

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.



President's Message: The View from Here

by Gail Sklar

Dear WNPS Members,

As I look out my closet, I mean office window (my office is in my closet), the day has darkened, and the rain is falling. My garden is resting except for one very confused *Lewisia* that just bloomed!

An amazing new 100-hour Native Plant Stewards class of 25 students is under way in Federal Way with Joe Albrecht as the Native Plant Stewardship Coordinator. One of the students and a volunteer at my Native Plant Steward site, China Lake Park in Tacoma, Jared Glenn shared that Joe works hard and is impressive in his role. These wonderful 25 Native Plant Stewards are from the Central Puget Sound and South Sound Chapters. The course was held at the Dumas Bay Environmental Center, City of Federal Way Parks and Recreation. This work is supported by funds from the Community Forestry Program, administered through the State of Washington Department of Natural Resources Urban and Community Forestry Program. The students will graduate on December 6th. A new 30-hour Native Plant Steward class will be held in Spokane and will begin in April.

The Youth Ecology Education Through Restoration (YEER) Program has six schools participating this year. Four of the schools are on the west side of the Cascade Range. They are Rose Hill Middle School, Griffin Bay School, Lakota Middle School, and TAF@Saghalie. The two schools that are on the east side are Paterson Elementary School and Rey Reynolds Middle School. There are 802 students participating during the 2024–2025 school year. The students have planted 1,243



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: Basalt cactus (*Pediocactus nigrispinus*), proposed as the Washington State Cactus, photographed along the Old Vantage Highway east of Ellensburg. PHOTO: MARK TURNER

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plants this year! This is so exciting for the students, teachers, the contractors, and Washington Native Plant Society (WNPS) volunteers participating in the YEER program.

I want to take the opportunity to thank the leaders who make these programs happen and work. My first thank you goes to Denise Mahnke, the Executive Director of Washington Native Plant Society. She follows up on everything, dots the i's and crosses the t's, is persistent, creative, and sees all the moving pieces of WNPS as well as the big picture. Thanks go to Scott Moore, Joe Albrecht, who teach our new Stewards, Tina Miller, the YEER Advisory Committee both past and present, and the paid YEER contractors Janneke Peterson and Mikki Symonds. Kudos to the WNPS volunteers who engage with the students and guide them through the process of restoration. I would be remiss if I did not thank the Washington State Recreation and Conservation Office (RCO) Grant for the YEER Program schools and the generous WNPS donors for making this program happen!

I believe that it is important to celebrate restoration events and thank the volunteers. One thing that I like to offer my volunteers at China Lake Park are snacks as a way of thanking them. I bake chocolate chip cookies or in season, zucchini chocolate chip muffins, and this year Halloween treat bags, making sure gluten free and vegan varieties are available. I also try to get to know my volunteers and make sure they find what they are doing rewarding. At the end of each work party, we eat, stand around, chat, and laugh. I would be remiss not to thank Metroparks for being a wonderful partner and supplying the tools.

As a thank you to all the WNPS members, my zucchini chocolate chip muffin recipe is included in this issue of *Douglasia*! As my granddaughter Gracie told me, "Everything is better with chocolate in it."

This is the season of giving. Please contribute to our Fall Fund Raising Campaign. Your gifts support WNPS' efforts to achieve our rigorous annual goals and help WNPS reach its mission of conservation and appreciation of Washington's native plants and their habitats through study, education, and appreciation.



Gail's Chocolate Chip Zucchini Muffins or Bread

3 large eggs
1 cup vegetable oil
2 cups dark brown sugar
1 tablespoon vanilla extract
2 cups grated zucchini
2 tablespoons molasses
1 ½ cups of mini chocolate chips
4 cups all-purpose or one to one gluten-free flour
1 teaspoon baking soda
½ teaspoon baking powder
1 teaspoon salt
2 teaspoons ground cinnamon
1 teaspoon ground allspice

Preheat the oven to 350° for 22 minutes.

Beat eggs at medium speed with an electric mixer. Add oil and sugar, beating well. Add vanilla, zucchini, molasses, and chocolate chips.

Combine flour and the next 5 ingredients in a separate bowl. Gradually add the dry ingredients to the zucchini mixture and beat well.

Pour the batter into your muffin pans. I line them with cupcake liners and use a gravy spoon to put the mixture in each liner. I got 2 dozen muffins and a tiny loaf of bread. If baking bread, pour batter into 2 greased and floured 4 × 8-inch loaf pans, filling ¾ full.

Bake at 350° for 1 hour.

Cool muffins and/or bread on a wire rack.

My granddaughter, Gracie, suggested adding chocolate chips because, "They make everything taste better!" So, I have added a healthy 1 ½ cups of mini chocolate chips. I also cut the brown sugar down to 1 packed cup.

Enjoy!!!!



Update: *Pediocactus nigrispinus* for Washington State Cactus

by Ron Bockelman

An article in the Spring 2023 issue of *Douglasia* (Cheney 2023) discussed the three native plants that are officially designated symbols in Washington:

- state flower—coast rhododendron (*Rhododendron macrophyllum*),
- state tree—western hemlock (*Tsuga heterophylla*), and
- state grass—bluebunch wheatgrass (*Pseudoroegneria spicata*).



The beautiful flowers of *Pediocactus nigrispinus* make this cactus very photogenic and easy to spot when it blooms in spring. PHOTO: MARK TURNER

The article also introduced a proposed state cactus—basalt cactus (*Pediocactus nigrispinus*). The idea originated within the Cascade Cactus and Succulent Society, and I agreed to lead the effort because I have been studying this cactus as a retirement project since 2018. Ultimately the idea was embraced by Discover Lab in Ellensburg, an elementary school that has been studying the local shrub-steppe habitat as an ongoing project. The students wrote letters to their 13th District state legislators explaining why they thought *P. nigrispinus* should be the state cactus.



Elementary students at Discover Lab in Ellensburg wrote individual letters to their state legislators explaining why they thought *Pediocactus nigrispinus* should be the state cactus. PHOTO: NATALIA PARKE

During the 2023 session of the 2023–2024 Legislature, State Senator Judy Warnick introduced a bill proposing, “The [*P*] *pediocactus nigrispinus*, more commonly known as the basalt cactus, snowball cactus, hedgehog cactus, or Columbia Plateau cactus, is hereby designated as the official cactus of the state of Washington.” A bipartisan group of state senators co-sponsored it, and Senate Bill 5698 was assigned to the Senate Committee on Government Affairs and Elections for consideration.

We hoped that the committee would hold a hearing to get additional information about basalt cactus and its habitat, why it is considered a Vascular Plant of Conservation Concern (Miller et al. 2024), and reasons why it would make a great state cactus. Unfortunately, that didn’t happen in either the 2023 regular session or the 2024 short session. This was disappointing, but we subsequently learned that these types of bills seldom pass on the first try (or even second). I also think we had a bit of bad luck timing-wise because a bill designating a state dinosaur (on its fourth try) stole our thunder as the “feel good bill” for attention and passage.

Concerns about State Cactus Designation

When Senator Warnick expressed interest in submitting a state cactus bill, I updated Washington Native Plant Society (WNPS) about the situation. The Board approved support for the effort, and we began coordinating with the WNPS Conservation Committee. In hindsight I wish we had begun interacting with the committee earlier because they have considerable experience related to legislative and regulatory actions affecting native plants.

The Conservation Committee reached out to WNPS chapters, and a couple chapters responded that the added attention associated with state cactus designation could prove detrimental to *P. nigrispinus* and its habitat. These concerns are described in the March 2024 issue of *Prairie Smoke*, the newsletter of the Wenatchee Valley Chapter (WVC 2024).

Illegal Collection (aka Poaching) Concerns

Historically, native cacti and other succulents as a group have been impacted by over collection, much of it illegal

(i.e., poaching). When basalt cactus was designated as a state sensitive plant by the Washington Natural Heritage Program (WNHP) in 2005, “cactus collectors” was considered its main threat. Although some of these were unscrupulous poachers hoping to sell plants at flea markets and similar venues, I suspect many were regional cactus enthusiasts wanting to add this unique species to their personal collections.

The Cactus and Succulent Society of America (CSSA) is changing these outdated attitudes and habits. In their *Conservation Policy Statement*, CSSA (2023) clarifies their position against field-collected plants and promotes the production of sale plants from seed, cuttings, or other artificial means. The CSSA also funded *Creating an Ethical Cactus and Succulent Collection* (Burger et al. 2021), a poster that teaches people how to identify and avoid purchasing poached plants that were field collected.

Currently WNHP (2024) lists wildfire as the greatest threat to *P. nigrispinus*, followed by conversion of habitat to agriculture, and then over-collection for horticulture. Climate change is a potential long-term concern because cacti are considered one of the most vulnerable vascular plant groups.

Habitat Destruction Concerns

A potentially larger concern discussed in the chapter newsletter is that if it is designated the state cactus, many more people will seek the photogenic basalt cactus because of the widespread use of social media. This in turn will result in habitat impacts because increased foot traffic fragments the habitat, compacts soils, and introduces weeds. More people also increase the risk of fire.

I think it is important to note the focus of these concerns is a cactus patch that is more easily accessible than nearly all other basalt cactus populations in the state. That easy access definitely justifies the habitat impact concerns, as it would for any of the few other patches that are easy to get to. At the same time, it makes this patch an excellent candidate for promoting the appreciation and conservation not only of our native basalt cactus and its unique shallow rocky (lithosol) habitat, but also of the many native plants associated with it.

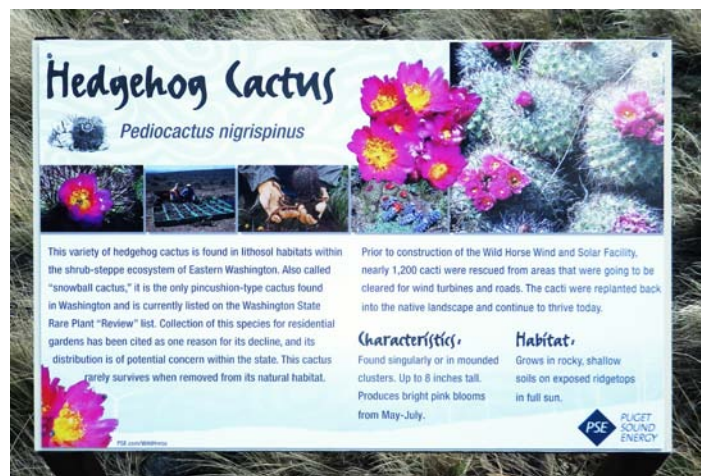
My understanding is that the Wenatchee Valley Chapter is exploring opportunities to both protect and promote this spectacular patch. Because it is on public land, the process will likely take time, just as we have learned about the timeline for state cactus designation. However, there already is a suitable site where the public can see and learn about basalt cactus with minimal added concern.

Puget Sound Energy’s Wild Horse Wind Farm is located on Vantage Highway between Ellensburg and Vantage, and thus it is a convenient side trip from either eastbound or westbound I-90. Beacon Ridge Road is paved between the wind farm entrance and the visitor center on Whiskey Dick Mountain, making it an easy drive. Right next to the visitor center is lithosol habitat with native basalt cacti augmented by plants that were rescued during wind farm construction in 2006.



The visitor center at Wild Horse Wind Farm is a great place to see basalt cactus and its associated native plants in their shallow, rocky (lithosol) habitat. PHOTO: ANDREA CRAWFORD

A large reader board provides information about *P. nigrispinus*. Visitor center staff are very knowledgeable about basalt cactus, some with firsthand experience assisting my studies. Search for Wild Horse Renewable Energy Center in your navigation app (e.g., Google Maps) if you want to make the trip between April and November when the visitor center is open.



A large reader board near the Wild Horse Wind Farm visitor center provides information about *Pediocactus nigrispinus*, which is sometimes called hedgehog cactus. PHOTO: RON BOCKELMAN

What’s Next?

Our ongoing efforts fall into two general categories: engaging with legislators and educating the public about *P. nigrispinus*. Most interaction with legislators will occur after the November elections. We will continue to benefit from advice and support from the Conservation Committee.

However, Senator Warnick is not up for re-election until 2026, so we can begin encouraging her to again submit a bill in early 2025 to have basalt cactus designated as the Washington State Cactus. Discover Lab students want to remain involved with this, providing us continuity.

Public outreach is focused primarily on western Washington, where most of the state population resides, and thus most of the legislators. Many legislators are unaware that there are native cacti in the state. Whenever there is a chance to share our knowledge, we explain why *P. nigrispinus* would make a great state cactus. Following are a couple examples.

Cascade Cactus and Succulent Society



The annual plant sale and show of the Cascade Cactus and Succulent Society in August is a great venue for informing the public, both young and old, about the proposed state cactus. PHOTO: KAREN SUMMERS

The society's annual Plant Sale and Show is held in August. Again this year we had a table with information about the natural history of basalt cactus as part of the Plant Show. Included were examples of juveniles grown from seed ranging in age from 4 months to 5 years, bees collected from cactus flowers, and stems burned in the 2022 Vantage Highway Fire. A mature plant rescued during Wild Horse Wind Farm construction highlighted the state cactus information. Stickers were available to help spread the word and make more people aware of the state cactus effort.



Stickers are a popular way of spreading the word about the state cactus effort. PHOTO: RON BOCKELMAN

Seattle Volunteer Park Conservatory



A mature basalt cactus rescued during wind farm construction in 2006 will become part of a permanent installation featuring Washington's three native cacti in the Cactus House at Seattle Volunteer Park Conservatory. PHOTO: PAN KANTIYAVONG

The Cactus House at the Seattle Volunteer Park Conservatory provides an excellent venue for educating western Washingtonians and others on basalt cactus and informing them about the process of getting it designated as the state cactus. The Conservatory has over 350,000 visitors annually, many from King County and surrounding areas. For the past year the mature cactus rescued during wind farm construction has been on display in the Cactus House, accompanied by information on the state cactus legislative process.

We are currently collaborating with the Conservatory to plan and implement an installation featuring all three cactus species native to Washington, as well as some of the succulent vascular plants associated with them. The plans include creating short videos on how to tell the three cacti apart, the natural history and habitat of each species, and conservation concerns and measures. For most visitors these videos probably will be the closest they ever come to seeing *P. nigrispinus* in its habitat.

Summary

Although disappointed that a state cactus wasn't designated during the last session of the Washington Legislature, we are using lessons learned and advice from the WNPS Conservation Committee as we work toward success in future sessions. We

acknowledge the risks of bringing more attention to *P. nigrispinus* as the Washington State Cactus, but feel they are offset by the potential rewards of making basalt cactus the “poster child” for promoting appreciation and conservation of lithsol habitat within the sagebrush-steppe of central Washington. Ongoing efforts educate the public about the natural history and conservation concerns for this cactus, as well as the legislative process for designating a state cactus. Future updates will advise WNPS members on the ease of submitting comments to their legislators.

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Ron Bockelman is a member of the Central Puget Sound chapter, and he volunteers as plant lists database manager for WNPS. He can be contacted at ron.bockelman@hotmail.com if you have feedback or would like to be copied on occasional emails about his basalt cactus observations and musings.



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Places to Go

Vantage Bridge and Frenchman Coulee Sand Dunes

by David E. Giblin, Ph.D., University of Washington Herbarium, Burke Museum

For the past 20 years I have driven eastbound over the Vantage Bridge on I-90 and marveled at the sand dunes pressed against the basalt rimrock escarpment rising just beyond the Columbia River shoreline. Always on my way elsewhere, I never stopped to explore. In early October 2023 I had a free weekend day, so I made the dunes my destination. Among the many things I learned on that trip was that the area had a name—Sand Hollow.



Sand Hollow Dunes area south of Vantage Bridge. PHOTO: DAVID E. GIBLIN

Before describing what I found on my visit, it is worth noting the origin of these dunes. I had initially assumed they resulted from the Missoula Floods, a series of deluges at the end of the last Ice Age that swept across central and eastern Washington and created the scablands found there. While some dune areas in Washington are the result of the Missoula Floods (e.g., West Bar north of the Vantage Bridge, Wahluke Slope), upon further reading I learned that the Sand Hollow dunes originated from wind activity that blew the sand upslope from the Columbia River shoreline over thousands of years. That's a lot of wind and a lot of time.

Back to my October trip, I was only expecting a pleasant walk on a sunny day among the sagebrush (*Artemisia tridentata*), common rabbit-brush (*Ericameria nauseosa*), and green rabbit-brush (*Chrysothamnus viscidiflorus*) that dominate the sandy slope. To my surprise I found over a dozen species in full flower, including Columbia cut-leaf (*Hymenopappus filifolius*), lance-leaf scurfp pea (*Psoraleidium lanceolatum*), white sand verbena (*Abronia mellifera*), hoary aster (*Dieteria canescens*) and pale evening-primrose (*Oenothera pallida*). It was remarkable to

see so much in bloom, and it opened my mind to the potential of a bimodal flowering phenology (late spring, early fall) for several of the plant species that I encountered that day. Less eye-grabbing but equally exciting to me (ok, the real reason for my visit) was finding Hooker's bugseed (*Corispermum hookeri*) in fruit. The genus *Corispermum* is in the amaranth family (Amaranthaceae), and like most of the family's members, fruits are needed for accurate identification.

The best place to park to access this section of the Sand Hollow dunes is just south of the Vantage Bridge on the northbound side of Highway 26 just past the fork with Highway 243. There is a wide pullout area on the northbound side of Highway 26 that makes for good parking (easily seen in aerial image on Google Maps). This can be a busy highway, so be sure you know where the turnout is before you go.

Inspired by my fall outing, I returned in late March with my wife Julie Monahan in hopes of finding Robinson's onion (*Allium robinsonii*), an early spring bloomer with a preference for open, sandy areas. We encountered a single plant in flower, as well as white daisy tidytips (*Layia glandulosa*), but not much more with it being so early in the spring. A subsequent visit in mid-April with my colleague Peter Zika yielded more sand-loving species including scads of the tiny annual matted cryptantha (*Greeneocharis circumcissa*) and sand dune penstemon (*Penstemon acuminatus*). Rigid fiddleneck (*Amsinckia menziesii*) was quite common throughout the area, as was cutleaf thely-

pody (*Thelypodium laciniatum*) on the basalt rimrock face at the top of the slope.

I was now slightly obsessed with visiting all the sand dune areas around the Vantage Bridge, and I won't go into the details of each spot. However, the other large, accessible dune area that is totally worth visiting and making a hike out of are the ones in Frenchman Coulee. In recent years this spot has become popular beyond the imagination for rock climbers. I have been told, but not seen, that there might be 100–200 cars parked along the road in the climbing area on a nice weekend. Fortunately, the access point for the dunes is well beyond there. On my mid-week visit in late April I saw not a soul.



View east from sagebrush slope adjacent to top of Echo Basin with Cedar (*Canis familiaris*) in foreground. PHOTO: DAVID E. GIBLIN



Echo Basin sand dunes in Frenchman Coulee. PHOTO: DAVID E. GIBLIN

Echo Basin is the land feature that you are looking for—the Washington Trails Association website has a few write-ups to consult in advance, but I didn't. One can pull off the road just about anywhere once the dunes come into view on the broad, flat plain that you cross as you take the road down to the Columbia River. After parking I crossed through the fence and started walking through the sagebrush towards the giant dune in the distance (maybe a mile or so away) that sloped up the basalt rimrock. There was some Robinson's onion along the way, but mostly it was the usual sagebrush suspects—Pursh's milk-vetch (*Astragalus purshii*), Hood's phlox (*Phlox hoodii*), Bingen lupine (*Lupinus sulphureus* var. *bingenensis*), and sand dune wallflower (*Erysimum capitatum*) in full bloom. The spacing among the sagebrush is broad, and the views are expansive such that you really don't need to follow a trail.

The dune area is remarkable for its barrenness, contours, scattering of plants, animal tracks, and sense of isolation. I climbed to the top of the dunes, and then over onto the sagebrush slopes, and then over on top of the rimrock itself. Again, there is no formal trail, but others have gone before you, including animals, such that the track is easy and safe. From here you can descend back down and head south along the base of the rimrock, where you will encounter a couple of more

large dunes heading upwards into the rimrock. I could see my car from here, so I just walked open country back towards it.

You definitely don't want to do this hike on a hot day—the cloudless, 70-degree spring day on which I went was ideal for me, and even for my dog Cedar, who is all black and tends to heat up like a microwave when in the sun. He managed fine. The views westward along this hike are splendid—straight across you are looking at the Colockum Pass area and all its wild openness. The total elevation gain is modest—probably 500 feet at most.

Hopefully I have piqued your interest in this remarkable, and probably overlooked, landscape. There are other dune areas in Washington to visit, and they are detailed in a wonderful 2007 report from Washington Natural Heritage Program, *Conservation Strategy for Washington State Inland Sand Dunes* (www.dnr.wa.gov/amp_nh_inland_dunes). It is a must read whether you visit the dunes or not!

David E. Giblin is Collections Manager and Research Botanist at the University of Washington Herbarium of the Burke Museum.



Spirit Lake Outflow Poses Next Challenge to Natural Recovery at Mount St. Helens

by Susan Saul, Suksdorfia Chapter

Washington Native Plant Society (WNPS) has a long conservation history with Mount St. Helens. The Spring 1982 issue of the *Douglasia* contains the testimony that Virginia Dale and A.B. Adams presented at congressional hearings in

March and April 1982 in support of legislation to designate the Mount St. Helens National Volcanic Monument.

Virginia Dale spoke as Conservation Co-Chair of WNPS. She had received her Ph.D. in Ecology from the University of Washington, and she had already started her long-term research at Mount St. Helens, which continues today. Virginia spoke of the importance of studying natural plant succession in response to a variety of disturbance and recovery patterns and argued that the land around Mount St. Helens should preserve natural processes.

A.B. Adams, an M.S. candidate in Botany at the University of Washington, noted that more than 100 species of plants survived the 1980 eruption in the blast zone. He emphasized the importance of studying the poorly understood mechanisms for surviving eruptions, ways that organisms respond to newly created environments, and recruitment of new species into the disturbance area.

Congress responded to their appeals, and those of other scientists and conservationists, by including language in the Mount St. Helens National Volcanic Monument Act (Public Law 97-243) that requires the Monument to be managed to “... protect the geologic, ecologic, and cultural resources, allowing geologic forces and ecological succession to continue substantially unimpeded,” and that scientific study and research shall have full use of the Monument.

Washington Native Plant Society has come to the defense of those provisions over the years. Most recently, in 2021, WNPS joined a lawsuit with other conservation partners and scientists asking the federal courts to direct the US Forest Service (USFS) to prepare an environmental impact statement (EIS) analyzing the impacts on research of a proposed road across the Pumice Plain in front of the crater of Mount St. Helens. The courts, swayed by the government's argument that there was an



The Pumice Plain and Spirit Lake are centers of ecological research at Mount St. Helens. Some Spirit Lake outlet options would require heavy duty construction roads with extensive cut and fill, significant excavation of rocks and soil and their disposal, and support infrastructure, forever altering this landscape. PHOTO: SUSAN SAUL



Spirit Lake's level is currently managed by this tunnel, which needs significant repairs to maintain its reliability. PHOTO: SUSAN SAUL

emergency need for the road, denied the request. Construction started on that “temporary” road in 2024, and several scientists were forced to abandon their research.

Now comes the latest opportunity to defend natural ecological processes at Mount St. Helens and the work of the scientists who study them. The USFS is preparing an EIS to improve the outflow of Spirit Lake to reduce the risk of flooding and mudflows from a failure of the Spirit Lake blockage that was created during the 1980 eruption. The USFS is requesting comments on six potential engineering options for future lake level management. Several of the options would cause severe impacts to the natural recovery of the blast area, contrary to the mandates of the Monument Act, and specifically to areas dedicated to long-term research.

Washington Native Plant Society has submitted scoping comments requesting that the EIS evaluate the impacts of the options on the purposes of the national monument, natural ecological processes, and areas dedicated to research. Washington Native Plant Society noted that the options with the least impact on natural ecological processes would be Option B to rehabilitate the existing outlet tunnel in shear zone areas with the redundant measure of lake storage; and Option E to convert the existing tunnel into a pressure tunnel with the redundant measure of lake storage.

More information is available at the project website: www.fs.usda.gov/project/?project=66482.

The USFS requested public comments by November 15, 2024, but they should accept comments submitted after that deadline. The USFS anticipates releasing a Draft EIS in May 2025, at which time there will be another opportunity for public comment.

Susan Saul is a Member-at-Large of the Suksdorfia Chapter Board and member of WNPS Conservation Committee.



2024 Plant Conservation Priorities: Updates to Washington's State Species of Concern Lists

by Sienna Wessel, Washington Natural Heritage Program

Stewarding Washington's Plant Species of Concern

The 2,660 native plant species found in Washington (Giblin et al. 2024) face an increasing number of threats, from land conversion to climate change. With so many species at risk, prioritizing conservation efforts is a challenge. The Washington Natural Heritage Program (WNHP) has addressed this by curating the state's species of concern (SOC) list for over 40 years, which identifies Washington's most imperiled vascular plants and, as of 2024, lichens, to guide conservation and land management. While no legal protection requirement exists for the SOC list, it is crucial for informing and guiding conservation and management of rare plant species. The US Forest Service (USFS) and Bureau of Land Management (BLM) consult the list when developing their own special status species lists and prioritizing field surveys, seed banking, and species reintroductions. Additionally, the SOC list informs US Fish and Wildlife Service consideration of federal listings for plant species. At the state level, mapped SOC locations inform many types of land use decisions such as timber sale planning, critical areas ordinances, and wetland regulations, and guide conservation designations such as nominating state natural preserves.

Updating the SOC Lists

The WNHP updates the SOC list roughly every two years to keep the list relevant and responsive to changes in population trends and taxonomy. The state's botanical experts can nominate taxa (species, subspecies, or varieties), propose changes, and review conservation status ranks during the revision period. Revision involves a rigorous ranking process that considers rarity, population trends, and threats. Using this information, heritage botanists calculate and assign global (G) and state (S) ranks to each species to indicate imperilment at both scales, along with a corresponding state status of “Endangered”, “Threatened”, or “Sensitive.” The ranks are assigned on a scale from 1 to 5, with lower values indicating greater imperilment. The team published the latest list in July 2024, adding 17 taxa and bringing the total to 386 vascular plants (Miller et al. 2024a), while also introducing the state's first official lichen SOC list (Miller et al. 2024b).

Noteworthy Vascular Plant List Changes

Revisions led to the addition of newly listed vascular plants for several reasons (Table 1), including newly characterized threats, restriction to uncommon and highly imperiled habitats,

Taxon	Common Name	Heritage Rank	State Status	Reason for Addition	Washington Habitat
<i>Allium scilloides</i> *	Fragile onion	G3/S3	Sensitive	Narrow range; new occurrences have not been discovered	Bare, rocky soils among sage-steppe in central Washington
<i>Brickellia microphylla</i>	Small-leaved brickellbush	G5/S1	Sensitive	Rediscovered in Washington in 2023, only one occurrence in state	Dry basalt cliffs and gravel road banks in the Blue Mts
<i>Campanula piperi</i> *	Olympic harebell	G2/S2	Threatened	Threatened by climate change, few occurrences under modern standards	Alpine rock crevices & talus in eastern Olympic Mountains
<i>Carex sheldonii</i>	Sheldon's sedge	G4/S1	Sensitive	Only one known occurrence in Washington	Rocky bank of Grande Ronde River
<i>Erigeron flettii</i> *	Olympic Mountain fleabane	G1/S1	Endangered	Threatened by climate change, few occurrences under modern standards	High elevation basalt rock outcrops in eastern Olympic Mountains
<i>Eucephalus glaucescens</i> *	Klickitat aster	G2/S2	Threatened	Narrow range, only six global occurrences under modern standards, threatened by habitat fragmentation and degradation and quarrying	Mid-elevation forest openings and brushy mountain slopes
<i>Hulsea nana</i>	Dwarf alpinegold	G4/S1S2	Sensitive	Decreasing number of occurrences; narrow ecological niche; vulnerable to climate change	Volcanic talus above timberline at Mount Rainier and Mount Adams
<i>Lathyrus ochroleucus</i>	Cream-flower peavine	G5/S1	Sensitive	Few known occurrences	Moist forest meadows in northeastern Washington
<i>Lomatium cuspidatum</i> *	Wenatchee desert-parsley	G2/S2	Threatened	Narrow range, <20 global occurrences under modern standards, partially restricted to serpentine soils	Semi-barren ultramafic rock slopes in Wenatchee Mountains
<i>Navarretia breweri</i>	Brewer's navarretia	G4G5/S1	Sensitive	Few known occurrences	Bare, rocky soils among sage-steppe in central Washington
<i>Penstemon washingtonensis</i> *	Washington beardtongue	G2/S2	Threatened	Narrow range, 11 global occurrences under modern standards	Mid-high elevation forest meadows and slopes east of Cascade crest
<i>Petrophytum hendersonii</i> *	Olympic Mountain rockmat	G3/S3	Sensitive	Narrow range, 12 global occurrences under modern standards, threatened by climate change	Rocky cliffs and talus slopes of Olympic Mountains
<i>Phacelia glandulifera</i>	Sticky phacelia	G5/S1	Sensitive	Threatened by wildfire, few known occurrences	Mid elevation forest meadows and slopes
<i>Poa curtifolia</i> *	Little mountain bluegrass	G2/S2	Threatened	12 global occurrences under modern standards, restricted to serpentine soils	Rocky serpentine soils in Wenatchee Mountains
<i>Senecio neowebsteri</i> *	Olympic Mountain ragwort	G1/S1	Endangered	Declining population trend, threatened by climate change; few occurrences under modern standards	Steep alpine talus slopes in northeastern Olympic Mountains
<i>Silene douglasii</i> var. <i>rupinae</i> *		G5TNR/S1	Endangered	Few recent occurrences in Washington; previously overlooked?	Granitic cliffs and ledges in Wenatchee Mountains
<i>Viola flettii</i> *	Olympic violet	G1/S1	Endangered	Threatened by climate change, few occurrences under modern standards	Rock crevices and talus above tree line in Olympic Mountains

Table 1. Vascular plant taxa added to the 2024 Washington Natural Heritage Program Species of Concern list (modified from Miller et al. 2024a).

*State endemic species.

and updated information on population numbers. Noteworthy changes are as follows:

Three species were elevated to the status of State **Endangered**.

Oreocarya leucophaea (Gray cryptantha, **G1/S1**) is a stiff-haired perennial member of the Borage Family that has rapidly declined due to habitat degradation in central Washington, where it is endemic and reliant on semi-stabilized sand dunes. Only two viable populations remain, prompting a petition for federal listing under the ESA in April 2024 (Center for Biological Diversity 2024).

Castilleja cryptantha (obscure paintbrush, **G1/S1**), a self-pollinating hemiparasite locally endemic to Mount Rainier National Park and the William O. Douglas Wilderness, is found on poorly developed pumice soils in subalpine meadows and at the edges of streams, seeps, and basins. Botanists have determined that populations are smaller than originally thought, and many have not undergone re-census since the 1980s.

Erythranthe washingtonensis (Washington monkeyflower, **G3/S1**) is a slender, annual monkeyflower of the Columbia River drainage system (WA, OR, ID) found at low elevations among intermittently moist rocky meadows, seeps, and gravelly

stream channels. Experts have now determined that all Washington occurrences, except one at Mt. Adams, are mis-identifications or historical.

Two species were **rediscovered** in Washington and added/readded to the list.

Arabis olympica (Olympic rockcress, **G1/S1**) is a slender mustard associated with basalt formations and sedimentary scree at high elevations on the Olympic Peninsula. Botanists thought it was extinct until it was rediscovered at Mt. Ellinor in 2020, though field surveys have not located any other populations since. Olympic rockcress is Highly Vulnerable to climate change (Fertig 2022).

Brickellia microphylla (small-leaved brickellbrush, **G5/S1**) is a shrubby aster that is found throughout arid habitats of the western United States. Botanists believed it to be extirpated from the northeastern edge of its range in Washington until surveyors rediscovered it in 2023 in two locations of the Blue Mountains among basalt cliffs and gravel road banks.

Two species are now considered to be **extirpated** from Washington state.

Liparis loeselii (Loesel's twayblade, **G5/SH**), a “twayblade” orchid that is widespread in the eastern United States, and was considered a disjunct species in bogs mostly near Mt. Adams, but no one has found it since 1983. It was the only *Liparis* documented in Washington.

Pityopus californicus (California pinefoot, **G4G5/SH**) is a West Coast fleshy mycoheterotroph (symbiotic with fungi) that once occurred in a small population at Joint Base Lewis-McChord under a 60-year-old Douglas-fir stand. Habitat degradation has impacted this site, and researchers have not found any plants in recent years.

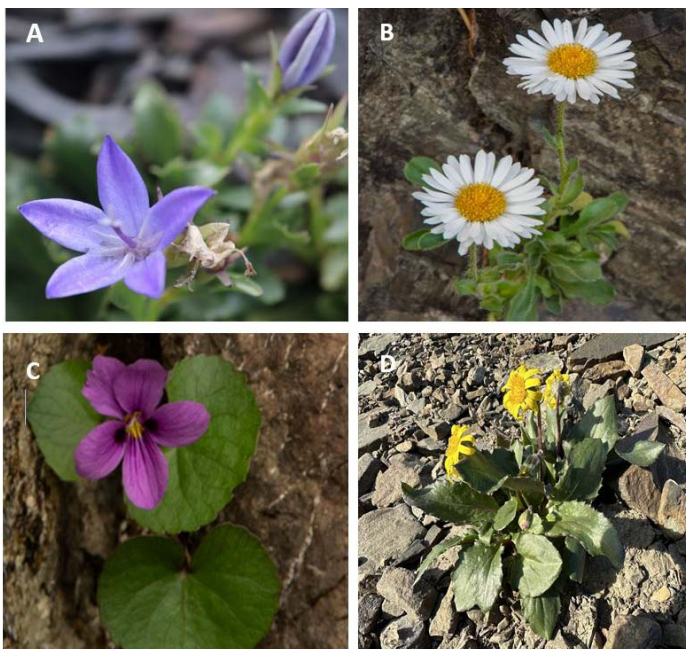
Championing Imperiled Endemics

A study published in 2018 projected major climate-change-driven habitat losses for Olympic Mountains endemics that had not been included on the SOC list (Wershow and DeChaine 2018), prompting researchers to review unranked endemics across the state. Of the 17 species added to the SOC list in 2024, nine qualify as State Threatened or Endangered. All of these are state endemics, which are now understood to have fewer populations and more threats than botanists had previously thought (Table 1). They include:

Olympic Mountains endemics: These species inhabit rock cracks or loose, rocky slopes where competition is low and microhabitats are somewhat buffered from the extremes of the surrounding subalpine to alpine environments. They occur on the eastern side of the Olympic Peninsula, where the rain shadow effect reduces permanent snowfields, and in areas that remained ice-free during the last ice age (Wershow and DeChaine 2018). As temperatures rise, these species have limited opportunities to migrate to higher elevations, putting them at risk of extinction. Threats from mountain goat herbivory and trampling from recreation are also high.



The 2020 herbarium collection of *Arabis olympica* by Joanne and Dave Schuett-Hames brought it “back from the dead.” PHOTO: CONSORTIUM OF PACIFIC NORTHWEST HERBARIA SPECIMEN DATABASE



Newly listed Olympic Mountains endemics. A. *Campanula piperi*. PHOTO: SIENNA WESSEL. B. *Erigeron flettii* and C. *Viola flettii*. PHOTOS: DAVE AND JOANNE SCHUETT-HAMES. D. *Senecio neowebsteri*. PHOTO: JARED DODSON, INATURALIST

Erigeron flettii (Olympic Mountain fleabane, **G1/S1**) is a low-growing, white-rayed member of the Aster family occurring in very small populations (less than 10 individuals) on basalt outcrops and cliffs above tree line.

Senecio neowebsteri (Olympic Mountain groundsel, **G1/S1**), this member of the Aster Family, with solitary, nodding yellow heads, occurs in the narrowest and highest elevation range of the new SOC and is expected to be among the hardest hit by climate change. It is locally common among steep, unstable gravel and talus. Mountain goat grazing inhibits growth of this species (Chambers et al. 2022).

Viola flettii (Olympic violet, **G1/S1**) is an alpine violet with striking, dark green leaves and purple venation. It occurs in small, isolated populations (less than 100 individuals) in the crevices of ledges, cliffs, and outcrops.

Campanula piperi (Olympic harebell, **G2/S2**), a member of the Bellflower Family with tiny, sharply toothed leaves in rosettes, occurs in dense cushions along rock cracks and on loose rock in the alpine. Researchers detected fragments of this species in mountain goat feces (Schreiner et al. 1994).

Wenatchee Mountains endemics: The new additions in central Washington are restricted to sparsely vegetated North Pacific Serpentine Barrens (Rocchio and Crawford 2015) on the eastern Cascade crest, among Washington's richest concentration of rare plants (Arnett 2012). These plants have adapted to thrive on toxic, heavy-metal-rich soils derived from ultramafic rocks. Major threats include mining and increased drought in this semi-arid region.

Lomatium cuspidatum (Wenatchee desert-parsley, **G2/S2**) features purple-red, umbrella-shaped flower clusters with fleshy,

divided leaflets. It thrives on arid, semi-barren rock slopes with full sun exposure.

Poa curtifolia (little mountain bluegrass, **G2/S2**) is a compact tufted grass with distinctly thick and short blue-green leaves bordered in white. This species requires high magnesium from ultramafic rocks to grow (USFS 1998).

Listing Lichens

In collaboration with Northwest Lichenologists, WNHP is excited to publish Washington's first official state lichen SOC list (Miller et al. 2024b), which includes 81 imperiled taxa. The 2024 lichen SOC list updates a 2018 draft list that reflects major changes to species concepts and taxonomy. These revisions include the addition of several cryptic pin lichens (*Calicium*, *Chaenotheca*, *Chaenothecopsis*) and jelly lichens (*Collema*, *Leptogium*, *Scytinium*). In total, botanists identified eight state endangered (S1) lichens, including the narrow spore pin lichen (*Calicium corynellum*, newly discovered in WA) and the coral shingle lichen (*Fuscopannaria coralloidea*, only known to WA since 2018). One species, Methuselah's beard (*Usnea longissima*), was removed from the list due to newly discovered populations in second-growth forests.

Connect with the WNHP



The circumboreal lichen *Usnea longissima* showing off its long central cord, which lacks the tufted side branches of other *Usnea* species. PHOTO: JESSE MILLER, 2023, OLYMPIC NATIONAL FOREST, QUILCENE, WA

To learn more about species of concern and the work of the WNHP, visit www.dnr.wa.gov/natural-heritage-program. Here, visitors can view and download the updated vascular plant and lichen SOC lists, use the Data Explorer to view mapped SOC occurrences across the state, and learn about specific taxa by searching the online Rare Plant Field Guide. Readers can report rare plant sightings, which are valuable for future SOC revisions, to the WNHP by filling out our online form (www.dnr.wa.gov/publications/amp_nh_sighting_form_word.docx).

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Dryland Gardening Requires a Total Re-thinking of What We Know

by Natalie McClendon

As native plant geeks, I suspect we have all toyed with the idea of ditching our suburban lawn and going native. But articles often tout a “natural” or “native” landscape as timesaving or money-saving. Like tossing out a few wildflower seeds. No, it’s labor intensive; there are almost no professionals that know how to do it; buying rare and hard to find plants isn’t cheap, and just knowing what plants to grow for your situation is a huge learning curve. But we’re going to try it anyway, right?

I moved to Yakima in the spring of 2022 from Bellingham. That first fall I stripped off my front lawn and began my experiment with a mostly native and fully no-water landscape. It’s been two full summers now, and it’s starting to take shape.

While my lawn was burning out that first summer, I went looking for information on how to transform it into a no-water landscape. I found the perfect book at the Yakima Library, *High and Dry: Gardening with Cold-hardy Plants* by Robert Nold.

Nold has gardened in the Denver suburbs for over 20 years and shares real-life experience of growing a garden with similar rainfall to Yakima (under 10 inches annually), heat, and even colder winters. Winter hardiness can be a challenge because many desert plants found in nurseries come from warm-winter climates and will die in our Zone 6 winters. Besides valuable advice on growing plants, the book includes 350 pages of plant descriptions of plants that he has successfully grown in his garden.

The essence of the book is that “successful dryland gardening requires a rejection of much of the accepted wisdom of traditional horticulture, a whole new catalog of plants, a new gardening technique, and a wholesome acceptance, without reservation, of the realities of the climates of the west.”

Rejecting the Accepted Wisdom of Traditional Horticulture

We are told to dig in organic matter, fertilize, mulch, create well-drained beds, and water the heck out of our gardens for them to grow in our semi-desert climate. Traditional notions of garden plant needs are based on the eastern US (and England), where it rains in the summer, with annual rainfall of 30–60 inches (compared to 7–10 inches in Yakima). Even with cloudless summers in western Washington, the average annual rainfall is around 60 inches. Plants common in the nursery trade match these traditional needs.

Plants that survive in our climate without watering have evolved under very different conditions. I often walk in the local uplands to remind myself of what is “normal” for plants around here and to collect seed. The soil has no organic matter in it, no organic matter as mulch, is low in nutrients, and dry as a bone in the summer. Yet, those plants bloom and grow.



The dry garden in early June with blanket flower (*Gaillardia aristata*), snowbrush (*Ceanothus velutinus*), California poppies (*Eschscholzia californica*), culinary thyme (*Thymus vulgaris*), Rocky Mountain penstemon (*Penstemon strictus*), and blue flax (*Linum lewisii*). PHOTO: NATALIE MCCLENDON

While some plants are adaptable to traditional garden conditions, specifically in an irrigated garden, many will die, often from rot, because organic matter holds too much moisture.

Understanding these conditions informs how to get started. Traditional advice on getting rid of a lawn is to cover it with black plastic or giant sheets of cardboard for the entire summer or just spray it with grass-killer. All that grass is organic matter I didn't need or want. After letting my lawn burn out over the summer, I hired a crew in September to strip the sod off the entire front yard. This removed almost everything except dandelion roots that sprouted in the spring, which I dug out by hand.

A Whole New Catalog of Plants

Rarely will a local nursery offer plants suitable for a dryland garden. Plants are often sorted by sun-loving and those that need some shade, but almost all of them will say water regularly, or when the soil is dry one inch down. Sometimes the label will say they are drought tolerant. This is a relative term, because the idea of a drought in the eastern US is maybe a month without rainfall. It means the plants won't die if you go on vacation for a couple weeks and don't arrange for someone to water the garden.

I tested out the idea of drought tolerance with some stonecrop (*Sedum*) I inherited in my front beds. Stonecrop is often referred to as drought tolerant. With no summer water, it just died. But the lavender (*Lavendula*) right next to it thrived. Nold has lavender on his list of a few non-native plants that live in his dryland garden.

There's just no easy way to shop for the appropriate plants for a dryland garden in Yakima. I have made myself a spreadsheet of the plants recommended by Nold, with height, color, bloom time, and other attributes. Many of the plants cannot be found anywhere, except as seed you might have to collect yourself or get from the rock garden society seed exchange. But there are a growing number of nurseries that are trying to make

some of the showier or more useful species available for sale. I cross-check my list of suitable plants with what they are offering, because not everything will survive the dryland garden.

The backbone of the garden is made up of local shrub-steppe natives. The local Conservation Districts carry some in their spring sales, but fall is a better time to plant. I recommend Tap-teal Native Plants in West Richland and Derby Canyon Natives near Leavenworth. Neither do mail orders, so you must drive to the nurseries to pick up plants, and even then on only a few weekends in the spring and fall. I've also found some good things mail ordered from High Country Gardens in Santa Fe, NM.

So far, my attempts at growing things from seed have been a failure; I have a lot to learn. But a few of the earliest plants I got started have self-sowed, and that was a surprise.

A New Gardening Technique

Besides the differences in soil type and preparation I discussed above, the main garden technique to re-learn is about planting. Most nursery-grown plants, even from native nurseries, are in soil-less quick-draining growing medium in a pot. Before transplanting to the garden, all that potting soil needs to be washed away. This forces the roots to quickly bond to the native soil rather than trying to stay confined to the pot's soil where it's been getting water. Those roots need to seek moisture deep down to survive.

I followed Nold's recommended technique, and I have had very few losses. Here it is: dig the hole, set the plant in the hole,



Desert Four-O'clocks (*Mirabilis multiflora*), a wild four o'clock native to the desert Southwest, blooming all summer in my Yakima dryland garden. PHOTO: NATALIE MCCLENDON



Raspberry Delight® hybrid salvia (*Salvia* x Raspberry Delight®) blooming in my Yakima dry garden on October 30. PHOTO: NATALIE MCCLENDON

fill the hole with water two or three times, washing much of the soil-less mix away (or wash the soil away in a bucket). Immediately fill the hole with native soil and complete planting.

The other gardening technique is what's missing. If you do not water your bare dirt over the summer, weed seeds will not germinate. Once I cleared the area of the spring-germinated weeds—no easy feat—I have done almost no further weeding this summer. This late spring weeding is done on my knees, looking at every seedling to distinguish the weeds from the self-sowed natives. I'm guessing you could not pay anyone to do that for you. And since I am keeping the area weed-free, I hope the weeding will diminish over time.

Mulching a garden is often recommended to keep down weeds and preserve soil moisture. In a dry setting, gravel is substituted, since organic matter should be avoided. I've decided to go with no mulch at all. The plants survive because they know how to find moisture deep underground, and there are few weeds in the summer. But if you like the look of a gravel mulch, go for it.

A Wholesome Acceptance, Without Reservation, of the Realities of our Climate

That first year, as the summer settled in with 90- and 100-degree cloudless days, I realized what Nold meant by acceptance, without reservation, of the realities of our climate. I started to get anxious about whether my little plants would survive the long hot dry summer. It was like sending your child to the first day of kindergarten, or their first boy-girl party. I just had to trust that I made the right choices, prepared the plants for their survival, and trust that they would be OK. The whole point is to grow a pleasing front yard that does not require supplemental water, and I have successfully resisted the urge to do any watering (after the first year of getting established).

This summer, that 100-degree period was even longer. The plants handled the heat like troopers. But I do think there is a limit to their tolerance. The Desert Four-O'clocks (*Mirabilis multiflora*) that bloomed wildly in August last year tried their best again but just couldn't manage much bloom in August. I'm

not approaching this as a purist. I'm willing to water, if necessary, but I want to test the limits first. I'm thinking I need to calculate an average "growing degree days" like the agronomists do for commercial food crops. So, if the rains stop too early in the spring, or the summer extreme heat lasts a lot longer, then I'll give myself permission to do a little watering.

The other part of acceptance of our climate is not to waste time and money on plants that are really marginal. There are a lot of neat plants that need little water that I might be tempted to buy, but "little" does not mean no water for 4–5 months in hot weather. I've kept to plants that are rated "xeric" or otherwise say they need under 10 inches of annual rainfall. Because my priority is no water and looking nice, I have not limited myself to shrub-steppe natives. I've found that plants native to the northern Arizona mountains do well here. California fuchsia (*Epilobium canum*, formerly *Zauschneria*) will bloom all summer long and into the fall, and it's not native here.

Other parts of eastern Washington have a bit more rainfall, and this will allow for a wider choice of plants. Know your local average annual rainfall and always check various authorities for the rainfall needs of the plants you are considering.

There's a Method to My Madness

A neighbor came by recently while I was in the front yard and told me she now "gets it." Last year she didn't get it, but it's making some sense now, and she likes it. That's progress! Most of my neighbors have heavily watered green lawns.

There's a dry stream running parallel to the street that's hooked up to a downspout. The most water it gets is when the grandkids convince me to let them run water in the downspout with the hose. Flowers are blooming. Hummingbirds are visiting. Giant sunflowers (*Helianthus annuus*) volunteered, and I left them to grow.

I've had three fall seasons to plant, and it's not quite all planted. This past summer the blank spaces were filled with a riot of California poppies (*Eschscholtzia californica*), which I may come to regret as all those seeds germinate. I've been reminded that things will grow faster if they get some water. And I might do that a bit more once I know they can survive a normal no-water summer. I'm also reminded that just because they can survive, doesn't mean they'll look good in August. I can't really do much about that, but I can add plants that will distract our eye with blooms in the summer.

This fall's major addition is the beginning of a cactus area. I'll be taking cuttings of some cactus in nearby gardens in the spring to add to it. And I'll be trying some different techniques for getting my collected seeds to grow. The experiment continues.

Natalie McClendon was introduced to the natural world and gardening by her botanist father decades ago. After 30 years of experimenting with gardening in Bellingham, she is re-learning the process in Yakima. She recently joined the board of the WNPS Central Washington Chapter.



The Plant List for Fort Flagler State Park

by Clayton Antieau

This article was adapted from a report prepared for the Washington State Parks and Recreation Commission. The work described here updated an existing plant list on the WNPS Plant List database (wnps.org/plant-lists) and illustrates how annotations are used to elaborate a list with additional details and document changes chronologically. The plant list update also included plant identifications made by others and documented by herbarium specimens and by photographs on iNaturalist. The resulting, updated plant list is thusly as comprehensive as possible up to this time and enriched with information related to source, location, and other relevant topics—beyond just species names! Perhaps this will ignite a passion in you to create and carefully curate your own lists that will be of much use to others who follow in your footsteps!

Fort Flagler State Park is known for its legacies of former military use and for a broad diversity of habitats, including old forests and remnant old growth forests at sea level; areas of ruderal flora; salt marsh and other wetlands; strand; and salt water. The State Park is owned and managed by the Washington State Parks and Recreation Commission (Commission) and includes 1,451 acres surrounded on three sides by nearly two miles of marine shoreline. There are five miles of trails in the State Park in addition to beach walks. This Report documents results of a focused vascular plant biodiversity field survey of the State Park. The survey was intended to update the Washington Native Plant Society's (WNPS) existing vascular plant list for the State Park (wnps.org/plant-lists/list?Fort_Flagler_State_Park). The list was started (date unknown) by long-time WNPS member Dr. Fred Weinmann of Port Townsend, Washington.

Methods

Prior to the field survey, existing information on the State Park's vascular flora was reviewed, including Ramm-Granberg et al. (2021), Visalli et al. (2006), and iNaturalist (www.inaturalist.org/). Further, a search for herbarium specimens collected from the State Park was made using the Consortium of Pacific Northwest Herbaria (CPNWH) database (pnwherbaria.org/index.php). In addition, aerial photographs (1932 and 2023) and ground photographs (1899 and 1908) were examined (Coast Defense Study Group 2024; Jefferson County 2024).

The field survey was conducted by Clay Antieau (Leader) and 11 other WNPS members. Observations were made during a Field Session to the State Park on June 15, 2024, as part of the WNPS Study Weekend in Blyn, Washington. The Field Session followed the walking route indicated in Figure 1. Vascular plant species not listed in the existing WNPS plant list were recorded in a field log. Most species were sight-identified without using an identification key, but some of the more difficult-to-identify species were identified using keys in Hitchcock and Cronquist (2018) either in the field or in the

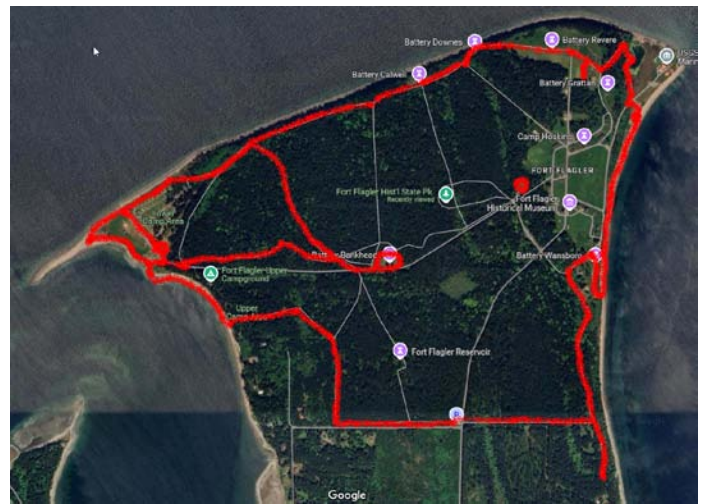


Figure 1: Walking routes taken and areas observed during field survey on June 15, 2024. Base photo from Jefferson County (2024).

lab. Herbarium specimens were collected for the most difficult-to-identify or notable species and have been deposited at the University of Washington Herbarium at the Burke Museum (WTU). Specimens were collected under authorization of Scientific Research Permit #240101 issued to Clayton Antieau on January 31, 2024, by the Commission. Identified species not previously included on the WNPS list were added to the list and annotated as being added as a result of the June 15, 2024 Field Session, recent iNaturalist observations, or previously collected herbarium specimens. Those annotations are visible only on the website wnps.org/plant-lists/list?Fort_Flagler_State_Park.

The updated WNPS list was then cross-referenced to the vascular plant species list included in Visalli et al. (2006) to identify additional species that may have been omitted from the updated WNPS list. Any such species were identified but not added to the updated WNPS list due to the age of Visalli et al.'s observations and their lack of herbarium voucher specimens, photographs, or other corroborating information.

Results

Updated Plant List

The updated plant list includes 258 taxa, of which 159 (62%) are native to the State Park and 99 (38%) are not native. Notably, the list features 10 clover (*Trifolium*) species and 30 species of grass. The June 15, 2024 Field Session identified 49 species not previously recorded on the WNPS list (Appendix A). Recent observations recorded on iNaturalist added six species not previously recorded on the WNPS list or observed during the June 15, 2024 Field Session (Appendix A, page 18). Herbarium specimens from the State Park collected by others added 11 species not previously recorded on the WNPS list or observed during the June 15, 2024 Field Session (Appendix A). Of the total 66 species added, 37 (56%) are not native to the State Park. Table 1 lists the 20 species included in Visalli et al. (2006) but not previously recorded on the WNPS list, observed during the June 15, 2024 Field Session, or previously collected as herbarium specimens by others. These species were omitted in the updated WNPS list for reasons explained above.

Species	Family
<i>Brodiaea coronaria</i>	Asparagaceae
<i>Conyza canadensis</i>	Asteraceae
<i>Capsella bursa-pastoris</i>	Brassicaceae
<i>Carex lyngbyei</i>	Cyperaceae
<i>Schoenoplectus americanus</i>	Cyperaceae
<i>Equisetum laevigatum</i>	Equisetaceae
<i>Lathyrus littoralis</i>	Fabaceae
<i>Lathyrus palustris</i>	Fabaceae
<i>Vicia villosa</i>	Fabaceae
<i>Glechoma hederacea</i>	Lamiaceae
<i>Ammophila arenaria</i>	Poaceae
<i>Bromus commutatus</i>	Poaceae
<i>Poa bulbosa</i>	Poaceae
<i>Poa palustris</i>	Poaceae
<i>Rumex occidentalis</i>	Polygonaceae
<i>Crataegus monogyna</i>	Rosaceae
<i>Fragaria virginiana</i>	Rosaceae
<i>Salix sitchensis</i>	Salicaceae
<i>Daphne laureola</i>	Thymelaeaceae
<i>Plectritis macrocera</i>	Valerianaceae

Table 1. Species included in Visalli et al. (2006) but not previously recorded on the WNPS list or observed during the June, 15 2024 Field Session and not included in the WNPS list. Species are listed alphabetically by family.

Notable Additions Made During the June 15, 2024 Field Session: Native Species

Notable native species additions include the mycoheterotrophic species, Pacific coralroot (*Corallorhiza mertensiana*) and Indian-pipe (*Monotropa uniflora*). Due to the small population numbers observed, no herbarium voucher specimens were made for either species.

Tall woollyheads (*Psilocarphus elatior*) is a native annual known from a few collections in northern California and a few, small, specialized habitats on southeastern Vancouver Island; in Canada it is considered Endangered. It appears to be somewhat common in Oregon and Washington but is probably undercollected due to its notably diminutive habit. In the State Park, tall woollyheads occurs in the Wagonwheel Campsite on compacted, gravelly road accesses. Herbarium voucher specimens are deposited in WTU. Identification was made by Dr. David Giblin, Collections Manager of WTU.

Vancouver wildrye (*Leymus × vancouverensis*) is a strand species known from just a few coastal locations in British Columbia, Washington (including a few Puget Sound locations), Oregon, and California. This native hybrid species (*L. mollis* × *L. triticoides*) resembles the native American dune grass (*Leymus mollis*) in its dunal and strand habitat preferences and strong rhizomatous habit. It differs notably from American dune



Western coralroot (*Corallorhiza mertensiana*). PHOTO: MARK TURNER

grass in its dark green—rather than bluish—leaf color, generally shorter spikelets (15–20 mm vs. 15–34 mm), and awned glumes. At the State Park, it occurs in sandy strand habitat on and adjacent to the USGS Marrowstone Marine Field Station at Marrowstone Point. Herbarium voucher specimens are deposited in WTU. Identification was made by Clayton Antieau, Research Associate of WTU.

Notable Additions: Non-Native Species

A small population of sandmat (*Cardionema ramosissimum*; 48.093514, -122.720597) is present in the Picnic Shelter area of the Lower Campground. This was collected as an herbarium specimen by Ben Legler in 2017 and observed during the June 15, 2024 Field Session. This species is presumed to be native to the Pacific Coast in Washington, but there is uncertainty regarding whether this species is native to Puget Sound environments. However, this perennial species can become an important



Sandmat (*Cardionema ramosissimum*). PHOTO: MARK TURNER

nuisance due to its sharply pointed floral and fruit parts that can embed in soft animal tissues. The species is not mentioned in Visalli et al. (2006), and therefore might be presumed to have been introduced to the State Park after 2006. This species is also now present at Fort Worden State Park (Port Townsend), Fay Bainbridge County Park (Bainbridge Island), and Brackert's Landing Waterfront Park (Edmonds). At Fort Flagler State Park, the Commission may choose to manage this species. Control would be via herbicide applications and/or manual removal of plants. At this time, control may be desirable because the population appears to be small and limited to the area around the Picnic Shelter in locations generally devoid of desirable or dense vegetation.

A small number of other non-native species in the State Park have potential to become more abundant as invasive species. Such species previously identified in the State Park include poison-hemlock (*Conium maculatum*; 48.093656, -122.693349) and whitetop (*Lepidium draba*; 48.092378, -122.721165). Such species identified during the June 15, 2024 Field Session include cardoon (*Cynara cardunculus*; 48.100835, -122.693521), common fennel (*Foeniculum vulgare*; 48.098306, -122.691813), and rugosa rose (*Rosa rugosa*; 48.100210, -122.689314). Because there is ample suitable habitat that would allow existing infestations to expand, and because current infestations are small at this time, the Commission should consider management or control efforts to eliminate these species from the State Park or manage their spread. Poison-hemlock and whitetop would be priorities in this regard, due to their specific propensities to become invasive and the presence of abundant suitable habitat.

Mature and Old Growth Forest Habitats

Ramm-Granberg et al. (2021) mention "...nearly all of Fort Flagler has been logged..." (page P-5), focus on "...the absence of large, old trees..." and vaguely describe effects of logging practices that pre-date modern practices. However, 1932 aerial photos and 2024 ground observations suggest relatively large blocks of forest in the State Park may be original—that is, pre-development—forest vegetation. The State Park's location close to the heart of the Olympic Mountains rain shadow affects tree growth. As a result, size of mature trees may not be an adequate criterion for assessing presence of original or pre-development forest vegetation. While some very large trees are present, most trees are typically smaller in diameter and shorter than might be expected in areas outside of rain shadows. Other characteristics suggesting mature or old growth forests in the State Park include:

- absence of cut stumps and evidence of logging or skid roads;
- absence of madrone (*Arbutus menziesii*) in these forests, which, in this State Park, importantly colonized areas after stand re-setting logging or wildfire events;
- presence of complex forest canopy structure, including gaps and snags, as well as complex canopy structure of mature and veteran individual trees;

- predominance of mature, single-stemmed big-leaf maples (*Acer macrophyllum*) (big-leaf maples coppice at or near the ground after stand re-setting logging or wildfire events);
- general dearth of understory invasive species;
- presence of high volumes of large-diameter down wood commensurate with older forest age and growth;
- presence of shade-tolerant conifer species reproduction in understories, particularly on down wood;
- presence of mature western hemlock (*Tsuga heterophylla*) and western redcedar (*Thuja plicata*), which, in mixed coniferous forest stands in rain shadows, suggest recruitment over periods of time longer than the duration of Fort and Park development; and
- presence of fire-scarring on mature and veteran trees that appears to pre-date Fort and Park development.

The Commission may wish to look more carefully at the State Park's forest habitats to clearly assess and document their condition, age, and natural history. Intact examples of old growth mixed coniferous forests at sea level are rare indeed in the Puget Sound basin.

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APPENDIX A. Vascular plant species (alphabetized by family then by scientific name) identified from the June 15, 2024 field session, recent observations from iNaturalist, and herbarium specimens from a search of the Consortium of Pacific Northwest Herbaria (CPNWH) database and not previously included on the original WNPS plant list for Fort Flagler State Park.

SPECIES	FAMILY	SOURCE	NATIVITY
<i>Foeniculum vulgare</i>	Apiaceae	June 15, 2024	Not native
<i>Glehnia littoralis</i>	Apiaceae	iNaturalist	Native
<i>Hedera helix</i>	Araliaceae	iNaturalist	Not native
<i>Amsinckia spectabilis</i>	Asteraceae	June 15, 2024	Native
<i>Anthriscus caucalis</i>	Asteraceae	June 15, 2024	Not native
<i>Cynara cardunculus</i>	Asteraceae	June 15, 2024	Not native
<i>Jaumea carnosa</i>	Asteraceae	June 15, 2024	Native
<i>Logfia minima</i>	Asteraceae	CPNWH Ben Legler ¹	Not Native
<i>Psilocarphus elatior</i>	Asteraceae	June 15, 2024	Native
<i>Senecio sylvaticus</i>	Asteraceae	June 15, 2024	Not native
<i>Soliva sessilis</i>	Asteraceae	CPNWH Ben Legler ¹	Not Native
<i>Myosotis arvensis</i>	Boraginaceae	June 15, 2024	Not native
<i>Lepidium campestre</i>	Brassicaceae	June 15, 2024	Not native
<i>Sisymbrium officinale</i>	Brassicaceae	June 15, 2024	Not native
<i>Cardionema ramosissimum</i>	Caryophyllaceae	CPNWH Ben Legler ¹	Not native
<i>Moenchia erecta</i>	Caryophyllaceae	CPNWH Ben Legler ¹	Not Native
<i>Spergularia rubra</i>	Caryophyllaceae	June 15, 2024	Not native
<i>Stellaria pallida</i>	Caryophyllaceae	CPNWH Peter F. Zika	Not Native
<i>Colchicum autumnale</i>	Colchicaceae	June 15, 2024	Not native
<i>Cuscuta pacifica</i>	Convolvulaceae	June 15, 2024	Native
<i>Crassula tillaea</i>	Crassulaceae	June 15, 2024	Not native
<i>Bolboschoenus maritimus</i>	Cyperaceae	June 15, 2024	Native
<i>Dipsacus fullonum</i>	Dipsacaceae	iNaturalist	Not native

SPECIES	FAMILY	SOURCE	NATIVITY
<i>Equisetum arvense</i>	Equisetaceae	June 15, 2024	Native
<i>Monotropa uniflora</i>	Ericaceae	June 15, 2024	Native
<i>Lupinus bicolor</i>	Fabaceae	June 15, 2024	Native
<i>Trifolium glomeratum</i>	Fabaceae	CPNWH Ben Legler ¹	Not Native
<i>Trifolium microcephalum</i>	Fabaceae	June 15, 2024	Native
<i>Trifolium retusum</i>	Fabaceae	CPNWH Ben Legler ¹	Not Native
<i>Trifolium suffocatum</i>	Fabaceae	CPNWH Ben Legler ¹	Not Native
<i>Trifolium willdenovii</i>	Fabaceae	June 15, 2024	Native
<i>Vicia nigricans</i> var. <i>gigantea</i>	Fabaceae	June 15, 2024	Native
<i>Juncus bufonius</i>	Juncaceae	June 15, 2024	Native
<i>Stachys cooleyae</i>	Lamiaceae	iNaturalist	Native
<i>Malva sylvestris</i>	Malvaceae	June 15, 2024	Not native
<i>Claytonia parviflora</i>	Montiaceae	June 15, 2024	Native
<i>Abronia latifolia</i>	Nyctaginaceae	June 15, 2024	Native
<i>Circaea alpina</i>	Onagraceae	June 15, 2024	Native
<i>Corallorhiza mertensiana</i>	Orchidaceae	June 15, 2024	Native
<i>Aphyllon californicum</i>	Orobanchaceae	CPNWH Alison Colwell ²	Native
<i>Papaver somniferum</i>	Papaveraceae	June 15, 2024	Not native
<i>Plantago coronopus</i>	Plantaginaceae	June 15, 2024	Not native
<i>Aira praecox</i>	Poaceae	June 15, 2024	Not native
<i>Arrhenatherum elatius</i>	Poaceae	June 15, 2024	Not native
<i>Bromus pacificus</i>	Poaceae	June 15, 2024	Native
<i>Bromus vulgaris</i>	Poaceae	June 15, 2024	Not native
<i>Elymus repens</i>	Poaceae	June 15, 2024	Not native
<i>Hordeum brachyantherum</i>	Poaceae	June 15, 2024	Native

SPECIES	FAMILY	SOURCE	NATIVITY
<i>Hordeum murinum</i>	Poaceae	June 15, 2024	Not native
<i>Leymus x vancouverensis</i>	Poaceae	June 15, 2024	Native
<i>Lolium perenne</i>	Poaceae	June 15, 2024	Not native
<i>Parapholis incurva</i>	Poaceae	CPNWH Ben Legler	Not Native
<i>Poa annua</i>	Poaceae	June 15, 2024	Not Native
<i>Vulpia myuros</i>	Poaceae	June 15, 2024	Not native
<i>Polygonum aviculare</i>	Polygonaceae	June 15, 2024	Not native
<i>Polypodium glycyrrhiza</i>	Polypodiaceae	iNaturalist	Native
<i>Aphanes australis</i>	Rosaceae	June 15, 2024	Not native
<i>Aphanes occidentalis</i>	Rosaceae	CPNWH Peter F. Zika	Native
<i>Pyrus communis</i>	Rosaceae	June 15, 2024	Not native
<i>Rosa rugosa</i>	Rosaceae	June 15, 2024	Not native
<i>Spiraea douglasii</i>	Rosaceae	iNaturalist	Native
<i>Salix hookeriana</i>	Salicaceae	June 15, 2024	Native
<i>Verbascum thapsus</i>	Scrophulariaceae	June 15, 2024	Not native
<i>Taxus brevifolia</i>	Taxaceae	June 15, 2024	Native
<i>Viola sempervirens</i>	Violaceae	June 15, 2024	Native
<i>Zostera marina</i>	Zosteraceae	June 15, 2024	Native

¹ Collected from Fort Flagler State Park under State Park Permit 170501.

² Collected from the US Geological Survey Marrowstone Marine Field Station adjacent to Fort Flagler State Park lands.



Pacific yew (*Taxus brevifolia*) arils among foliage. PHOTO: MARK TURNER

There's More to Milfoil

by Wesley Glisson

When I first started my job a few years ago at the Washington State Department of Ecology, I came across some old educational materials tucked away among the folders at my new desk. One was a bumper sticker that says, “Stop spreading milfoil around!” I really like this bumper sticker. It’s bright yellow, it has a little STOP sign, a nice line drawing, and a very clear message. Unfortunately, despite how nice this bumper sticker is, milfoil (*Myriophyllum* spp.), specifically the invasive Eurasian watermilfoil (*M. spicatum*), did spread around. A lot. And it is still spreading.



Bumper sticker to promote awareness and prevent the spread of Eurasian watermilfoil (*Myriophyllum spicatum*).

All prevention failures aside, the sticker and the decades of outreach that have accompanied the spread of Eurasian watermilfoil across the US have ingrained the name “milfoil” into the minds of many lakeshore property owners, fishermen, boaters, and water recreators alike. It’s impressive how many people I’ve met working in this field who know the name milfoil. The problem is that most of the “milfoil” that folks see on their lakes isn’t milfoil at all. Most of the “milfoil” I investigate turns out to be a myriad of other aquatic plant species: water naiads (*Najas* spp.), waterweeds (*Elodea* spp.), and pondweeds (*Potamogeton* spp.).

Sometimes I do find milfoil, and sometimes it is Eurasian watermilfoil, but not always. It often surprises people when I tell them they have one of our native watermilfoil species in their lake, and that there are actually a handful of these native watermilfoils that grace our waters. These overlooked aquatic plants are diverse, beautiful, and ecologically important to Washington. Nonetheless, conservation of our native watermilfoil species is subject to several major challenges, including difficulty in observation and identification, and hybridization with their invasive cousins.

Observation

Those interested in native plant conservation may be familiar with the concept of plant blindness, or plant awareness disparity as it has been more recently described (Wandersee and Schussler 1999; Parsley 2020). This condition is defined as the inability to notice plants, and hence, their intrinsic importance and value to our ecosystems and our lives. For aquatic plants, this issue is exacerbated by access to their habitats, the physical ability to see below the water’s surface, and general disinterest in the “weedy” portions of our fresh waterbodies. Most folks’ enjoyment of our natural waters relates to water clarity, both in

terms of the suspended algae that gives some lakes their green color, and aquatic plants. Even for those interested in enjoying the aquatic plant community, the ripples from a light wind or the glare from the sun on a calm day preclude observation of the underwater flora (pro-tip: wear polarized sunglasses for maximum aquatic plant enjoyment!). Thus, it is typically only those who snorkel, SCUBA, or use specially designed tools to sample aquatic plants that can truly appreciate these species. Because we often seek out and recreate in clear water and are generally unable to observe the aquatic plant community, we typically only see aquatic plants when they are growing more densely than usual or into an area that was previously clear. From this aquatic plant blindness stems the incorrect notion that all aquatic plants = (Eurasian) milfoil and because milfoil = bad, then aquatic plants = bad. Aquatic plant blindness extends to most aquatic plant species, but our native watermilfoils have the toughest reputation to shirk. Unfortunately, our native watermilfoils often get overlooked and when they are seen, get labeled unduly as ruiners of lake recreation.



Submersed leaves of northern watermilfoil (*Myriophyllum sibiricum*).
PHOTO: WESLEY GLISSON

Identification

Washington state harbors nine species of watermilfoil and two hybrid taxa (see below). Three of these watermilfoil species are introduced and invasive: Eurasian watermilfoil from Europe, Asia, and Africa; parrotfeather (*M. aquaticum*) from South America; and variable-leaf watermilfoil (*M. heterophyllum*) from eastern North America. These are the species that even most novice botanists are familiar with. The first two are

unfortunately common in the state and the same characteristics that make them so invasive are also those that make them so visible—their ability to grow abundantly and cover the water’s surface. It’s no surprise that our more well-behaved native watermilfoils are not as well observed. However, even if one did take the time to notice one of our native species, most of the time they would be hard pressed to identify it.

In general, identifying the genus is straightforward. The leaves are typically arranged in whorls of 3–6 and appear pinnately compound with a central axis and many segments (leaflets) arranged like a feather; hence the name: *myrios* for 10,000 or innumerable, and *phylon* for leaf. None of our other aquatic plants share these leaf characteristics. Beyond this distinguishing feature of the genus, however, separating individual watermilfoil species is notoriously difficult. This is mainly because many watermilfoil populations do not flower, and without the flower structures the submersed leaves and stems are all that are available for identification.

There are general rules of thumb to separate some species of watermilfoil. For instance, one rule for separating invasive Eurasian versus our native northern watermilfoil (*M. sibiricum*) is that Eurasian watermilfoil will have ≥ 24 leaf segments and northern fewer. This works well enough for separating these two species, but it neglects the fact that several other native and invasive watermilfoil species may overlap with these leaf segment counts. Then there is the issue of hybridization between these two species, leading to intermediate leaf traits (Moody and Les 2007). Even Pojar and MacKinnon state that northern watermilfoil is, “...indistinguishable from Eurasian water-mil-



Emergent flower spike of northern watermilfoil (*Myriophyllum sibiricum*) with male flowers above and female flowers below. PHOTO: WESLEY GLISSON

foil to all but the experts or those who really care...” (Alaback et al. 2004; pg. 347).

While I disagree that only experts can distinguish these species (and I hope that members of the Washington Native Plant Society indeed care) it’s clear that even among the botanically inclined, these are difficult species to identify with certainty. When flowering, our Washington species will produce a spike above the water’s surface. The characteristics of the floral bracts (which intergrade with emergent leaves), flowers, and fruits make identification easier, but not foolproof. These challenges mean that genetic analysis is often the best tool to conclusively identify these species, which is not always feasible. Without easy identification of our native watermilfoils, appreciation and conservation of these species remain difficult.

Hybridization

The ability to observe and identify our watermilfoils can be improved with tools and practice, but a more difficult conservation issue to address is the threat posed to our native watermilfoils from their invasive relatives. First, species such as Eurasian watermilfoil can suppress the growth of our native aquatic plants, including native watermilfoils (Boylen et al. 1999). A second, and more cryptic issue, arises from just how closely related some of our native and invasive watermilfoils are: at least two of our native watermilfoil species hybridize with closely related invasive watermilfoils. Our native northern watermilfoil hybridizes with Eurasian watermilfoil, and our native western watermilfoil (*M. hippuroides*) hybridizes with variable-leaf watermilfoil. The northern and Eurasian watermilfoil cross

Species	Common Name	Leaves per Whorl	Submersed Leaf Segments (Leaflets)	Emergent Leaf (Floral Bract) Characteristics	Distinguishing Characteristics
<i>M. aquaticum</i> *	parrotfeather	4–6(–8)	(14–)16–36(–40)	Same as submersed	Emergent stems are robust, leafy, and blue-green
<i>M. heterophyllum</i> * a	variable-leaf watermilfoil	4(–6)	(10–)12–20(–28)	≤ 3 cm long; pectinate to pinnatifid proximally, lanceolate to ovate or elliptic distally, margins serrate to lobed	Large, wide, emergent leaves on long flower spikes; leaves often occur outside of whorls
<i>M. hippuroides</i> a	western watermilfoil	4(–6)	12–24	≤ 2 cm long; pectinate to pinnatifid proximally, linear to narrowly oblong or linear-lanceolate distally, margins serrate to shallowly lobed	Similar to above, but emergent leaves more slender; leaves occasionally occur outside of whorls
<i>M. quitense</i>	Andean watermilfoil	(3)4(5)	(2)3–9(–11)	≤ 1 cm long; pinnatisect to lobed or entire, ovate to oblong in outline	Multiple flower stalks produced on each stem; plants dry to a blue-gray color
<i>M. sibiricum</i> b	northern watermilfoil	(3)4	6–18(–24)	< 0.5 cm long	Fewer leaf segments than below; produces turions (bunches of thickened leaves for overwintering) in fall
<i>M. spicatum</i> * b	Eurasian watermilfoil	4(3–5)	(20–)24–36(–42)	< 0.5 cm long	Stems often highly branched; many leaf segments, arranged uniformly parallel to central leaf axis
<i>M. verticillatum</i>	whorled watermilfoil	(3)4	(9–)12–22(–34)	≤ 1.5 cm long; pectinate, lanceolate to elliptic to ovate in outline	Small, pectinate emergent leaves; produces turions in fall

Table 1. Vegetative characteristics of seven watermilfoil (*Myriophyllum*) species in Washington. Asterisk (*) indicates introduced species. Species sharing the same letter are known to hybridize. Two species are not included because they have very limited distributions in Washington: Ussurian watermilfoil (*M. ussuriense*) and cut-leaf watermilfoil (*M. pinnatum*).

(*M. sibiricum* × *M. spicatum*) was first confirmed in 2002 in several locations (Moody and Les 2002) and the western and variable-leaf cross (*M. hippuroides* × *M. heterophyllum*) in 2011 in Oregon (Thum et al. 2011).

For our native watermilfoils, hybridization can result in the replacement of native alleles and genes through introgression, where alleles and genes of the invasive species continually enter the gene pool of the native species. Given how readily these taxa hybridize (LaRue et al. 2013) and the distribution of these hybrids, introgression could result in the depletion of the native gene pool and the eventual extirpation of our native species. In addition, for hybrids of Eurasian and northern watermilfoil, these appear to grow more aggressively than pure Eurasian watermilfoil, which could result in greater competition of hybrids with northern watermilfoil and other native aquatic plants (Glisson and Larkin 2021). Finally, hybridization makes identification of this already challenging genus even more difficult (Moody and Les 2007). For watermilfoil specimens with intermediate traits of parental taxa, genetic analysis is the only route for identification.

Because they are so difficult to identify, watermilfoil hybrids have likely spread beyond our current understanding of their distributions in Washington. Hence, the true impact on our native watermilfoils is largely unknown. In the midwestern US, hybrids of Eurasian and northern watermilfoil are widespread and likely displacing populations of northern watermilfoil (El-tawely et al. 2020). While more data are needed, the same may be happening here in Washington. Both hybrid watermilfoil taxa are listed as noxious weeds in Washington, which is a huge step in informing the public and controlling their populations. Pure variable-leaf watermilfoil and hybrids of variable-leaf and western watermilfoil have limited distributions in the state, so we stand a real chance of mitigating further harm to our uncommon native western watermilfoil. However, this requires diligence and awareness for all those working in and on the water.

Conclusion

In line with another bumper sticker I have seen while on the road (“Start seeing motorcycles”), I encourage readers to “Start seeing milfoils!” Not all aquatic plants are milfoil, and not all milfoils are Eurasian watermilfoil. There are indeed challenges to the conservation of our native watermilfoils, but overcoming these challenges is possible by: 1) addressing the (aquatic) plant blindness that limits our interaction with them, 2) familiarizing ourselves with how to identify our native and invasive watermilfoils, and 3) documenting occurrences of these species and hybrid taxa. This starts with visiting the weedier parts of a waterbody and pulling those plants out of the water to take a closer look. While identification is difficult, it is not impossible. Start by looking for any emergent flower spikes and then go to the submersed leaves and count the segments. There are other tools to help you determine where our native watermilfoil species have already been documented, such as the Burke Herbarium Image Collection (burkeherbarium.org/imagecollection),



Variable-leaf watermilfoil (*Myriophyllum heterophyllum*) with submersed leaves below and emergent flower spike above with emergent leaves. PHOTO: WESLEY GLISSON

Ecology’s Lakes Environmental Database (apps.ecology.wa.gov/lakes), and the new Milfoil Mapper online tool (thumlab-msu-watermilfoilapp.shinyapps.io/milfoil_app).

If you are still stumped and/or think you may have an invasive watermilfoil species on your hands, contact the Department of Ecology or your county noxious weed program for assistance. Breaking the barrier of the water’s surface and identifying these species are important steps by themselves, but these will also help determine the extent and magnitude of watermilfoil hybridization—a major threat to our native watermilfoil species. Together, addressing these three areas can improve the appreciation and conservation of our native watermilfoils.

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Better Common Names for Noxious Weeds: The Power of Language in Botany

by Skye Pelliccia and Tom Erler, King County Noxious Weed Control Program

What do elephant ears, Mexican bamboo, Sally rhubarb, Huzhang, peashooters, and Japanese knotweed have in common? They're all referring to the same plant—*Fallopia japonica*. But since 2021 the King County Noxious Weed Control Program has called this plant Itadori knotweed and urges you to do the same. In fact, we have changed the suggested common names of 25 plants since 2020.

Why do Common Names Matter?

Common names play a vital role in connecting people with plants, often serving as the first point of familiarity. Think about it—what did you know first: the dandelion or *Taraxacum officinale*? They are an essential tool for making this field more accessible with the caveat that one species may have many name options.

Common names reflect our society as they vary regionally and through time. Scientific names by contrast are more universal and give direction to where the species is in relation to other plants. The two complement each other.

By these standards, when we change the names of plants, they reflect the progress of our taxonomic or nomenclatural (scientific names) understanding or societal advancements (common names) ...yet many common names still in use date back to the early 1900s.

While language in other fields has evolved alongside societal changes, botany has lagged, likely due to limited diversity and perspective within the field. As our field diversifies, awareness is growing around the impact of some plant names, underscoring the need for change.



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Roundleaf bittersweet's orbicular leaves and unripe yellow berries in the winter. PHOTO: SKYE PELLICIA, TOM ERLER

What's the Problem?

Many plants have nationalistic names—think Himalayan blackberry, Syrian bean-caper, or Oriental clematis. Often named by those who introduced the species, these ties to locality were seen as ways to boast the exotic nature of plant collections. Unfortunately, when a plant is removed from its natural controls it has the potential to grow in a way that impacts the local landscape—we call these plants weeds. In this new context, nationalistic names tied to harmful or invasive species, combined with war-like language (e.g., exotic, aggressive, alien, invader), can affect people associated with these regions, fostering feelings of exclusion, or even validating prejudice.

Additionally, common names are an opportunity to better connect people to the plants around them. The most helpful common names are those that are descriptive of the plant itself, rather than the associated location that is often not helpful, and in some cases inaccurate. For example, Himalayan blackberries are not from the Himalayas.

King County Noxious Weeds—Leading by Example

This is why the King County Noxious Weed Control Program is taking action. The King County Noxious Weed List is updated annually and has undergone 25 common name changes since 2020 (kingcountyweeds.com/namechanges) to elevate common names that emphasize descriptive language for the ease of field identification, to demonstrate impacts, or even indicate cultural significance.

King County Noxious Weed staff are active participants in regional botanical conversations as well as with the Just Language Ecology/Education Project (justlanguage.org) at the national level, and in turn bring a broader range of perspectives to the discussion.

A leader in the niche field of invasive plants, our extensive weed species pages (kingcounty.gov/weeds) and official weed list are used as reference by groups around the world and is why the program takes such responsibility for the common names that we use.

The Name Changing Process

The program's name-change process is enacted on a county level and begins with reviewing the weed list to identify names with nationalistic or unclear elements. Specialists research alternative names used elsewhere, prioritizing options that are more descriptive.

Once selected, the proposed name goes to the King County Noxious Weed Control Board for approval. If accepted, it's updated on the weed lists and website, with the old name included in the footnotes for three years. Other organizations, such as the Washington State Noxious Weed Control Board, reference these updates. The program also coordinates with other progressive institutions such as the University of Washington Herbarium, Burke Museum to maintain consistency across resources.

Case Study:

Oriental Bittersweet to Roundleaf Bittersweet

Roundleaf bittersweet (*Celastrus orbiculatus*) is a fast-growing, woody vining plant that is noted for its impacts on forest canopies in several states. Its discovery in a King County Park in 2023, which was the first sighting of this plant in a natural landscape west of the Rocky Mountains at the time, led to its proposal and official listing as a Class A Noxious Weed for addition to Washington's 2025 Noxious Weed List.

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King County's first infestation of roundleaf bittersweet beginning to grow heavy atop native shrubs and into the tree canopy, taken in February 2024. PHOTO: SKYE PELLICCIA, TOM ERLER

In the process of authoring a proposal for listing, an effort was made to prioritize the common name roundleaf bittersweet over its more widely known name, Oriental bittersweet. Historically, “Oriental” was a term meant to reduce the diverse cultures of Asia and the Middle East to a single exoticized label, often as a promotional tactic for “exotic goods” (in this case to appeal to collectors of exotic flora). The term “Oriental” perpetuates stereotypes and “otherness” and has been banned from US federal documents since 2016 (H.R 4238). Roundleaf bittersweet was chosen because it is already in use by practitioners in the midwestern US, and its name is descriptive of physical aspects of the plant itself: roundleaf refers to the plant’s “orbicular” or disc-shaped leaves, also noted in its scientific name *Celastrus orbiculatus*.

Moving Forward with Naming Evolution and the Role of Practitioners

The name-changing process is rarely seamless. Some practitioners see these updates as unnecessary or as new barriers, but as fresh perspectives enter the field, we can use this as a chance to evolve rather than resist change.

As policy makers and practitioners, we need to elevate the experiences of those who feel alienated by outdated names, especially when these conflicts affect biodiversity efforts. It’s time our field catches up to the progress being made on many social

justice fronts and moves beyond attachment to nostalgic plant names tied to exotic garden fetishism.

Supporting and practicing these changes are one way we can make our field more welcoming to a broader range of experiences. When we reduce barriers to the field, we invite new stewards to these spaces that we call home.

Many groups are already supporting these efforts, and good alternative names from reliable sources are available, making it easier to steer language in a positive, inclusive direction. To learn more, visit kingcountyweeds.com/namechanges or justlanguage.org, and check out The University of Minnesota’s, *Guiding principles to inform selecting primary common names for new non-native species* (<https://docs.google.com/document/d/1yVrLMvAmPTwaE190mq27KZb73TTFelQvINIDnWB3nl8/edit?usp=sharing>).

Skye Pelliccia is a Seattle based noxious weed specialist and educator with the King County Noxious Weed Control Program. Beyond plants, she is an organizer with the CDE’s Environmental Professionals of Color (EPOC) Seattle Chapter, a member of the Just Language in Ecology Core Group and leads Equity and Social Justice efforts within King County as a member of her division’s Core Team.

Tom Erler is a Certified Ecological Restoration Practitioner, as well as a specialist with the King County Noxious Weed Control Program. His focus is Early Detection and Rapid Response as the program’s research botanist and iNaturalist proselytizer.



Roundleaf bittersweet’s thick, woody vines can grow up to 60 feet long and 4 inches in diameter. PHOTO: SKYE PELLICCIA, TOM ERLER

Forests, Steppes, Prairies, and *Ilex aquifolium*: WNPS Conservation Advocacy, 2024

by Becky Chaney, WNPS Conservation Committee Chair

Long before the end of the year, the days darken. In western Washington we hear weather reports: expect rain, with occasional showers, and possible thunderstorms. Not all the news is good. The United Nations Climate Change Conference in Azerbaijan is attempting to make progress despite an incoming United States administration that vows to loosen environmental rules. As the darkness settles in, where is the spark of hope? I reflect as I take time to write this missive, and my search narrows. I focus my thoughts on Washington Native Plant Society (WNPS) advocacy, 2024, Washington State—protection of native plants and their habitats. Ah. It's here.

The abundance of Washington's forests is phenomenal, yet forest protection has not always been high on the environmental priority list. This is changing. The critical role forests play in moderating Earth's climate is now realized, and there is recognition that their seemingly infinite resources, functions, and all-important existence are threatened. Washington Native Plant Society is monitoring proposed forest plan updates. We have commented on the US Forest Service's Old Growth Amendment, supporting proposed protections and requesting that support for forest connectivity and maturing forests be included. Initial WNPS comments on scoping for revisions to the 1994 Northwest Forest Plan are in. Conservation Committee members are watching for draft Environmental Impact Statements (expected release November 2024) for Western Washington, Northern California, and Oregon forests. The statement for the Blue Mountain Forest Plan is expected in early 2025. Look for timely updates in your WNPS eNews, including possible opportunities for WNPS input and individual comments on this issue.

Many WNPS members have noted the devastation that recent wildfires have brought to Washington's environmentally sensitive shrub-steppe. Following passage of the National Infrastructure Bill, funds for addressing fire safety are available on a short-term basis. The Bureau of Land Management plans to use these funds for various efforts, including one which is of considerable concern to WNPS botanists. The available science and member observations suggest that repeated burning in the Horse Heaven Hills, as prescribed and without surety of ongoing management, is likely to degrade the intact perennial plant habitat and allow open spaces for weed proliferation. The Columbia Basin Chapter, working with the Conservation Committee, is stating these concerns during the Environmental Assessment comment period.

Prairies bring summer delight. Washington Native Plant Society has a long history of prairie interest and support. Where

they exist, prairies are appreciated and when possible, nurtured by attentive members. The Kai Tai Prairie, a gem tucked within the Port Townsend city limits, is one of these. Our members want to ensure its existence for perpetuity. The city government seems to think a long-term perspective is limited to the next few years and that the development of overshadowing housing isn't cause for alarm. The Olympic Chapter, having actively maintained the prairie for the last 40 years, is keeping a close watch. WNPS has worked with the chapter to learn about proposed zoning updates and has submitted a letter, published in the local press, voicing concerns.

Conservation advocacy frequently carries over multiple years and requires ongoing association with public and non-profit agencies. WNPS member observations, involvement, and activism of over 40 years informs WNPS activity at Mount St. Helens National Monument. Currently the focus is on two areas: National Forest land just outside the monument, and, within the monument, Spirit Lake and its adjacent Pumice Plain. Washington Native Plant Society is partnering with Cascade Forest Conservancy in advocating that the Green River Valley adjacent to the monument is "no place for a mine" and supports a withdrawal of mineral rights for the area. Additionally, WNPS is participating early in plans by the US Forest Service to improve outflow safety at Spirit Lake. At a recent informational briefing WNPS members learned about engineering options under consideration. The importance of assessing ele-



English holly (*Ilex aquifolium*) growing in the forest understory in Bellingham's Cornwall Park. PHOTO: MARK TURNER



While it's a popular winter holiday decoration, English holly (*Ilex aquifolium*) is invasive and doesn't belong in our forests. PHOTO: MARK TURNER

ments beyond efficiency and costs was emphasized by WNPS members and allies. These range from the tangible destruction or interference with scientific research key to understanding natural recovery of plant communities from cataclysmic events to the intangible commitment to provide for the appreciation of untrammelled wilderness (as codified in the Wilderness Act). A take-away from the briefing, wilderness without access is still meaningful, even critical, to the collective psyche.

Circling back to forests, the decade long effort to list *Ilex aquifolium*, our invasive English holly, as a noxious weed, has once again come to the forefront. The effort benefited greatly from WNPS member coordination. It almost resulted in a win. The November decision: "*Ilex aquifolium* added to the class C noxious weed list as an extension of this process with a hearing prior to and vote at the March meeting. Passed 5 votes yes, 2 abstain." The evidence for the listing was overwhelming. However, the final vote had to be postponed ensuring that the listing is specific to the actual weed of concern, rather than the 400+ *Ilex* species. Supporting the Washington State Noxious Weed Control Board with adequate information on English holly's destructiveness required the involvement of diverse WNPS members and allies. The WNPS Conservation Committee will be following this closely in the coming year. Next year...

Next year, every year, your member involvement and contributions matter. The Conservation Committee needs assistance. Experience with or interest in learning the skills of building consensus and coalitions, the strength to willingly engage in activist decisions, and the tenacity to carry out nitty-gritty project management, all combined with a profound dedication to native plants and their habitats, is necessary. Member challenge! Become or recruit the person with these skills. Consider working on or with the WNPS Conservation Committee to ensure beneficial outcomes for Washington's native plants and habitats. What an excellent New Year's Resolution!

Becky can be reached via e-mail at conservation@wnps.org. She is always happy to hear your conservation interests, concerns, and comments. The Conservation Committee welcomes new members. Meetings are usually held, via Zoom, on the second Tuesday of each month, and are open to all members.



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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.

What's In a Name?

Addressing Pejorative Names and Language in Natural History Collections

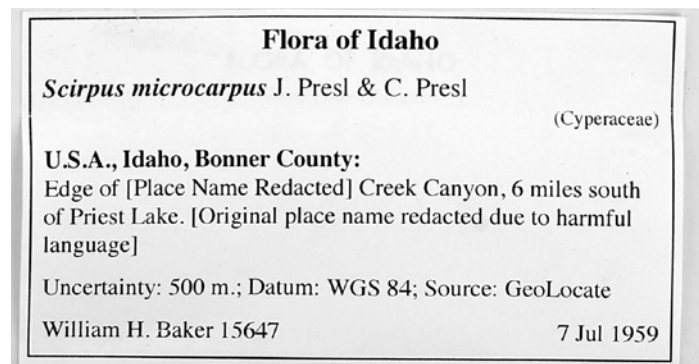
by Nile Peoples

The value of natural history collections as imprints of the past cannot be overstated; however, problems may arise when specimens capture the more regrettable parts of history. This is true of many specimens in the University of Washington Herbarium, Burke Museum that cite localities with racist, derogatory, or otherwise hurtful place names. Reconciling with the existence of such harmful language in the collections led us to my project: addressing and developing procedures for handling pejorative language in the herbarium.

This project aims to 1) create a record of specimens containing harmful language in our collection, 2) redact harmful language from immediate view on labels or metadata, and 3) establish a procedure for handling pejorative language on future specimens. Using the herbarium's database, I found records for over 400 specimens containing racist language. Of those, I pulled 50 that would get new labels during the first stage of this project. The new labels are partially removable and indicate that the previous label contains harmful language. This way, the uncensored information is still accessible, though only by making an informed choice to view potentially upsetting content.

Beyond the steps I have described, there are other factors and practices worth keeping in mind about this matter:

1. **Acknowledgement:** The first step in this work is acknowledging the existence of problematic language as well as the real harm it imposes—even when that harm is unintentional. A strong acknowledgement is transparent about the issue, and about the actions taken by the institution toward harm mitigation. However, the work of anti-racism does not stop simply at acknowledging that the problem exists.
2. **Intervention:** The next layer is some sort of preliminary intervention. These are proactive steps taken by the institution to mitigate the immediate harm associated with racist language, and they lay the foundations for more comprehensive, long-term work. These actions also create a safer environment for the next step to take place.
3. **Diverse stakeholder input:** In a collection as large as the Herbarium's, it would be impossible for us to find every instance of harmful language alone. More importantly, it is critical that anti-racist work is informed by the people who are most affected by it. Unfortunately, this is difficult at institutions where people of color are underrepresented. This is why it is necessary for institutions to look beyond themselves for input from a variety of stakeholders when addressing harmful language. In my project, I fulfilled this by interviewing several collections stakeholders within and outside of the herbarium.



An example of a specimen containing racist language that received a new label. The new label may be flipped to view the original label.
PHOTO: NILE PEOPLES

Anti-racism work related to knowledge production and academia is increasingly complex and controversial, but necessary, nonetheless. By allowing pejorative language to exist in collections without mitigation, we perpetuate the harm it causes; conversely, mindful and informed interventions make collections a safe source of knowledge for all.

Nile Peoples is an undergraduate in the University of Washington's Program on the Environment and an assistant at the University of Washington Herbarium.



WNPS Will Award \$24K in Grants for 2025

WNPS is opening the 2025 Grant Cycle with a request for applications by March 1, 2025, for projects in Conservation, Education, and Research and Plant Inventory. Each committee will award \$8,000 in 2025, for grant projects that promote native plants and their habitats within the State of Washington. Grant awards of \$500–\$2,000 are available.

WNPS Grant funding is provided by generous donations made to the WNPS Endowment Fund and additionally supported by the WNPS Board designation of general fundraising campaign funds each year.

Successful project applications must follow the criteria for the specific committee and provide public benefit with support of the WNPS mission to promote the appreciation and conservation of Washington's native plants and their habitats through study, education, and advocacy.

Please review each committee's grant requirements to find the right fit for your project:

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Indian-pipe (*Monotropa uniflora*),
North Cascades National Park.
PHOTO: MARK TURNER

