting and restoring this peat wetland would benefit a wide range of wildlife species. It also would promote water storage and groundwater recharge, which would in turn benefit Bonaparte Creek, a tributary to the Okanogan River.

This wetland is currently available for purchase as a conservation acquisition, but only for a very limited period of time. The potential Bonaparte Meadows conservation acquisition includes roughly 265 acres that are surrounded by 481 acres of upland forest, with many more acres of national forest and Washington Department of Natural Resources land surrounding it. The site continues to offer up rare and precious biological treasures as more botanists, wildlife biologists, and birders survey the site. Local organizations and community members are partnering to protect this wetland through this very time-sensitive conservation acquisition opportunity.

The conservation of this botanical jewel is very much in jeopardy because Bonaparte Meadows is privately owned and being sold by the landowners, and could be divided into lots and developed similar to the recreational developments at nearby Bonaparte Lake.



Pictured here: George Thornton and Dana Visalli collect willow specimens as part of the 2025 botany survey. PHOTO: JULIE VANDERWAL

A Call to Action

If the site is successfully acquired, both protection and restoration will be possible. The Okanogan Land Trust is working with Trout Unlimited, the Confederated Tribes of the Colville Reservation, Okanogan Conservation District, Sparrow Song Consulting, and other local partners to assess site conditions, write grant applications, and invite the community to support the effort. As of the writing of this article, the “For the Fen” campaign (see link at end of article) has raised \$916,097 of the \$1.5 million needed as match by the end of July 2026. Funding must be secured to purchase the property before the option agreement with the landowner’s heirs expires.

“It’s a short window for this kind of campaign,” said Kate Miller of Okanogan Land Trust, “but we have momentum. I’m hearing tremendous excitement from the community, and a sense of pride at the idea that we could pull it off.”

The biodiversity of this wetland makes it significant at a statewide scale, and a high priority for protection. Preserving Bonaparte Meadows is a strategic investment in water storage, flood and drought mitigation, biodiversity, and the long-term health of the watershed. Its large size, mineral-rich groundwater, presence of peat and rare plants, headwaters location, and connectivity to other high-quality aquatic and upland habitat make this site distinctive in Washington and ecologically valuable.

If allowed to be sold in pieces, and cabins built, the opportunity will pass to keep this habitat unfragmented and restore this high-value, unique wetland.

To support this effort, visit www.okanoganlandtrust.org/bonaparte. To volunteer, contact kate@okanoganlandtrust.org. For updates, follow Okanogan Land Trust on Instagram and Facebook, and subscribe to Okanogan Land Trust’s YouTube channel, where you can watch a full-length presentation (www.youtube.com/watch?v=6fOl6XW72FQ) about the site.

Julie Vanderwal is a Certified Ecological Restoration Practitioner focusing on Process-Based Restoration. She operates Beaver Food Forest, a peat-free, coir-free native plant nursery and farm, which includes a section of plants grown from Bonaparte Meadows provenance, and she is a WNPS member (Okanogan chapter). Reach her at sparrowsongjulie@gmail.com.

Josh Wozniak is a wetland scientist, WNPS member, and plant enthusiast based out of Twisp, Washington. Reach him at sno-wozz@gmail.com.



Book Review

The Story of Nature’s Revolutionaries: How Flowers Made Our World

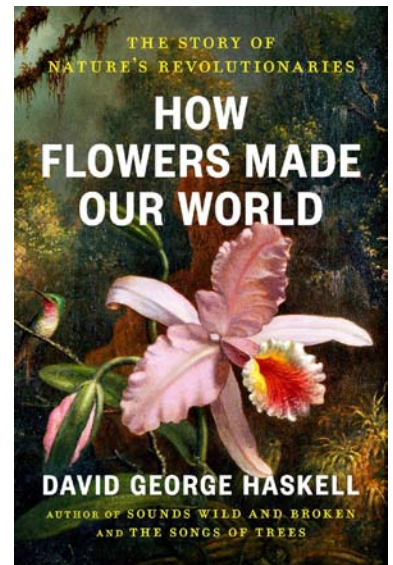
by David George Haskell

Reviewed by Gail Sklar

Before reading David George Haskell’s *The Story of Nature’s Revolutionaries: How Flowers Made Our World*, we had never thought of flowers as revolutionaries and had only casually considered how flowering plants supported human evolution by providing fruits, vegetables, and grains. Haskell argues that flowers are often dismissed as delicate, decorative, and feminine, and therefore are rarely featured in natural history museums. Through elegant prose and vivid examples, he explains the evolution of flowering plants in a way that invites even non-botanists to become fascinated.

The chapters in Haskell’s book trace the evolution of flowering plants, which began in the early Cretaceous period, about 135 million years ago. He argues that flowering plants “caused an explosion of biodiversity and ecological productivity.” The book follows the development of flowers alongside bees, butterflies, birds, and mammals, showing how these species became interconnected within the cycle of life we know today, making this both a work of botany and a reflection on evolution. Haskell also examines how flowering plants shaped human development—and how humans, in turn, have influenced flower reproduction, often in ways that do not benefit either pollinators or people. Each chapter contains many layers, blending history, ecology, and personal observation.

In Chapter One, Haskell focuses on magnolias. He explores their fragrance and symbolism, writing about “beauty, bisexuality and motherhood.” The chapter centers on propagation and cooperative relationships that make reproduction possible. Magnolias, he explains, have retained a relatively primitive floral morphology and have not evolved more specialized reproductive structures. Haskell follows the flowers through a blooming season by tying a knotted string near each magnolia bud and observing its changes over time. He pays particular attention to one particular bud, describing its scent and its progression from bud to fruit.





Goatsbeard grass (*Tragopogon porrifolius*) blossom & bud. PHOTO: MARK TURNER

Haskell next turns to goatsbeard grass (*Tragopogon*) originally from Europe and western parts of Asia, focusing on non-native forms. I was delighted to see Walter Fertig mentioned here; once a WNPS Board member, he is now the Collections Manager at the WSU Ownbey Herbarium. Haskell visited the herbarium to examine goatsbeard grass specimens collected by Ownbey that were the offspring of two non-native plants. These offspring—the result of natural hybridization—could breed only with one another, not with their parent plants. They were not simply new to science; they were new to the world. As Haskell puts it, this was “...instant evolution, helped along by bees.” Change and adaptation is the rule rather than the exception.

The chapter on orchids focuses on interdependence and specialization. Many orchids and their pollinators have become so highly specialized that a particular insect or bird may pollinate only a specific orchid. Many orchids depend on mycorrhizal fungi for germination, a relationship many orchid growers do not fully understand. It is hypothesized that many species of orchids evolved the ability to survive as epiphytes (growing non-parasitically on another plant) to avoid competition with other plants growing on the ground.

The chapter on grass was especially fascinating. Growing up on the East Coast, I was taught that that region had been blanketed by vast forests at the time of European colonization. However, this book taught me that much of the Southeast was grassland or open plains at that time. Haskell explains how grasses evolved to have an endosperm, which nourishes developing seedlings. Curious about this structure, he examined several flours in his kitchen under a high-powered microscope and was surprised to find that they resembled coral. He suggests that grasses may have contributed to the evolution of early

humans by supporting the shift from walking on all fours to walking upright.

Seagrasses (*Phyllospadix*) first evolved in a warmer climate, then adapted to cooler waters, and now must cope with rising temperatures once again. Although their numbers and diversity have declined sharply, seagrasses remain vital: they store carbon, protect shorelines, filter pollutants, trap sediment, and provide nursery habitat for young freshwater and marine animals. Haskell highlights seagrass restoration work in the Firth of Forth, Scotland, stressing the value of involving volunteers, both to educate them and to inspire their imagination. He calls for efforts to keep the seafloor free of debris and prevent further damage.

In the chapter *Roses* (*Rosa* spp.), Haskell emphasizes the role of scent in attracting pollinators. He explains that roses became central to the perfume industry in Grasse, France, where perfume was first developed to mask the odor of curing hides. Haskell describes both the perfume-making process and the growth of the perfume industry. He suggests that people are so strongly drawn to flowers because floral scents “evoke feelings of beauty and desires in others.”

The next chapter, entitled *Tea*, is not really about tea, except for a short discussion of Linnaeus’s failure to adapt tropical tea and banana plants to Sweden’s environment to grow them as crops. Instead, the chapter is about the evolution of Linnaeus’s classification system in which he organized plants into 24 classes, to which he could easily add new discoveries. This was a much simpler than previous attempts at plant classification.

In the chapter titled *Pansies* (*Viola* spp.), Haskell recounts that his great grandfather was an award-winning pansy grower in England. He believes that the cultivated pansies in his great grandfather’s garden fed less pollinators, perhaps due to some having “long nectar-filled spurs, but few insects can access this bounty.” He also writes that doubled flowers often grow their extra petals by converting what would have been pollen-making stamens into extra petals. Haskell writes about the importance of native plant gardens that hum with insect life, and warns of the danger of chemicals used in the plant trade that can be harmful to both insects and humans. He also describes how important public gardens are for people in population-dense cities like Brooklyn, NY, and that “a lived experience of thriving flowers and humans collaborating to build new life around them, not only inspires that change, it embodies the answers we need: multispecies communities, working together.”

In the final chapter, Haskell paints several pictures of the future of flowering plants in a warming world. And in the book’s supplement, he includes some experiments people can try at home to enhance their understanding of flowering plants.

This book will help you to see the world with different eyes and see more clearly the interconnections and threats to flowering plants. It is well worth the read.



50 Years of Conservation Action

by Jamie Bails

For 20 years, the WNPS Conservation Committee has sought to support and enrich a variety of local stewardship, inventory, and conservation projects across the state. The committee funds projects that restore, improve, or support native plant ecosystems. Projects have promoted the appreciation and conservation of Washington's native plants and their habitats through study, education, and advocacy. This work is complemented by vigorous letter writing, testifying in public hearings, and committee involvement. While committee members rotate regularly, one thing that remains constant is a dedication to the protection and conservation of wild places and habitats throughout the state.

The Conservation Committee was established in 1977 as WNPS's second standing committee, following the Research and Inventory Committee. The society's conservation and research activities have often complemented each other as WNPS has advocated for recognition and preservation of special areas in Washington. Mark Egger (who served as the first committee chair beginning in 1981) started the tradition of "Conservation Notes" in *Douglasia*, which was later changed to the "Conservation Corner" in 2014 by Becky Chaney.

That first *Notes* states that the committee is a group "of plant lovers who are determined that those who come after will have the same opportunities we have had to enjoy the wild and wonderful native plants of Washington State." By 1985, Egger focused on advocacy regarding public land planning, especially as related to natural areas planning in Research Natural Areas, Wilderness Areas, and Wild and Scenic River areas within the national forests of Oregon and Washington.

A conservation policy was adopted in 1997. Recognizing that protection must extend to entire ecosystems rather than just to individual plant species, the policy focused on the identification of rare habitats and removing invasive species through citizen action. By 2003 WNPS's strategic plan also prioritized:

- identification and control of invasive species;
- protection of existing shrub-steppe communities; and
- protection of Garry oak (*Quercus garryana*) communities.

By 2005, the committee directed funds to projects that would have an immediate landscape impact and could involve local citizens and groups, especially for Garry oaks, camas (*Camassia*) meadows, and pollinator populations—topics which continue to be a focus of grant applicants to this day.

Mike Marsh served as the committee's chair from 2005 through 2012. Under his guidance, the committee broadened its work to include local efforts to salvage native plants and restoration on private lands. Marsh established a conservation grants program that recognized the loss of local habitat and the impacts of invasive species as threats to native plants. He wanted to preserve Garry oaks and associated prairies in

Puget Sound, as well as shrub-steppe grazing habitats held by the Washington Department of Fish and Wildlife. Marsh (who passed away in 2024) shared the chair role with John H. Browne, who served from 2006 to 2015.

Becky Chaney served as chair from 2013 to 2024, and led the committee's fight against invasive species, especially English holly (*Ilex aquifolium*)—which was finally listed as a statewide Class C weed in 2025. (*Douglasia* 49 (2): Summer 2025)

Grant Proposals

Twenty years of grant awards of \$250 to \$2,000 have shown that even small amounts can have a big impact on a project that needs a boost to get started. The first official call for grants came in the spring of 2008 with an advertisement in *Douglasia*. The goal then—as now—was to advance stewardship of native habitats throughout the state. Proposals are evaluated based on:

- appropriateness of the proposal for WNPS goals
- the likelihood that the proposed project will be successful
- the resources and experience of the applicant, and
- how the project addresses WNPS conservation focus areas (*i.e.*, shrub-steppe, Garry oak woodlands, and invasive species).

On applications from chapters, chapter financial resources and their ability to support the project also were considered in chapter applications.

The first statewide conservation grants were approved for the following projects:

- Discovery Park Native Herbaceous Planting and Non-native Plant Removal, David St. John
- Friends of Deadhorse Canyon—Tool Purchase to Fight Invasives, David Dobson
- Wildlife Corridor and Garry Oak Plantation, Mary Fiddler;
- Amabilis Mountain Knapweed Pull, Frank Harris, and
- Smokehouse Marsh Restoration and Native Plant Propagation, Brenda Clifton.

For these projects, \$500 was enough to pursue a conservation idea that addressed real-life problems: restoring native prairies, getting rid of invasive species, or propagating seeds for restoration of species that weren't readily available. Early project proponents took stewardship and restoration into their own hands when government funding and support weren't available.

Today a subcommittee of the Conservation Committee reviews grant proposals in February. The subcommittee includes botanists and restoration and conservation practitioners, all of whom have a passion for protecting and restoring native plants on the landscape.

Grant requests that align with WNPS's mission to promote the appreciation and conservation of Washington's native plants and their habitats through study, education, and advocacy, may be submitted by WNPS members on behalf of WNPS chapters, other organizations, or individuals. Preference may be given to students and first-time-recipient team projects, and to chapters

or organizations with limited financial resources. Underserved communities and geographic distribution across the state are also a point of emphasis.

Proposals are evaluated based on:

- support for the WNPS mission and its Conservation Principles, and/or for local WNPS chapter interests;
- quantity and quality of the ecological benefit to be gained; and
- likelihood of long-term project success.

Recipients are limited to three awards in six years.

WNPS memberships and endowment funds have been instrumental in supporting a wide range of conservation efforts and projects on all state ecosystems—including riverine, wetland, forest, shrub-steppe, and marine habitats that protect rare species—by removing invasive weeds and re-establishing native species on both sides of the Cascade Mountains. Funding for small, locally led projects has steadily increased to \$8000 per year up from \$2000 in 2005. Locally important projects include vital conservation work by non-profit groups, conservation districts, state parks, and cities can receive stipends to jump-start small projects that are unlikely to be competitive for state or federal grants.

Project Stories

As we celebrate the 50th year of WNPS, I wanted to revisit some of the early projects listed above and describe how the projects have prospered over time.

Point Wilson Beach Conservation Project, 2006

In 2006 a group of WNPS Olympic Peninsula Chapter members formed the Point Wilson Restoration Workgroup with the goal to protect the delicate and unique coastal native plant community in Fort Worden State Park, as documented by Charles Espey (a local botanist) in his article “Point Wilson: Grassroots conservation of a coastal plant community (*Douglasia* 31(2): Spring 2007). Nelsa Buckingham had studied this community in 1993 and documented it as a “globally imperiled (G2) American Dunegrass-Coastal Sand verberna (*Leymus mollis*-*Abronia latifolia*) grassland” in the NatureServe database.

The workgroup proposed to protect sensitive species by consolidating several meandering beach access trails. Using match money from The Friends of Fort Worden (\$1500) and the WNPS (a \$500 conservation grant matched by \$500 from the Olympic Chapter), the group laminated temporary signs and installed recycled fencing barriers to close off access paths. They consolidated 12 social trails into five pathways on the southeast side of the road from the lighthouse to the kitchen shelter,

Simply redirecting traffic had a tremendous impact on salt-tolerant species such as bighead sedge, (*Carex macrocephala*), yellow sand verberna (*Abronia latifolia*), beach carrot (*Glehnia leiocarpa*), seashore lupine (*Lupinus littoralis*), and beach peavine (*Lathyrus littoralis*)—all of which thrive in sand with very little organic material. Native plants were later added near



Puget Sound gumplant (*Grindelia integrifolia*) among grasses at Point Wilson. PHOTO: MARK TURNER

the lighthouse and bathrooms and adjacent to the kitchen shelter. “Like so many plant communities, the coastal plants don’t look like much during most of the year, until you look at them when they are blooming; then the whole perspective changes,” said Sharon Schlenter, Olympic chapter member and volunteer.

By 2016 the site needed upgrades. The recycled fence posts and rope barriers provided by Fort Worden State Park had degraded and collapsed. With another \$500 conservation grant from WNPS, the workgroup purchased 40-inch screw-in earth anchors to firmly hold up string cables—a fencing design that had been used successfully in national parks to direct traffic away from sensitive areas such as beach dunes. The Olympic Peninsula Chapter of WNPS, Friends of Fort Worden, and a Fort Worden State Park maintenance crew then installed 90 earth anchors and sturdy 4” X 4” corner posts, strung up ¼” galvanized coated string cable between them, and installed additional permanent directional signage on March 25, 2017.

Ten years later, the earth anchors have held up in the sand dunes, allowing nearby native species to proliferate untrampled—aided by now-permanent metal park signs installed by State Park staff that direct foot traffic to the beach. Volunteer work parties continue to remove American dune grass (*Ammo-*

phila breviligulata) and Scot's broom (*Cytisus scoparius*) seedlings throughout the park. However, mossy stonecrop (*Sedum acre*)—a deep-rooted non-native species—will always pose a challenge due to cohabitation in areas with a natural moss crust.

Many volunteers and state park managers have supported this project, including Dave Llewellyn, Claude Manning, Luzi Pfenniger, Jay Courtney, Eric Lanzillotta, Vern Bessey, Jody Olsen, and Bob Schlentner. Additional kudos go to Fort Worden State Park superintendent Brian Hageman and park staff for supporting this conservation effort, and to Dixie Llewellyn (who passed away in November 2025), who researched and designed the fencing system, and without whom this work would not have happened.

Discovery Park Native Herbaceous Planting and Non-Native Removal, 2006-2011 to present

It can be difficult to know where to begin with a site as large and diverse as Seattle's Discovery Park. In early 2006, two WNPS botanists—David St. John and Clay Antieau—took on the challenge to restore coniferous forests and improve meadows impacted by the military establishment of Fort Lawton in 1890.

Antieau began his restoration project on the Wolf Tree Nature Trail area, located on the north end of the park, in an area dominated by a bigleaf maple (*Acer macrophyllum*)/red alder (*Alnus rubra*) overstory that had been substantially graded to create military housing.

To address the lack of conifer regeneration, Antieau planted 163 conifers to support the successional understory growth that is common in Northwest forests. Antieau theorized that the natural successional forest timeline could be reestablished by converting areas under deciduous trees into conifer islands, taking advantage of canopy cover gaps once Himalayan blackberry (*Rubus bifrons*) was cleared out. But because old-growth conifers had been extensively removed to build the fort, neither a seed source nor suitable soils remained for the forest to regenerate naturally. Before they could plant the trees, they had to survey and remove (with hand tools!) swaths of invasive weeds such as Scot's broom, Himalayan blackberry, English ivy (*Hedra hibernica*), and English hawthorn (*Crataegus monogyna*). Clay girdled non-native sycamore maples (*Acer pseudoplatanus*) by removing the outer bark to hasten their demise into habitat trees (snags) and eventual decomposition to the forest floor. Removing invasive species that dominated the understory would allow canopy gaps to be filled by western cedar (*Thuja plicata*) and western hemlock (*Tsuga heterophylla*), which are known to exist in the understory patiently awaiting their chance to thrive. With volunteer crews, Antieau planted Sitka spruce (*Picea sitchensis*), Douglas-fir (*Pseudotsuga menziesii*), western red cedar, and western hemlock). A limited number of grand fir (*Abies grandis*) also were planted.

After two years, it was evident mountain beaver (*Aplodontia rufa*) had eagerly awaited the addition of the conifers as a

food source and chewed through some of the 163 saplings. The removal of invasive species also allowed a resurgence by stinging nettles (*Urtica gracilis*) around the conifers, adding a vital herbaceous layer. Following project completion in 2009, Clay found that 90 percent of the trees survived and planted an additional 80 trees to expand the project area.

Volunteers with Friends of Discovery Park and the Green Seattle Partnership continue to remove non-native blackberry and Scot's broom, focusing on the 2010 Capeheart Restoration Project, located in a former military housing area.

After sixteen years, the overstory has prevailed and allows minimal light to reach the forest floor, delaying the growth of the planted conifers. However, bigleaf maple—a stronghold of



Friends of Discovery Park volunteer work party, Capeheart Forest, Discovery Park, June 13, 2026. PHOTO: PHILIP VOGELZANG

the forest—is showing a mysterious decline and decay and may be losing its foothold in certain areas. As the dominant maples die, the canopy opens up and allows conifer succession to occur. This natural succession may be the key to the long-term creation of a conifer-dominated forest. However, Clay wonders whether the loss of a dominant tree species might simply promote growth of the pervasive invasive species, precluding natural successional processes.

In 2009 and 2011, David St. John submitted a proposal for a half-acre plot in the northern portion of the park, near the playground and visitor center, as part of the Seattle Parks' Adopt an Area program. This open, sunny project site had recently been graded into a bowl shape, with suitable sandy soils for creating a prairie. But it also was overrun with non-native Scot's broom, Himalayan blackberry, English ivy, and common holly. St. John focused efforts on removing invasives prior to planting numerous Puget Sound coastal perennials. Several Garry oaks (*Quercus garryana*) and serviceberries (*Amelanchier alnifolia*) also were planted.

Despite good intentions, the thick cover of non-native grasses—including sweet vernal grass (*Anthoxanthum odoratum*) and tall fescue (*Schedonorus arundinaceus*)—prevented many of the propagated seedlings from establishing. Some plants—in-

cluding balsamroot (*Balsamorhiza deltoidea*), camas (*Camassia quamash*), coast goldenrod (*Solidago spathulata*)—did survive and were found on my May 2026 visit.

Luckily, the Garry oaks and serviceberries also survived. In addition, a preexisting tanbark oak (*Notholithocarpus densiflorus*), bristly manzanita (*Arctostaphylos columbiana*), Douglas maple (*Acer glabrum* var. *douglasii*) and Pacific madrone (*Arbutus menziesii*) that originally surrounded the project area are thriving.

Oak Harbor Garry Oak Plantation, 2003 and 2008 to present

Garry oaks are a big deal in Oak Harbor. Since 2015, the Garry Oak Society has protected this iconic tree species on several city blocks and private properties around Smith Park in downtown Oak Harbor. Many of these oaks date to before 1850, when the area was colonized by European settlers. (<https://ohgarryoaksociety.org/local-garry-oak-history/>)

In 2003—when the revitalization and preservation of native oak trees was just getting started on Whidbey Island—Mary Fiddler of Oak Harbor recognized the inherent value in increasing Garry oak prairies. She received a \$3000 Wildlife Habitat Incentive Project (WHIP) grant from the USDA's Natural Resource Conservation Service to purchase 150 Garry oak seedlings grown by Fourth Corner Nurseries in Whatcom County to restore 10 acres of fallow horse pasture.



Garry oaks (*Quercus garryana*) on Mary Fiddler's property in May 2026.
PHOTO: NEED PHOTOGRAPHER

In 2008, she applied for a WNPS grant of \$250 to purchase an additional 50 Garry oaks—along with Nootka rose (*Rosa nutkana*), common snowberry (*Symphoricarpos albus*), hardhack spiraea (*Spiraea douglasii*), and red elderberry (*Sambucus racemosa*)—to create hedgerow fencing around her property and create a wildlife corridor that connected declining habitat on north Whidbey Island to refuge areas. According to Mary, “I just liked the oaks and wanted to create a wildlife habitat from an old pasture.”

I visited Mary's property in May 2026 to find that the oaks had been planted in clumps of five to eight trees to aid mowing. Mary and her husband dug the holes by hand and enriched them with mulch, installed fencing around each tree to reduce deer browsing, and watered the trees for the first four years. Twenty years later, most of the trees were doing well (if a bit behind season in leafing out due to lack of rain and dry soils). She continues to collect and plant Garry oak acorns for a future Garry oak plantation.

The Fornsby Creek Smokehouse Floodplain Tidal Wetland Project, 2009 to present

The Swinomish Channel was created by dredging the once vast Swinomish Slough to create a navigable channel—adding dikes and channelizing other estuarine sloughs—and filling 105 miles of tidal slough that once covered a 900-acre estuary within the Swinomish Tribe Reservation.

A large-scale restoration project had begun seeking to reconnect fish habitat throughout the dredged delta by upgrading tide gates that hindered fish passage. The resulting improvement in tidal flushing would expand channel walls for native plants to colonize and allow regular estuary flushing in the slough, recreating natural estuary cycles, and distributing sediment and seeds to areas previously separated from natural recolonization.

The WNPS-funded project wanted to pair with tidal reconnection and channel modification by propagating and planting of five key native species: Lyngbye's sedge (*Carex lyngbyei*), seaside arrow-grass (*Triglochin maritima*), seaside plantain (*Plantago maritima*), seacoast bulrush (*Bolboschoenus maritimus*), and hard-stemmed bulrush (*Schoenoplectus acutus*).

In summer 2009, seed was collected from local estuarine populations and propagated under nursery conditions to evaluate germination. Germination results revealed several clear differences in dormancy and establishment strategy:

- Seaside plantain had 52% initial germination, increasing to 86% after winter stratification.
- Seaside arrow-grass germinated without stratification, with 35% germination and no increase following stratification.
- Lyngbye's sedge required cold stratification; although initial germination was negligible, it reached 27% after winter exposure, confirming a dormancy mechanism.
- Seacoast bulrush and hard-stemmed bulrush showed 0% germination under tested conditions, despite moderate to high viability in the field.

Following germination, propagated plants were planted along the edges of the slough, where daily tidal changes would presumably aid in native colonization. Other native species such as Nootka rose (*Rosa nutkana*), Pacific crabapple (*Malus fusca*), and Sitka spruce (*Picea sitchensis*) were planted alongside the propagated plants.



Lyngbye's sedge (*Carex lyngbyei*) seedlings. PHOTO: NEED PHOTOGRAPHER

Fifteen years after restoration, the marsh has filled in with native vegetation from the seedlings and from water-borne native plant propagules. Lyngbye's sedge dominates edges with freshwater inputs, and coastal saltgrass (*Distichlis spicata*) dominates the salt marsh. Small populations of seaside plantain and seaside arrow-grass line the channel.

These results show that although seaside plantain, seaside arrow-grass, and Lyngbye's sedge germinated and established well, they now are much less abundant than saltgrass naturally brought in by the tidal prism. So while the planted species added important diversity to the site, tidal inundation apparently was more effective (and cost-effective) at revegetating the marsh than propagating and planting desirable species. Skagit River System Cooperative is now seeking funding to restore an additional 232 acres of saltmarsh along the Swinomish Channel by setting back the levee that was constructed in 1937. Based on the lessons learned from this study, they will rely on passive revegetation to reestablish the salt marsh.

Lessons Learned

These on-the-ground projects funded by the Conservation Committee have had lasting effects on the habitats we seek to protect—and on the individuals receiving funding.

Conservation of native species in areas with abundant non-native invasions is an ongoing and important effort that requires continual maintenance, attention, and funding. Even when you think that your project has achieved its goals, you'll find that there will be unexpected changes that force managers back to re-evaluate the outcomes. Restorationists can either let nature take its course, or intercede to put it on a human-directed course.

Funding for conservation projects has empowered individuals and organizations to pursue unique projects that would not have been funded by state or federal grants. This funding has encouraged experimental projects, yielding results that keep us curious and engaged in supporting natural processes. The restoration process has kept us asking questions after the initial project implementation, and created partnerships and commu-

nities that ensure ongoing restoration amidst vanishing native habitats.

If your organization received conservation grant funding over the last 20 years, we'd love to hear from you. Tell us how that money helped to get your project going and what has been done to keep the work successful. The grant funding cycle opens annually on December 1. Applications are available on the WNPS website.

Acknowledgements

None of these conservation projects would have been possible without the support of WNPS members. In addition to basic funding, this work has created a network of paid staff, scientists, citizen volunteers, and board members who volunteer their time to recruit more volunteers, to support research projects, and explore creative alternatives to restoring native ecosystems.

WNPS Conservation Committee (in alphabetical order) currently consists of:

- Jamie Bails, chair;
- Kathy Darrow, Olympic Peninsula Chapter;
- Emil Doyle, Columbia Basin Chapter;
- Ed Lisokwski, Central Washington Chapter;
- Oliva Pope, South Sound Chapter;
- Susan Saul, Suksudorfia Chapter;
- Alec Sorensen, South Sound Chapter.

Reports referenced:

WNPS Grant Report: "Point Wilson Conservation Project, Fort Worden Beach," Sharon Schlentner, October 2016

WNPS Grant Report: "Discovery Park Native Herbaceous Planting and Non-Native Plant Removal," David St. John, January 2009, Phase 1, and Phase 2, January 2011,

WNPS Grant Report: "Smokehouse Marsh Restoration and Native Plant Propagation," Brenda Clifton, January 2009

WNPS Grant Report: "Wildlife Corridor and Garry Oak Plantation," Mary Fiddler, December 2008

WNPS Grant Report: "Urban Forestry, Conifer Underplanting in Discovery Park, Seattle, WA", Clay Antieau, 2006

WNPS Grant Report: "Juanita Bay Garry Oak Prairie Project," Green Kirkland Partnership, Jacob Gunden, March 2020

Jamie Bails has been a member of the conservation committee since 2023 and began serving as chair in January 2026. She has worked as a river restoration ecologist and in state environmental permitting for almost 30 years.



Botany Washington 2026



Umatilla Rock standing guard at the entrance to Camp Delaney.
PHOTO: LIAM PENDLETON



Thymeleaf buckwheat (*Eriogonum thymoides*) encountered on the Umatilla Rock hike. PHOTO: LIAM PENDLETON



The Umatilla Rock crew botanizing. PHOTO: LIAM PENDLETON



David Giblin entertaining the crowd. PHOTO: Rob Brown



Penstemon pruinosus during the Umatilla Rock hike. PHOTO: ROB BROWN



Denise Mahnke shares announcements. PHOTO: ROB BROWN



Botany Washington attendees. PHOTO: DON JACOBSON



People botanizing during the Hungate Canyon walk. PHOTO: ROB BROWN



Thompson's paintbrush (*Castilleja thompsonii*). PHOTO: DON JACOBSON



Tara Calloway giving a rousing presentation on several of Washington's federally listed plants.. PHOTO: ROB BROWN



Sun Lake at Sun Lake-Dry Falls State Park. PHOTO: DON JACOBSON



Chelan beardstongue (*Penstemon pruinosus*). PHOTO: DON JACOBSON

Study Weekend 2026



Fred and Ann Weinmann and others taking a lunch break during the Burch Mountain hike. PHOTO: MOLLY BOYTER



Dining table setup featuring Wenatchee Mountains endemic plants and WNPS 50th anniversary trivia. PHOTO: SUSAN BALLINGER



Joe Arnett (r) leading the group in keying plants along the trail.. PHOTO: TIFFA THEDEN



A group identifying plants in a shaded spot during the Tiptop Mountain hike. PHOTO: MELANIE MERZ



Members of Sam Lichen Hills hike(?) stopping to smell a fallen ponderosa pine. PHOTO: TIFFA THEDEN



An interactive timeline of WNPS's history presented in the gathering hall at Study Weekend 2026. PHOTO: JOAN FRAZEE



Unidentified individuals (Likely Olivia with the blue hat, and the woman in orange has the last name Owen) showing off their nature journaling during the Nature Journaling event. PHOTO: OLIVIA SCHILLING



Yellow-white larkspur (*Delphinium xantholeucum*) blossoms on Burch Mountain. PHOTO: MARK TURNER



Large-flowered collomia (*Collomia grandiflora*), with beetles. PHOTO: GREG SACHS



Harsh paintbrush (*Castilleja hispida*), Icicle Gorge Trail. PHOTO: MARK TURNER



White shooting star (*Primula latiloba*) blossoms, Icicle Gorge Trail. PHOTO: MARK TURNER



The Tibbetts Mountain team stopping for a group photo, with leader Clay Antieau on the far left. PHOTO: NATALIE HAMMERQUIST

An Apex Predator of the Douglas-fir Forest

by Eric Worden

A stealthy predator stalks within our forests. It seeks only the most massive of prey. Silent as a rolling fog: once its victim is caught, a grisly death inevitably follows. I am depicting (rather overdramatically) the fungus *Phaeolus hispidoides* which truly is a common killer of large Douglas-firs and Sitka spruce in our area. The fungus is more commonly referred to as “dyer’s polypore” by mycologists and crafters because its mushroom can yield green, brown, or yellow dye—and as “root and butt rot” by foresters. This mushroom is familiar to many of us, as it is commonly encountered in our woods from mid-September through October. During the following months the mushroom gradually decays and crumbles away. The species is native to North America, with other species occurring in forests all around the Northern Hemisphere. A few years ago I had an interesting encounter with this fungus when I discovered that it was killing a large Douglas-fir on my property, near a house.



Phaeolus hispidoides mushroom growing on Douglas-fir tree roots. The surrounding pine needle mulch was brought from a nearby ponderosa pine. PHOTO: ERIC WORDEN

The mushroom appeared as a hard “conk” about three feet from the base of the large Douglas-fir. This is typically where it appears, in early fall, growing from the tree roots underground, though it can sometimes appear above the ground on the trunk. Curiously, it appeared in the exact spot where I had drowned a large underground nest of yellow jackets just a couple of months earlier. I’ve noticed before that mushrooms sometimes appear where a concentration of fertilizer or animal waste was deposited. I knew that the tree was doomed, but there was just one complication: a second Douglas-fir was nearby and I wanted to be certain which tree was infected before cutting it down!

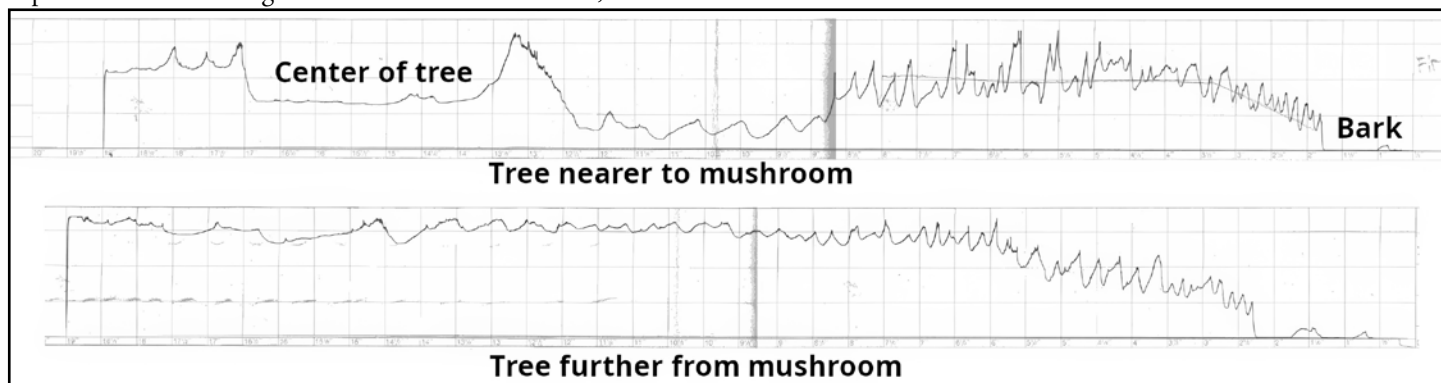
I called a trusted arborist for expert help. He said that he had experience with this fungus as a killer of residential trees, and

explained that the fungus consumes the roots and heartwood of the tree, starting at the bottom and moving upward, often leaving the visible parts of the tree unaffected and apparently healthy. Generally people find out about the problem only after the roots rot and the tree falls over. He offered to use a new tool that he had acquired, a Resistograph. This tool drills a long thin needle into the tree, measuring the resistance of the wood as the needle moves through. Sound wood strongly resists the drilling needle while rotten wood offers little resistance. This way we could find out which tree was affected and determine the extent of the decay. Shown below are the Resistograph read-outs from each of the trees. Each test was performed on the trunk about 18 inches above ground level. From right to left, the graphs’ horizontal axes represent the distance from the exterior of the tree. The vertical axes represent the hardness of the wood. Notice that the bark registers essentially no resistance.

Do you see the difference in the two read-outs? The rotten tree was the one closest to the mushroom. Finally, my years of academic and seemingly pointless study of biology had yielded a practical benefit! To eliminate the hazard to the house, I had the infected tree cut and was amazed when I saw the rotten core of the tree with my own eyes. The brown, cracked appearance of the wood showed that the fungus digested the white cellulose fibers of the wood, leaving behind brown lignin.

According to the USDA Forest Service, “Spores are deposited on and subsequently percolate into the soil. Fine roots are the main infection court for basidiospores. Fresh trunk wounds caused by mechanical injury or fire probably are not infected directly by spores but instead the wounds exacerbate decay in previously infected roots and butts.” The fungus gains entry through the root tips. The fungus may persist in an infected fallen tree for many years, and even fruit again. From this information I conclude that—in residential areas—the conks should be immediately removed and disposed of when found. Be mindful though that nearly all other mushroom-producing fungi species are harmless or beneficial to trees.

The fungus preys on other tree species as well, especially those in the *Pinaceae* family, but also trees in the families *Cupressaceae* (western red cedar), *Taxaceae* (yew), and occasionally even hardwoods such as oak, birch, ash, and *Prunus*. On my own property, I planted bitter cherry (*Prunus emarginata*) next to the stump, and now two years later the cherry foliage shows



Resistograph readouts from the two trees.

signs of severe disease; these signs also are on snowberry (*Symphoricarpos albus*) growing next to it, while snowberry elsewhere in the yard appears healthy.

Regarding my use of the word “predator” in the title: I usually avoid quibbling over terminology, but I think it’s interesting that the term can arguably and accurately be applied to the relationship between this fungus and its tree hosts, given that a predator kills its prey and consumes it after it is dead. The manner of killing and consuming is not part of the definition of the term. And since the fungus itself has no known predators, I call it an “apex” predator!

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Eric Worden is a lifelong amateur naturalist and the chair of the Koma Kulshan chapter of WNPS.



Arthur R. Kruckeberg Fellow Award Call for Nominations

*by the WNPS Arthur R. Kruckeberg Fellows Committee:
Gail Sklar, Ashley Shattuck, Linda Storm, and Van Bobbitt*

The highest accolade given to a member by our society is to be named a WNPS Arthur R. Kruckeberg Honorary Fellow. The call for nominations is only every three years, and the next award year is 2027. We are now taking nominations, which may be made by individuals or chapters by writing a letter to the WNPS Fellows Committee explaining how the nominee meets the award criteria.

To be considered for recognition as a WNPS Fellow, an individual must be a current or past member of WNPS and be recognized for one or more of the following criteria:

- Significant and lasting change in the organization has been realized through the actions of this member.
- Contribution of an extraordinary amount of volunteer time to WNPS.
- Performance of an outstanding act and/or has been a driving force on behalf of the conservation, education, research, or advocacy of Washington’s native flora.
- Longevity of their contributions at the state or chapter level.

A list of previous recipients of the award can be found at <https://www.wnps.org/history/wnps-fellows>.

Nominations are due November 5, 2026. The WNPS Fellows Committee will review submissions and recommend candidates to the WNPS Board of Directors, which will vote at the spring board meeting.

Submit applications to the WNPS Fellows Committee, c/o Gail Sklar at PastPresident.Sklar@wnps.org.



The Systematics of Western Asphodel (*Triantha occidentalis*, *Tofieldiaceae*) in Washington

by Philippa Stone

Triantha is a small genus in the family *Tofieldiaceae*, and has four species found across North America and Japan. *Triantha occidentalis* (western asphodel) is native to Washington and is found in western North America from California to Southern Alaska, stretching inland to the Rocky Mountains in Canada and south into Idaho. In 2021, Western asphodel was shown to be carnivorous by Qianshi Lin, a former Ph.D. student at the University of British Columbia. Lin placed flies labeled with a heavy nitrogen isotope on sticky hairs found on the flower stems, and discovered that this nitrogen was absorbed into the plant. He also showed that these sticky hairs secrete digestive enzymes that degrade proteins (Lin et al. 2021). *T. occidentalis* is one of just four known carnivorous monocot species, and the only one to catch prey using a sticky trap. Lin’s findings have led to renewed interest in the genus from carnivorous-plant enthusiasts. In fact, it now is possible to buy *Triantha* seeds from several specialist nurseries.



Western asphodel (*Triantha occidentalis*). PHOTO: MARK TURNER

The last major review of the genus *Triantha* was authored by John G. Packer in 1993. Packer determined that there were three subspecies of *T. occidentalis*: *T. occidentalis* ssp. *brevistyla*, *T. occidentalis* ssp. *montana*, and *T. occidentalis* ssp. *occidentalis*.

Under this revision, the only subspecies of *T. occidentalis* found in Washington is *T. occidentalis* ssp. *brevistyla* (Packer 1993).

Lin also carried out initial genetic work on the genus as part of his Ph.D. research. Using chloroplast DNA from specimens across North America and Japan, he created a phylogeny of the genus, which—while not fully resolved—did indicate that a revision of the genus was necessary. Lin found that *T. occidentalis* contains *six* clearly defined genetic clades, and the clades do not fully align with Packer’s subspecies (Lin 2020). Most surprisingly, Lin showed that *T. japonica*—the only Asian species of *Triantha*—is actually nested within *T. occidentalis* and does not appear to be a separate species. The *T. japonica* sampled shared the same genotype as the *T. occidentalis* found on the Haida Gwaii archipelago northwest of Vancouver Island, and on the northern tip of Vancouver Island, and on Cape Caution (a headland on British Columbia’s Central Coast, north of Vancouver Island and east of Haida Gwaii).

Haida Gwaii and the northern tip of Vancouver Island are two of the three major glacial refugia in the Pacific Northwest. The *T. occidentalis* sharing the same genotype as *T. japonica* are present in both of these locations. Glacial refugia are geographical areas that were not covered by glacial ice, where populations of plants, animals, and other organisms were able to persist through past ice ages and recolonize surrounding areas after glacial retreat. The last glacial maximum (LGM) took place around 25,000 to 18,000 years ago, during which a large portion of the Pacific Northwest was covered by the Cordilleran Ice Sheet. It is possible that the genotype of *T. occidentalis* found in western BC and Japan was potentially much more widespread over all of Beringia (the land bridge that connected northeastern Asia and northwestern North America), and glaciation may have wiped out all populations except those in refugia.

The third major glacial refugium in the Pacific Northwest is the Olympic Peninsula (Byun et al. 1999). Unfortunately, Lin did not include any specimens of *T. occidentalis* from the Olympic Peninsula in his initial genetic analyses of the genus, so the genotype of *Triantha* in the Olympic Peninsula is currently unknown. I hypothesized that the genotype of *T. occidentalis* found in western BC and Japan may also be present in the Olympic Peninsula—in which case Washington actually is host to *two* subspecies of *T. occidentalis* instead of one.

The seeds of the *T. occidentalis* in Japan (aka *T. japonica*), Haida Gwaii and the northern tip of Vancouver Island have unusual morphology compared to other specimens of *T. occidentalis*. The outer seed coat of most *T. occidentalis* populations—including those found in the Washington Cascades—is much larger than the seed and loose around the seed, giving it the appearance of being white, translucent, and “inflated.” In contrast, both layers of the seed coat in *T. japonica* and the *T. occidentalis* found on Haida Gwaii and northern Vancouver Island are tight to the seed and appear more transparent. This enables the genotype of *T. occidentalis* found on Haida Gwaii and northern Vancouver Island—potentially tied to

glacial refugia—to be distinguished by morphology alone. The unusual morphology of *T. occidentalis* specimens from Western BC and Japan has been noted by other researchers, and is likely the main reason that these populations of *T. occidentalis* have previously were labeled as *T. glutinosa*. The inflated seed coat in *T. occidentalis* is considered the key character for distinguishing it from *T. glutinosa*, (Packer 1993; Lin 2020).

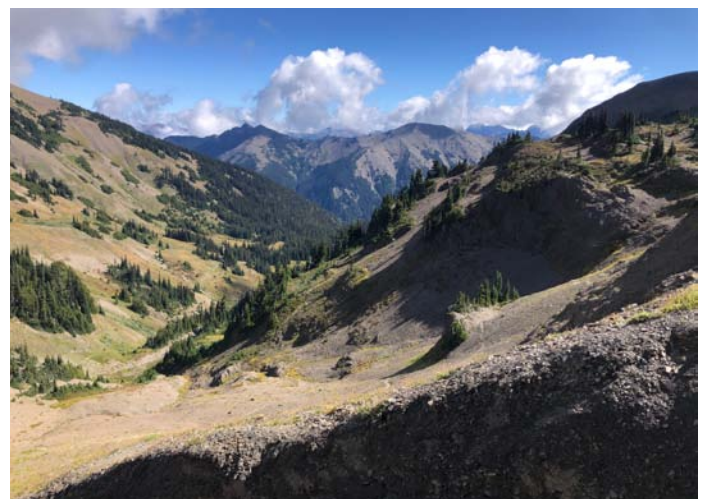


Triantha occidentalis at Royal Lake, Olympic Peninsula. The bright red fruits of *Triantha* are noticeable when mature. The red sticky hairs below the inflorescence trap insects and release digestive enzymes to break down prey for nutrient absorption.

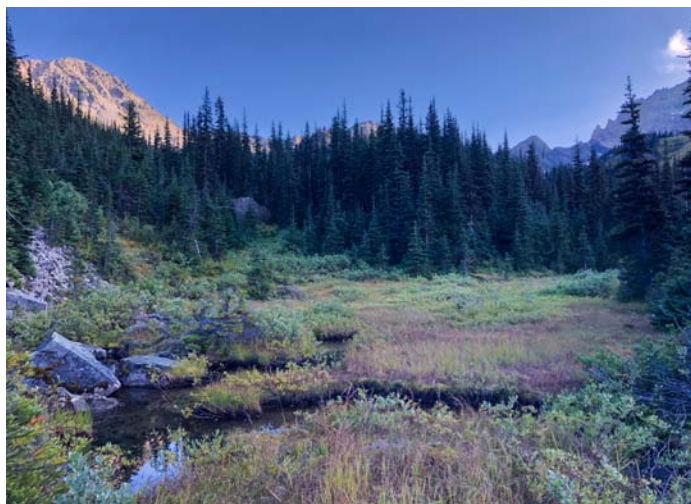
Triantha occidentalis is distributed throughout the mountains of the Olympic Peninsula and on the coast around Ozette. I chose to focus my sampling in the northeastern Olympic Mountains. As most glacial relicts in the Olympic Peninsula are found in the basalt crescent around the north, east, and south edges of the mountain range, I thought that this would be the best place to look for a putative glacial relict population of *T. occidentalis* which should have the same morphology as the *T. occidentalis* found in Western BC and Japan.

Fieldwork

In September 2024 I travelled to the Olympic Peninsula with Teagan MacLachlan (an undergraduate student) to collect



Looking toward Badger Valley from close to Obstruction Point.



Typical *Triantha occidentalis* habitat at Royal Lake.

seeds for morphological analysis back at the University of British Columbia.

Leaving the car at Obstruction Point, we headed out into clouds on the Grand Valley Trail to our campsite at Grand Lake, botanizing as we walked. We were particularly pleased to see cliff dwarf-primrose (*Androsace laevigata*, formerly *Douglasia laevigata*). Cliff dwarf-primrose is incredibly rare in British Columbia, occurring only in a few localities on Vancouver Island



Teagan MacLachlan photographing a rather tall pinedrops (*Pterospora andromedea*) individual on our way back down from Royal Basin.

and in Haida Gwaii, and considered to be of special concern by the province—so it was quite novel for us.

Triantha occidentalis is typically easy to spot in the later months of the summer due to its bright red fruits, and we were happy to find several populations of *T. occidentalis* suitable for collecting herbarium specimens and seeds along the Grand Valley Trail and around Grand, Moose, and Gladys lakes.

The next day we walked back along Badger Valley Trail to our car, and enjoyed watching Olympic marmots on our way. Later in the afternoon, we drove to the Dungeness Forks Campground in the Olympic National Forest to sleep before driving to Upper Dungeness Trailhead the next morning.

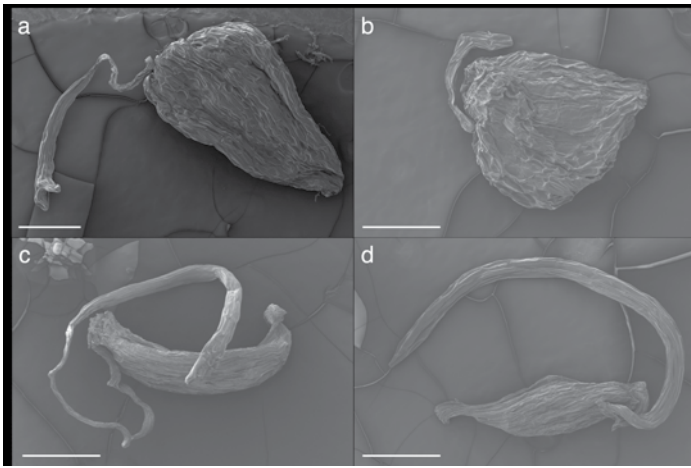
From Upper Dungeness Trailhead we took Dungeness Trail and then Royal Basin Trail to re-enter Olympic National Park, collect *T. occidentalis*, and camp at Royal Lake. At Royal Lake we were easily able to locate *T. occidentalis* for collecting herbarium specimens. We timed our trip well as there were plenty of plants with mature seeds. Having completed our collections, we enjoyed spending more time observing the mycoheterotrophic plants on our way back from Royal Basin the next day (September 17th). On our hike we saw many-flower Indian-pipe (*Monotropa hypopitys*), sugarstick (*Allotropa virgata*), gnome-plant (*Hemitomes congestum*), spotted coralroot (*Corallorhiza maculata*), and woodland pinedrops (*Pterospora andromedea*). Following specimen processing, we drove back to the University of British Columbia.

I submitted the 28 specimens of *T. occidentalis* that my permit allowed me to take from Olympic National Park to the University of British Columbia Herbarium. We also made numerous other specimens that we collected outside the park boundaries, including the University of British Columbia's first *A. virgata* collections from Washington.

Findings

I carried out scanning electron microscopy at the UBC Bioimaging Facility using the Zeiss Crossbeam350 FIB-SEM, to image seeds at high resolution and high magnification. As shown in the photos on the previous page, the *T. occidentalis* from the Olympic Peninsula all shared the same strongly inflated seed coat phenotype as has been found in populations of *T. occidentalis* from the Cascades and throughout Washington State, and differs from the tighter seed coat of *T. occidentalis* found in western BC and Japan. As a result, my investigations do not support my initial hypothesis that the Olympic Mountains acted as a glacial refugium for the same genotype of *T. occidentalis* found in Haida Gwaii and the northern tip of Vancouver Island during the last glacial maximum.

I later travelled to the University of Washington Herbarium at the Burke Museum to view and sample more *T. occidentalis* specimens from the Olympic Peninsula, and found all of them to have the same “inflated” seed coat morphology as those found in the Washington Cascades. Hence I have been able to confirm that Washington does contain only a single subspecies



Scanning electron micrographs of *Triantha occidentalis* and *T. japonica* seeds. The *T. occidentalis* seeds from the Olympic Peninsula and the Cascades (a and b respectively) have an “inflated” seed coat, whereas the *T. occidentalis* seeds from Haida Gwaii (c) and the *T. japonica* seeds (d) have a seed coat that is tight to the seed. The scale bar represents 500 μm in all panels.

of *T. occidentalis* (*T. occidentalis* ssp. *brevistyla*). The *Triantha* present in Japan may have arrived via long-distance dispersal, rather than having been widespread across Beringia prior to the LGM—or the Olympic Peninsula could have acted as a glacial refugium for a different genotype of *T. occidentalis* than that found in Western BC and Japan. As I continue my Ph.D. research, I will use nuclear genomic data to better understand the phylogeography of the genus and the historical ranges and migration of each species and subspecies since the LGM.

Acknowledgements

I would like to thank David Giblin of the University of Washington for his advice on carrying out fieldwork in the Olympics and hosting me at the Burke Herbarium; Eric DeChaine of the Western Washington University for his advice on carrying out fieldwork in the Olympics; and Matt Dubeau of Olympic National Park for arranging my collection and wilderness permits; and Derrick Horne at the UBC Bioimaging Facility for his help with scanning electron microscopy. Finally, I am incredibly grateful to the Washington Native Plant Society for funding this fieldwork and morphological research.

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A Survey of the Seasonal Workforce Supporting Washington’s Native Plants

by Erik Ertsgaard

Behind the scenes of Washington’s public lands and the health of its native plant communities is a workforce of outdoor professionals who choose to spend their careers conserving the living world around them. However, a large proportion of this workforce cannot do this work year-round due to two unyielding constraints: seasonal weather and finite resources. That group is the seasonal workforce—the technicians, resource assistants, research aides, and crew members who forego stability and comfort for gaining career experience and making an impact.

I bring this to your attention because the seasonal workforce often goes unnoticed, especially by members of the public who may only encounter a field crew once or twice a summer. For those field crews, the status of the seasonal job market and conditions of their current posting are a reality felt daily. I would wager that most conservation achievements are indebted to the efforts of seasonal workers, yet the attention—and more importantly, the support—is not reciprocated.

Seasonal job wages vary widely, but because most pay near or below the local minimum, workers cannot live off one season’s earnings for the entire year. The combination of low wages and seasonality disproportionately affects young professionals who lack outside support to survive financially. It also is very inefficient, as seasonal workers are constantly forced to switch organizations, and previous skill development is often wasted. It is long overdue to take a critical look at how well this situation is serving these early-career professionals, and how their growing numbers could be gainfully employed for the betterment of our native landscapes.

In this article I describe the major categories of seasonal jobs in Washington as they relate to native plants, both for readers who may be unfamiliar with the extent of work ongoing and for those in the job market themselves. I share brief lessons and experiences in these fields, both from my own field seasons and from what I’ve gathered from those of my peers. I will then share my outlook on the seasonal workforce, including some ideas on how we as a community of plant enthusiasts and the beneficiaries of seasonal field work can better support it.

Survey of Seasonal Field Jobs

On-the-Ground Restoration Practitioners

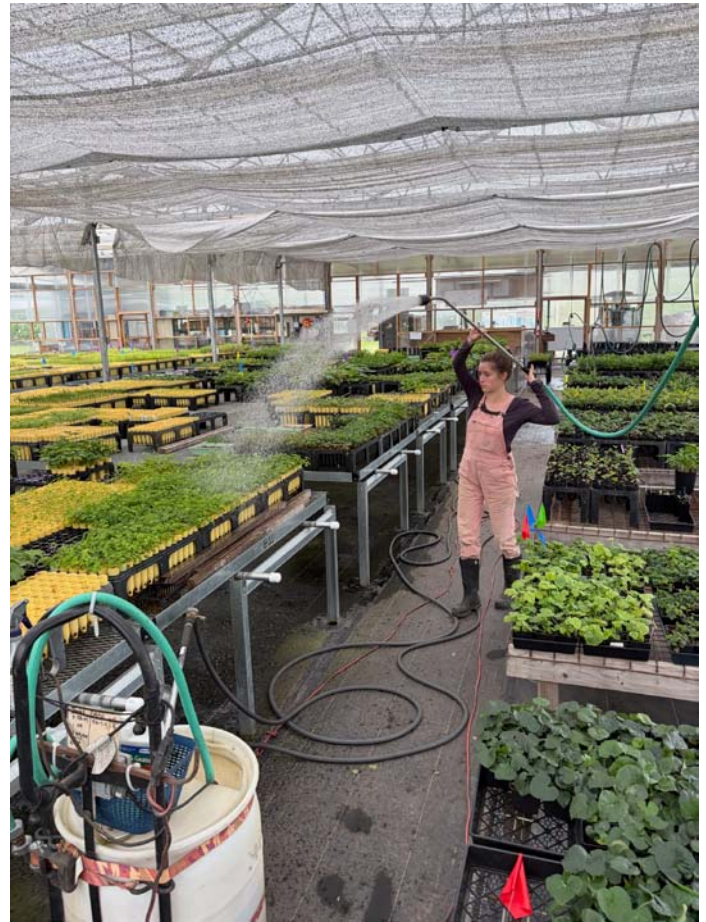
This is an admittedly wide bucket of jobs and tasks. Many of these jobs are offered through volunteer programs that emphasize diverse skill training so crew members can try a variety of management activities that may be useful for future positions. Collectively, this group is responsible for the physical improvement of habitats across the state, with a lot of time spent controlling invasive plants, planting native species, and installing amendments for recreation or improving hydrologic or soil conditions. The use of herbicides is fairly ubiquitous among these crews—and because seasonal workers are on the front lines of this chemical application, they bear the highest exposure risks and rely on carefully following safety protocols. These jobs are the most numerous and geographically widespread of any category, and may be available in the off-season if the local climate permits. On-the-ground restoration is more likely to occur closer to populated areas (where the degradation occurs), but can also venture deeper into national forests and rural lands.



Joshua Kim, a Habitat Restoration Project Assistant for the Snohomish County Conservation District, designs and implements restoration projects across the county. This riparian project requires a heavy-duty trimmer to prepare a reed canary grass (*Phalaris arundinacea*) invaded streambank for solarization. PHOTO: JOSHUA KIM

Nursery Technicians

Seasonal nursery technicians assist with large-scale production of native plants—from germination to filling orders for plants numbering in the thousands. These roles have a variety of day-to-day activities, including watering, weeding, and the fine tinkering required to cultivate a diversity of plant species. Another central component of this work is Integrative Pest Management, in which technicians develop and implement prevention, control (chemical, manual, and ecological), and monitoring plans to ward off infestations. Because there are continual tasks and many are under the cover of greenhouses or hoophouses, nursery technicians may also find year-round employment. It's also worth noting that nursery technicians



Jess Speer is a Production Technician at Oxbow Farm & Conservation Center's Native Plant Nursery in Carnation. One of the many daily activities is watering each plant according to their specific needs; here, Jess is watering trays of inside-out flower (*Vancouveria hexandra*) plugs. PHOTO: JESS SPEER

are often tasked with seed collecting, experimentation, and restoration on top of day-to-day plant growing. The supply of native plant material is a frequent limiting factor for statewide restoration efforts, so cultivating this sector of the workforce is vitally important.

Seed Collectors

Seed collecting sounds simple on paper: spend the summer collecting seeds from native plants as they ripen. In practice, ample planning is required to be in the right place at the right time to collect pounds (yes, pounds!) of seeds for dozens of species—not to mention the painstakingly detailed work of cleaning seeds from their surrounding fruit structures and culling nonviable seeds. Crews spend some days scouting and documenting their work, but most days are spent repeatedly harvesting seeds to meet season-long quotas. A majority of seed collecting jobs are located in eastern Washington, where seed-based restoration is more effective. These seasonal workers independently traverse broad geographic areas to find seeds and, as a result, often camp in remote places. This may be the fastest growing sector of the seasonal job market due to the increased use of direct seeding in large-scale restoration. To support this growth, the Bureau of Land Management leads an interagency Seeds of Success (SOS) program to develop collection proto-

cols and research best practices. Through the Chicago Botanic Gardens and other regional institutions, the SOS program hires seasonal workers to collect seeds for a national native seed bank, stationing collectors at federal agency offices across the country. Other seed collecting positions are offered through local restoration, research, and nursery organizations to support their respective projects.

Research Support

Seasonal research supporters come in many forms that are as varied as the field of native plant research. These aides, technicians, and assistants can be found collecting data of all kinds and for multiple aims. Some prominent examples include monitoring rare plant populations, conducting systematic inventories of forests or streams, collecting vegetation data from plots large and small, and taking samples for later analysis. This data often contributes to long-term condition assessments, agency management plans, and primary research by professors, graduate students, and other scientists. As a result, research seasonals build the foundation for our understanding of native plants, and directly or indirectly inform management decisions to preserve them. Research support roles can be stationed just about anywhere—from transient camping for statewide studies to stable housing near the study site(s). Compensation also

varies considerably, ranging from often-reasonable university-set wages to meager monthly stipends. A key issue is whether seasonal data collectors are included in the subsequent analyses (which provide the opportunity to develop scientific skillsets)—or at the very least, get attribution in final reports and studies for their data collection efforts.

Firefighters and Foresters

While I know less about their day-to-day tasks, I include these workers because of their potent impact on the state's landscapes. Both roles require specialized training or education and some degree of physical training to navigate dynamic landscapes, and are more dangerous than typical field jobs. Because of these job realities and the political and economic interests supported by these jobs, these roles are typically more in-demand and high-paying than others. While you can find both foresters and firefighters in bunkhouses or in rentals in forest communities across the state, firefighters may be deployed to ongoing wildfires and live in nearby “spike camps” (*i.e.*, hundreds of tents in a field). Wildland firefighting can be especially lucrative—and dangerous—when a fire is blazing, with overtime pay compensating the strenuous and hazardous work.

Forestry seasonals commonly have opportunities for advancement, with responsibilities naturally progressing from inventorying stands to tagging trees for harvest and eventually designing treatments. Whether current forestry and firefighting practices help or hurt plant communities is beyond this article's scope, but incoming seasonal workers will inevitably influence future practices in each discipline.

Tips for Prospective Field Workers

With so many job types and potential employers, the job-seeking process can feel quite convoluted for first-time and even veteran applicants. The best advice I received was from other seasonals, so I am excited to pass along those tips to any readers currently looking for seasonal employment. For other readers, this section can serve as a brief foray into the complexities of the seasonal world.

First is where to look for opportunities. Without being told by a friend, how on earth could I have discovered that local job postings are most reliably found on the Texas A&M Natural Resources Job Board (jobs.rwfm.tamu.edu)? Other good resources are the Conservation Job Board (conservationjobboard.com), the Great Basin Institute (thegreatbasininstitute.org/employment/), and the Ecolog-L listserv (esa.org/membership/ecolog/). Jobs can be posted anytime during the preceding season until the start of the next, so it is worth searching regularly and weighing current opportunities against those that may come later.

Federal jobs are listed on USAJobs.gov, and state or local jobs are listed on GovernmentJobs.gov, both of which have special requirements and lingo. I will spare readers the details, but potential applicants should familiarize themselves with GS levels and their requirements.



Lindsey Skidmore spent the 2024 season at Mount Rainier National Park with the Scientists in Parks program, collecting field data on visitor impacts to subalpine meadows. This data was used to inventory meadow condition for management in the Paradise and Sunrise meadows. PHOTO: LINDSEY SKIDMORE



EmmaRose Lowery is an Assistant Supervisor for a Washington Conservation Corps (WCC) crew stationed in Elma. EmmaRose and her crew restore lands across the Olympic Peninsula, including this patch of salmonberry (*Rubus spectabilis*). WCC crews have installed over 400,000 native plants across 3,000 acres this year, in addition to supporting wildlife management, maintaining recreation amenities, and attaining advanced certifications. PHOTO: EMMAROSE LOWERY

As you go forth on your job search, you will be confronted with numerous tradeoffs between lifestyle and opportunity. For example, it is much easier to find roles if you are open to living anywhere, especially in the middle of nowhere. It is completely reasonable to want to be close to your community, but job opportunities narrow quickly and grow more competitive closer to cities. Compensation is perhaps the largest sacrifice because “Corps” positions pay stipends below minimum wage. But they often offer training and opportunities for year-round employment. Other positions run the gamut of pay and duration, and I find myself developing standards (*e.g.*, wages I would or wouldn’t accept) against the availability and competitiveness of jobs each season. Job mobility is a final and crucial factor to consider. It is notoriously difficult to bridge the gap between seasonal and permanent employment, often necessitating years of seasonal experience or getting a graduate degree. To help you advance, demonstrate your readiness for more responsibility by asking managers for end-of-season projects such as data analysis or report writing. “Permanent seasonal” positions are a common bridge for roles with shorter off-seasons and more responsibility. The most coveted employers have a track record of transitioning seasonal workers into permanent roles, or at least retaining seasonals for multiple seasons.

A Field Worker’s Perspective on Workforce Development

The experiences of my peers, coworkers, and friends have led me to advocate for and try to change the narrative around seasonal workers. Three structural improvements are needed: fair wages, regular training, and clear opportunities for career advancement. I am very aware that each improvement requires more funding—often more funding than people think our field can acquire. I argue that compensation, training, and advance-

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- Workplace giving is an easy way to support WNPS.
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- Washington State Employees may donate through the Combined Fund Drive—CFD # 0315051.
- King County Employee giving—WNPS agency code #9600.
- Workplace matching gifts: Your employer may offer to match your charitable donations.

WNPS Endowment Fund Giving

Endowment gifts are kept as permanently restricted funds as designated by the donors. This fund provides annual distributions that support the WNPS Grant programs in Research and Plant Inventory, Conservation, and Education. Donations may be made in the following ways:

- Online at www.wnps.org/donation/endowment.
- By mail. (Please make checks payable to WNPS Endowment Fund.)

Make A Planned Gift

Making a gift through your estate is a powerful way to express your values, and ensure a lasting impact. “*One generation plants the trees, another gets the shade.*” —Chinese Proverb

Here are examples of how to make a planned gift:

- Name the Washington Native Plant Society in your will.
- Make the Washington Native Plant Society a beneficiary to your IRA or life insurance policy.
- Name the Washington Native Plant Society as the beneficiary of a charitable remainder trust.

Make a Contribution with Stock

WNPS can now support stock transfers with a brokerage account. Contact the WNPS office for our FAQ sheet that provides information to share with your broker.

Learn all the ways you can support WNPS at www.wnps.org/donate. For more information on giving options, call the WNPS office 206-527-3319, or email wnps@wnps.org.

ment are sound investments entirely worth the fundraising effort, and will benefit the quality and longevity of native plant work.

Fair wages are crucial to attracting and retaining a diverse cohort of native-plant-enthused entrants. There is certainly a pool of workers who can afford to work for less, but to only employ those able to work for low wages creates an unrepresentative workforce that probably is ill-suited for the multifaceted tasks at hand. Wages are just one part of the equation for seasonal workers as there can be large and often-unreimbursed expenses above those of a typical job—such as housing in remote areas, required outdoor and camping gear, travel, and food. This delicate balance of compensation and expenses is further exacerbated by the lack of wages in the offseason and the strain of finding other employment. Some seasonals qualify for unemployment benefits during offseasons, but already low-wage programs like AmeriCorps preclude members from applying.

Training and advancement naturally follow an investment in compensation, and special attention should be given to safety and equity. Being in remote settings far from medical care Wilderness First Aid training should be offered (at a minimum) to all workers so crew members can properly support each other in emergency situations. Organization-wide attention to safety is paramount for seasonals frequently exposed to higher heat and smoke, and to chemical, weather, and wildlife hazards. In addition, harassment and inclusivity training are critically important because many interpersonal interactions occur in remote settings; if a crew member acts inappropriately, you are isolated and without harassment-reporting capabilities for hours or days. So having trained crewmates is crucial for everyone's well-being.

Lastly, training in skills beyond basic job duties is invaluable for seasonals to gain comfort in future roles. Anything from cross-training with other crews, certifications and workshops, or even introductory meetings with other staff have disproportionately large impacts on a seasonal employee's growth compared to the time invested. Organizations more than recoup that investment when seasonal employees are hired back and advance to permanent roles.

While this article can only comment on structural issues such as compensation and professional growth, I hope to make a meaningful contribution to the narrative surrounding seasonal work. Rather than lamenting funding limitations and resource constraints, discussions should center on what daunting projects the workforce could tackle if all prospective seasonals are gainfully employed and utilizing their college and/or on-the-job training. From effective statewide ecological restoration to large-scale production of native plant species, to an "Evergreen State" with healthier forests, many of our problems can be solved through our people.

This level of job creation requires much more federal support and political will than is currently available. Nonetheless, I enjoy dreaming of job programs that provide adequate financial support in return for the labor that our lands so desperately

need. Investing in living-wage conservation jobs helped revive our economy during the Great Depression and build lasting backcountry infrastructure via the Civilian Conservation Corps. I have yet to find a compelling argument against renewing that investment to tackle our economic and conservation issues today.

Growing the workforce to its full potential is a lofty task, but we can cultivate its improvement through ambition and sound principles. Recognizing the wide impacts of seasonal botany work on native plant conservation is a good place to start.

Erik Ertsgaard has completed three seasons of field work in the "Research Support" category. However, this article is in no way reflective of those experiences. Erik is also chair of the Research and Plant Inventory Committee of the WNPS and can be reached at researchinventory@wnps.org.



Putting the "Black" in Black Cottonwood

by Eric Worden

In the fall, after rains have been falling for a while, sometimes black cottonwood leaves can be found on the ground colored not yellow or brown, but a striking black. What causes it? Colors in living things pique my interest because they are almost always caused by large complex molecules, and large complex molecules in living things always have interesting complex functions. In plants, examples are chlorophyll (green), xanthophylls (yellow), carotenoids (yellow/orange), and anthocyanins (red/purple/blue).

In plants, dark brown and black colors are most often caused by polyphenolic compounds being enzymatically oxidized into melanins. (Yes, these melanins are similar to those that darken people's skin!) Inside the kitchen, we are familiar with them in raisins, chestnuts, and spoiled bananas and avocados. The chemical processes are most studied in food plants, but they are fairly ubiquitous in wild plants. Plants commonly produce melanins

when their tissue is damaged, as a deterrent to microbes and insects consuming them. Those black spots that we see on plant leaves? Those were targeted deployments to stop attackers. But what about these blackened cottonwood leaves that seem quite dead and have been sitting on wet ground for days? I can only



Black cottonwood (*Populus trichocarpa*) leaf. PHOTO: ERIC WORDEN



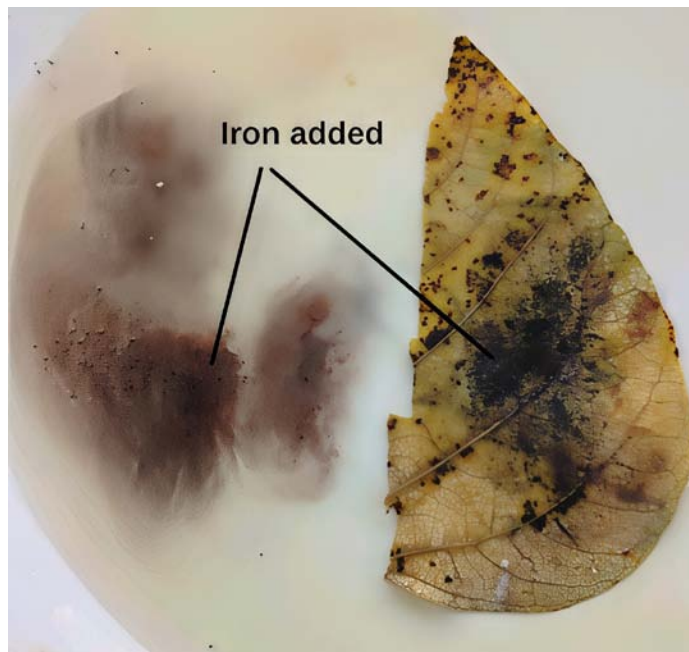
Concrete sidewalk stained by black cottonwood leaf. PHOTO: ERIC WORDEN

speculate that polyphenol oxidase enzymes are still active and working on the polyphenols that leak from the decaying leaf cells.

There is another possible cause of the black leaves. Those of you who have built fences or decks with western red cedar wood may have learned the problem of using ordinary iron nails with that wood: the iron reacts with abundant tannins in the wood and leaves black stains under the nails. Even the ambient dust that accumulates on a wooden deck will stain it gray from the reaction of tiny amounts of iron in the dust. In the photo at the bottom of the previous column, see what happens when a dusting of chelated iron nutritional supplement is

sprinkled into a cup of black cottonwood leaf “tea”. Don’t drink it unless you want black teeth!

I made the tea with distilled water. With only the water and iron, there was no blackening reaction until I raised the pH by adding a pinch of baking soda. (There was no blackening when I added baking soda to plain distilled water.) I guessed that a higher pH would help, due to the details of how iron ions bind to oxygen atoms in tannin. This adds an intriguing variable to the mystery of the black leaves in nature: maybe the blackened



Black cottonwood leaf stained with chelated iron nutritional supplement. PHOTO: ERIC WORDEN

leaves spent some time in an elevated pH environment such as the surface of concrete, perhaps with some leached iron from embedded rebar.

This tannin blackening reaction was well known in times past: it was the basis of common black ink for writing, produced from powdered oak galls and a touch of iron.

Now, in addition to the reds, purples, and yellows of fall, you can also appreciate the black! Learn more about colors in plants at the University of Utah, “The Chemistry of Flower Color”: <https://learn.genetics.utah.edu/content/flowers/chemistry/>

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Eric Worden is a lifelong amateur naturalist and the chair of the Koma Kulshan chapter of WNPS.



Black cottonwood tea with chelated iron nutritional supplement. PHOTO: ERIC WORDEN

WNPS 2026 Award Recipients

Annually, WNPS provides awards to members and partners exhibiting excellence in service to the organization, as voted on by the WNPS Board of Directors. For 2026, two Mentzelia Awards and the Outstanding Partner Award were presented at the Study Weekend event in Cashmere, WA.

Mentzelia Award

This award—named after the genus for blazing stars—is presented to a WNPS Member who has made a significant contribution to native plant conservation, research or education in Washington State.

Blazing Star Susan Saul

- Career of 33 years with U.S. Fish and Wildlife Service.
- WNPS representative on the Silver Star Mountain Scenic Area Advisory Committee.
- WNPS representative for comment letter on the NW Forest Plan revisions.
- Longtime advocate for the Mt. St. Helen's National Monument.
- Long time member of the Suksdorfia Chapter board.
- Conservation committee member since 2018, instrumental in supporting and writing the WNPS Advocacy letters.



Susan Saul.

Blazing Star Heather Wendt

- Deputy Director at Washington Conservation District Foundation.
- Past Chair of the Columbia Basin Chapter of WNPS and current Treasurer.
- Advocated for the Leslie Groves North Restoration Project with the City of Richland, and developed an 'Adopt a Park' Agreement for this project.
- Developed strong collaboration between the Benton and Franklin Conservation Districts and the Columbia Basin Chapter.
- Co-author of the 'Heritage Garden Guide' – A species guide for gardens in the Columbia Basin and surrounding areas in eastern Washington.
- 2025 Strategic Plan Committee leadership developing the draft 2026-2030 Strategic Plan and collecting data of strategic priorities, goals and objectives.



Heather Wendt

Outstanding Partner Award

The Outstanding Partner award is presented to an agency, organization, or individual which has made significant contribution to native plant conservation, research or education in Washington.

ACT Now Science—Janneke Petersen

Act Now Science is celebrating five years of delivering the Youth Ecology Education through Restoration (YEER) school curriculum to middle-school students.

Janneke Petersen developed the YEER curriculum and currently serves as YEER's School Coordinator, working with five schools in Western Washington, three schools in the Tri-Cities, and one school in Spokane.



Janneke Petersen PHOTO: MATT STEVERSON



Highbush cranberry (*Viburnum edule*) against a tree trunk along the Icicle Gorge Trail. PHOTO: MARK TURNER

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Lyall’s star tulip (*Calochortus lyallii*) blossoms on Burch Mountain.
PHOTO: MARK TURNER

