

# Douglasia

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**WASHINGTON NATIVE PLANT SOCIETY**

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



## About This Issue

by David Giblin

It is hard to fathom how much the world has changed since the last issue of *Douglasia*. In a matter of weeks even the most routine activities (getting a haircut, sharing a meal with friends in a restaurant, attending a meeting) became fraught with the risk of contracting COVID-19 and its potentially lethal consequences. For WNPS members, gathering is at the core of what we do, whether at a monthly chapter meeting, carpooling to a wildflower hike, or congregating for the Study Weekend, Botany Washington, or workshops. For the moment all of those WNPS experiences are on hold. We can only hope that in the not-too-distant future there are global solutions and cures to the present suffering from the pandemic.

Fortunately we have multiple ways for maintaining community with regards to our shared knowledge, appreciation, and interest in conserving Washington's native plants. This journal is one such example, and once again the content spans a gamut of topics. Abe Lloyd shares with us his intrepid taxonomic and culinary exploration of our native bulrushes and related species. We are sure you will appreciate the depths (sometimes of mud) that Abe went to in order to unlock his novel insights. Becky Chaney reminds us of the need to stay informed about land conversion and development projects across the state and why more hands are needed to assist with WNPS conservation efforts. Walt Fertig does double duty in this issue by reviewing a fascinating book by Robert Carson on the natural history of the Blue Mountains, and by providing suggestions for native plants for attracting hummingbirds to your gardens. Speaking of natural history books, Fred Weinmann gives a thorough review of a new publication on one of everyone's favorite destinations—Mount Rainier. I provide an overview of the origins and current management of the Washington Flora Checklist.

This issue is historic for including the first-ever peer-reviewed article in *Douglasia*. WNPS member Steven Link suggested the inclusion of such article. The inaugural paper is by former University of Washington undergraduate Cole Lysgaard, who along with his colleagues researched the fate of seedlings for several Pacific Northwest conifer species. We are interested in gauging member interest in this new direction, so please share your thoughts if you are so inclined.

Finally, these past few months have seen the passing of two high-profile WNPS members, WNPS Kruckeberg Fellows Lou Messmer and Terri Knoke. Tributes to the legacies of Lou and Terri are shared, and they remind us how great an impact our members have on our community and beyond.



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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.

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## Douglasia Staff

### Editor

Andrea Cummins  
douglasia\_editor@wnps.org

### Layout Editor

Mark Turner  
douglasia\_layout@wnps.org

### Technical Editor

David Giblin  
dgiblin@uw.edu

### Editorial Committee Chair

Walter Fertig  
douglasia@wnps.org

## WNPS Staff

### Business Manager

Denise Mahnke  
wnps@wnps.org

### Office and Volunteer Coordinator

Elizabeth Gage  
info@wnps.org

### Send address and similar changes to:

Washington Native Plant Society  
6310 NE 74th St., Suite 215E  
Seattle, WA 98115  
206-527-3210  
wnps@wnps.org

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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: [www.wnps.org/publications/douglasia/douglasia\\_contributors.html](http://www.wnps.org/publications/douglasia/douglasia_contributors.html).

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# President's Message: The View from Here

by Van Bobbitt

Dear WNPS Members,

One measure of an organization's strength is the way it responds to a crisis. All organizations—governments, businesses, schools, and nonprofits—have been put to the test by the COVID-19 pandemic, and we have seen a variety of responses. Some appear to have been quite effective, some erratic, and most have had mixed results.



I am impressed with how WNPS responded to the COVID-19 crisis. Our relatively successful response is a result of several factors.

First of all, WNPS is an organization that **values science**. Before deciding on March 12 to cancel all WNPS public events, we consulted the Washington State Department of Health and county health departments for credible data. Based on that, we were able to weigh the potential risks to our members, the general public, and our organization.

Second, the **foresight and work of previous WNPS leaders** put us in a good position to weather this crisis. Our finances are in good shape due to dedicated members, generous donors, and those who put WNPS's books in order after the great recession. Additionally, the board of directors decided in 2016 to focus on improving communications. That resulted in a new website, the e-newsletter, and obtaining Zoom video conferencing software. Now WNPS can easily communicate with members and host virtual educational events despite the cancellation of public gatherings.

Third, WNPS was **nimble and quickly adapted**. An excellent example of that is Native Plant Appreciation Month (NPAM). WNPS celebrated Native Plant Appreciation Week for years. In 2020, though, WNPS worked with Governor Inslee to proclaim what is believed to be the first Native Plant Appreciation MONTH in the nation. The NPAM Committee, under the leadership of Gail Sklar, vigorously encouraged chapters and other organizations to celebrate NPAM. Terri Knoke prepared a Native Plant Appreciation Month Activity Guide and presented a webinar on How to Advocate with a Native Plant Appreciation Month Event. Many field trips and plant sales were planned throughout the state, but everything changed in March. The NPAM Committee quickly regrouped; and with the collaboration of seven chapters and other part-

ners, NPAM offered 14 webinars with a total of 2,895 registrations! When we work together and lead with our strengths, we can make things happen quickly. (By the way, the NPAM committee is looking for new members to bring new strengths to its efforts in 2021.)

Finally, WNPS is blessed with a small but **hardworking staff and dedicated volunteers**. WNPS Business Manager Denise Mahnke's position was increased from 30 to 40 hours per week as of January 1. That was fortunate, because extra hours were needed to deal with event cancellations, preparing for our first ever online state board meeting, and managing more Zoom meetings and webinars than ever before.

There is probably no such thing as a perfect response to this crisis. We've never dealt with this situation before, therefore we don't have a recipe for how to handle it. We are improvising, but that can be good.

In her book *Leadership in Turbulent Times*, Doris Kearns Goodwin points out that Franklin D. Roosevelt was able to lead the U.S. out of the Great Depression because he had spent his life adapting to changing circumstances. While campaigning for president in 1932 he stated: "... the country demands bold, persistent experimentation. It is common sense to take a method and try it: If it fails, admit it frankly and try another. But above all, try something."

Due to the pandemic, WNPS tried new things. We discovered that we can hold a productive board meeting by Zoom and offer quality webinars that are popular with a diverse audience. We will continue to experiment. Despite its downside, this crisis will bring positive changes to WNPS.



**On the cover:** Old-growth western Hemlock (*Tsuga heterophylla*) towers over a carpet of mosses and oval-leaf huckleberries (*Vaccinium ovalifolium*) along the Enchanted Valley Trail in Olympic National Park. PHOTO: MARK TURNER

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# Bulrush: A Meal under the Mire

by T. Abe Lloyd, Koma Kulshan Chapter

I don't usually start an educational article by trying to prove how confusing something is, but bulrushes (*Bolboschoenus*, *Schoenoplectus*, *Scirpus*) are a bane for many botanists and a nightmare for ethnographers. There are a few understandable reasons for this disdain.

First, many bulrush species have close relatives that are challenging to differentiate from one another. For example, of eight common bulrushes in western Washington, four have close look-a-likes that share similar habitat: cottongrass bulrush (*Scirpus cyperinus*) and small fruited bulrush (*S. microcarpus*) both have leafy stems with 50-100 small spikelets; maritime bulrush (*Bolboschoenus maritimus*) and river bulrush (*B. fluviatilis*) both have broadly triangular, leafy stems with 5-20 large spikelets; hardstem bulrush (*Schoenoplectus acutus*) and softstem bulrush (*S. tabernaemontani*) both have round leafless stems; and American threesquare (*S. americanus*) and common threesquare (*S. pungens*) both have triangular stems with only a couple leaves and flower heads. In fact, I had thought the last two names were synonyms for the same plant until I began writing this article.

Secondly, bulrushes grow in marshes with thick mud that can pull your boots off and choke you with rotten-egg stench, vegetation that can tear up your legs, and mosquitoes and leaches that can suck your blood. Who knows what other dangers lurk in the murk. Finally, to make matters worse, both the common names and scientific names for bulrushes have not only changed frequently over time, but they have also been applied to the wrong species, or multiple species. Frankly, understanding bulrushes is messy business both literally and figuratively. But life is messy.

As my love for plants has grown, I have been increasingly drawn to challenging groups. While in college in Wisconsin, I became interested in the Cyperaceae—the family containing sedges and bulrushes—and spent three years experimentally restoring an old field to a sedge meadow for my senior capstone project. Naturally, native seeds were needed for this project, so I spent one day a week throughout the summer collecting sedge and bulrush seeds, efforts that earned me the title “Abe sedge seed.”

Despite this interest, I had never heard of any edible parts of bulrushes until a few years ago, when Sam Thayer, a friend and wild food expert, excitedly told me about his first taste of river bulrush (*Bolboschoenus fluviatilis*). He proclaimed the tuberous roots to be sweet and delicious raw. With piqued curiosity, I set off into the mire to better understand what is going on beneath our various bulrushes.

## The species

With bulrushes, the old botanical mnemonic, “sedges have edges, rushes are round, and grasses have joints [swollen nodes]

all the way to the ground,” doesn't hold the water they grow in. As members of the Sedge Family (Cyperaceae), many bulrushes have the normal triangular cross section, but a few species have round stems that bear a confusing resemblance to those in the Rush Family (Juncaceae). However, there are easily discernible differences. Bulrushes (and sedges in general) have simplified flowers (no sepals or petals) with a single scale below each flower, and flowers that only produce a single seed. By comparison, rush flowers have six tepals (sepals and petals that look alike) that surround a capsule containing multiple seeds.

As far as I know, the edible bulrushes are limited to two genera, *Schoenoplectus* and *Bolboschoenus*. These genera have been split from the otherwise inedible genus *Scirpus* by most modern botanists, a treatment which suits me because their botanical differences have real world meaning. In this article, I describe the more common members of *Schoenoplectus*, *Bolboschoenus*, as well as two members of the closely related genus *Cyperus*.

## Softstem Bulrush and Hardstem Bulrush (*Schoenoplectus tabernaemontani* and *S. acutus*)

These two herbaceous perennial species die back to a thick fleshy rhizome every year. Reaching 3-9' in height, they are the tallest bulrushes in Washington and Oregon. Both species have round stems that lack leaves, and inflorescences that appear lateral on the stem. Strikingly similar, I find the best way to tell them apart is to both feel and cross-section the stems. Softstem bulrushes compress easily, almost as if there is no pith inside; these spongy cells are loosely packed, usually numbering about 5-12 across the diameter. In contrast, you can feel the pith push



Inflorescences of softstem (upper) and hardstem (lower) bulrushes.

PHOTO: T. ABE LLOYD

back when compressing hardstem bulrushes, which have 18-30 tightly packed cells across the diameter.

Those with a hand lens may also examine the scales below each seed. Hardstem bulrush scales have a contorted (twisted) awn at the tip and a midrib that is nearly the same color as the rest of the scale, whereas those of softstem bulrush have a straight or only slightly bent awn and a highly contrasting midrib (Hitchcock and Cronquist, 2018). Both species inhabit lakes, sloughs, marshes, and ditches throughout the Pacific Northwest. I usually see softstem bulrush more in estuarine salt marshes, and hardstem bulrush more in freshwater marshes and lakeshores, but they do not break cleanly along these habitat differences.



Softstem bulrush in saltmarsh. PHOTO: T. ABE LLOYD

A third species, California bulrush (*S. californicus*) grows in Oregon and California and looks similar to the others but has a slightly three-sided stem that can reach 12' tall! Very few other herbaceous perennials in North America can grow as tall in a single growing season.

### **Maritime Bulrush, River Bulrush, and Sturdy Bulrush (*Bolboschoenus maritimus*, *B. fluviatilis*, and *B. robustus*)**

These three herbaceous perennials die back to thin rhizomes that produce hard nut-like over-wintering tubers. They have leafy stems that are strongly triangular in cross section on the upper half but may have slightly rounded corners near the base. All three have terminal spikes of flowers and seeds, though leaf-like bracts often extend around and above their inflorescences. Distinguishing the three species is best done by examining their height, and characteristics of the spikes and seeds (achenes).

Maritime bulrush is usually 1-4' tall with a compact clump of sessile spikes that are less than 1" long (although a few may be on short stalks) and 2-sided seeds. River bulrush is a larger species at 3-5' tall and has more loosely packed spikes that are greater than 1" long, and three-sided, elliptical seeds that sink in water. Sturdy bulrush is 1.5-5' tall with a loose clump of fat, cylindrical spikes that average about 1" long, and three-sided, rounded topped seeds that float on water.

Maritime bulrush is very common in salt marshes at the low end of the high marsh, as well as sloughs and ditches near



Maritime bulrush (left) and river bulrush (right) PHOTO: T. ABE LLOYD

the ocean and along large river systems, from Vancouver Island southward with a northerly disjunct population near Anchorage, Alaska. River bulrush is only found sporadically in the fresher and higher parts of estuarine marshes. I know it only from the mouths of the Stillaguamish and Samish rivers, but herbarium records show it in a few other locations throughout our region. Sturdy bulrush is found in brackish marshes along the California's coast and Central Valley.

### **Chufa and Purple Nutsedge (*Cyperus esculentus* and *C. rotundus*)**

Both species die back to thin rhizomes that produce nut-like over-wintering tubers, have leafy stems that are strongly triangular in cross section, and sweet-scented foliage. Flowers are arranged neatly in two ranks forming flattened spikelets. These spikelets form open spikes on long stalks that look a little like chimney sweeps or bottle brushes. They are best differentiated from each other by the color of their flower bracts: yellowish in chufa and purplish in purple nutsedge.

Chufa is intolerant of saltwater and evidently avoids the maritime climate near the ocean. In the Pacific Northwest, it appears to be limited to the large river drainages such as the Fraser, Nisqually, Columbia, Snake, Willamette, and Sacramento rivers, with some records from small rivers and drainage ditches, especially outside of our area in Southern California. Purple nutsedge is found in disturbed soils along agricultural fields and is evidently naturalized in California (Jepson eFlora).

### **Harvest and Preparation**

I have harvested softstem bulrush rhizomes in the middle of June and the end of August. In June the rhizome was  $\frac{3}{4}$ " thick by 3" long with white skin and very delicate flesh. When raw it was bland with no disagreeable flavors. In August, the rhizome was 1" thick by 5" long and had started to sprout next year's shoot, indicating it was at full length. The skin was still white but the texture was much firmer. In cross section, the flesh looked very much like a cattail rhizome, except that the outer

spongy layer was almost imperceptibly thin. Raw, the flavor was bland with a hint of sweetness; cooked it was even more bland and stained red for mysterious reasons (possibly a reaction with minerals in my well water?). Since few starches are all that good boiled alone, I conclude that these sizeable rhizomes have promise as a source of calories that take even less time to process than cattails (but aren't as tasty).



Edible rhizome of softstem bulrush. PHOTO: T. ABE LLOYD

I harvested hardstem bulrush in early September. The rhizome was approximately an inch in diameter and more than a foot long with white skins and black triangular bracts at regular intervals. A cross section revealed a thin hard starch core surrounded by a thick layer of spongy tissue, exactly like a cattail

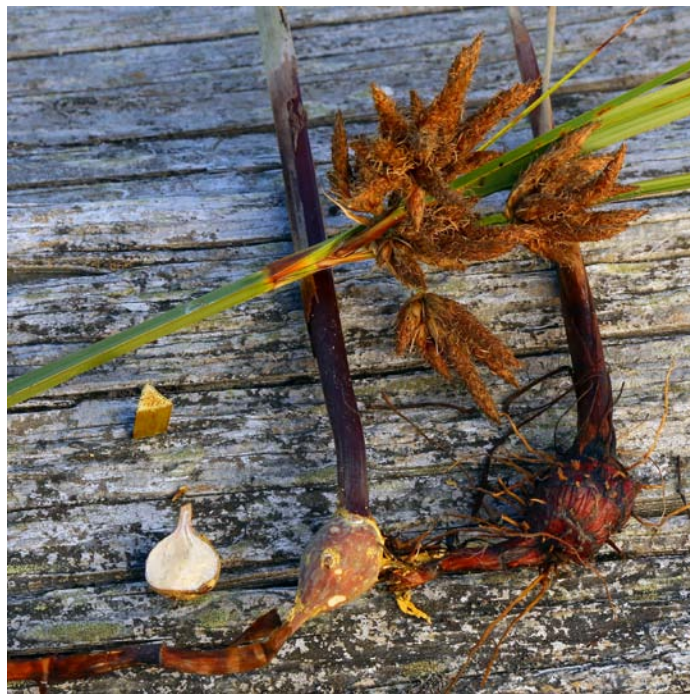


Edible rhizome core of hardstem bulrush. PHOTO: T. ABE LLOYD

rhizome. The core was easier to peel than a cattail rhizome and raw it had a mild sweet flavor with bitter aftertaste. The core was very fibrous. I suspect that the rhizome size, stringiness, and flavor all vary seasonally.

I harvested maritime bulrush tubers in early and mid-June, early July, and early September. The edible portion is really the enlarged underground base of each plant that develops an egg-like shell over the course of the growing season. In early June, the tubers were about 5/8" across with white skin and tender flesh that was deliciously sweet raw. By July the tubers were 1" across and more pear shaped. The outer skins had blackened, but the shell of the tuber was still white and soft enough to eat fresh. It was very sweet. In September the plants were senescing, and the tubers had purplish black skin with a shell that was reddish brown. The shells and flesh were so hard it was difficult to cut them with a sharp knife. The flesh was white but too hard to eat raw or cooked. Perhaps at this late season it could be ground into flour. The Snow Geese root for these tubers in the winter and use rocks in their gizzard to grind them into meal.

My experience with river bulrush is more limited to the late season (when they were hard as a rock), but their tubers appear the same as maritime bulrush. I have never eaten chufa, so all I can do is pass on the anecdote that I hear they have tasty tubers.



Hard tubers of river bulrush. PHOTO: T. ABE LLOYD

## Ethnobotany

Historical accounts concerning bulrush edibility are frustratingly difficult to attribute to a distinct species. I suspect this ambiguity is either the result of poor botanical knowledge on the part of ethnographers, leading them to unknowingly lump multiple species into a single account, or Indigenous groups

using the same name for multiple species with very similar qualities.

Many of the early accounts I review below use the common name tule. Tule usually refers to tall bulrush species (softstem, hardstem, and California bulrushes), although confusingly, it is sometimes attributed to cattail (*Typha* spp.), which is in a different family (Typhaceae). The word tule evidently comes from the Aztec word *tullin* or *tollin* for aquatic bulrushes—a word that was first adopted by the Spanish in Mexico and later by English speaking Americans (Small 2013).

If using a twice borrowed common name for multiple species in two different plant families wasn't befuddling enough, horsetails or "scouring rushes" (*Equisetum* spp.) are also confused in the ethnographic record under the common name "rush" (see Swan 1857, 88; and Eells 1885, 1885) or called by the same Indigenous name in some cultures (see Turner et al. 1990, 116). The similarities are numerous: bulrushes, cattails, and horsetails all grow in wetlands, have spongy, linear leaves or stems that can be used in weaving, and several have edible tubers or rhizomes.

While traveling in the Columbia River watershed in Oregon and Washington in the early 1820s, the pioneering botanist David Douglas (Douglas 1914) observed that the tender white shoots of a 4-10' tall species of bulrush (making it either softstem or hardstem bulrush) were eaten and "considered a luxury." The sprouts of an undetermined species are also traditionally eaten by the Puyallup and Nisqually in Washington (Smith 1930).

Other early records come from Edward S. Curtis, the famous ethnographic photographer and author of the 20-volume series *The North American Indian*. Curtis had some knowledge of the various bulrushes and frequently documented the use of both tule and cattail, making it possible to be sure that he was differentiating the species. As if he were aware of the potential for confusion, he occasionally includes scientific names for cattail, hardstem bulrush, and sturdy bulrush in the series.

In California, he observed the tender, white, central shoot of hardstem bulrush being eaten fresh by the Klamath (1924, 13: 170, 273; although on page 238, he apparently confuses this with sturdy bulrush), the Tolowa, Tutuni (1924, 13:99, 228, 247), and Lake Pomo (1924, 14:62). He describes tule as "a fairly important food" to the valley Maidu (1924, 14:107). He also recorded indigenous terms for edible "tule shoots" among the eastern and central Pomo (1924, 14:188, 217), and "tule pith" among the Wappo (1924, 14:210) and Wiyot (1924, 13:267). The Northern Pomo eat the raw young shoots of sturdy bulrush (Welch 2013). In Utah, the young shoots of hardstem bulrush are also traditionally eaten by the Gosiute of Utah (Chamberlain 1911).

The roots of bulrushes are also traditionally eaten by many Indigenous Peoples. Accounts from northern groups are unfortunately ambiguous. The inland Dena'ina eat the thick, underground tuber of a large sedge that is described as look-

ing like the bulb of an onion (Russell 2012) and is probably a bulrush. Steedman (1930), working from the notes of the botanist and ethnographer James Teit, noted that the thick fleshy "rootstalks" of one bulrush species were roasted and eaten by the Nlaka'pamux. The roots of a kind of "rush" were eaten by the Twana, Chemakum, Klallam, and other Native Americans in the Puget Sound (Swan 1857; Eells 1885, 1985), which could be a bulrush, cattail, or horsetail. The Quinault considered a bulrush species to be among their principle root foods, and steam cooked it (Curtis 1913 9:58).

The thick rhizome of hardstem bulrush was widely eaten along the Pacific states (Harvard 1895). Botanist Robert Brown (1868) observed its use in California. Curtis also documented tule use among many groups in western North America including the Shasta, Achomawi (1924, 13:140, 230, 234, 257), Tolowa (1924, 13:247), Northern Wintun and Valley Patwin (1924, 14:224), Valley Maidu (1924, 14:232), Diegueno (1925, 15:43, 180) and Hupa (1924, 13:238). He elaborates that the fresh rhizomes were "esteemed" by the Mono and Paviotso (15:72, 169, 184), and that the "core of the underground stalks . . . were eaten raw (15:63) by the Mono. The Yokuts "depended mainly on tule-roots. . . . The dried roots of tule were roasted, pulverized, and formed into balls, which were baked in hot ashes or the flour might be cooked into mush (1924, 14:157; 197)." The Chumash also ate the rhizomes this way, or raw (Timbrook 2007).

Some useful details come from a 10-year-old who made news for her presentation of Shasta Indigenous Foods at the California State Fair. She was quoted saying "The [Native Americans] pull tule roots early in the spring while they are young and tender. They also dry them for winter use (Hollenbeak 1921)."

Another participant observer account comes from Thomas Jefferson Mayfield who was adopted by the Choinumni band of the Yokuts and lived with them for a decade in the 1850s. He provides exceptional detail about their use of tule. "They ate great quantities of young tule roots, which were soft and sweet. The lake Indians made an almost pure starch from tule. . . . [The rhizomes were placed] into a large cooking basket and were covered with hot water. The mixture was stirred with the looped stirring stick for an hour or so. Then the rush roots were raked out and were thrown away. In an hour or two, the starch had settled to the bottom of the basket. The water was then poured off. They obtained in this way a cake of starch two inches in thickness (Mayfield 1993, 66-67).

The seeds of hardstem bulrush are sometimes used as food by the Klamath (Coville 1897) and the pollen may have been used by the Nlaka'pamux (Steedman 1930; see also Turner et al. 1990) and elsewhere in North America (Harvard 1895).

Throughout many accounts, the roots and young shoots of tule are described as being sweet when raw. In fact, the leaves are capable of exuding sugar! In their book *The Natural World of California Indians*, Heizer and Elsasser (1980) describe a sugar

that is produced by bulrushes in arid climates. They elaborate that “this ‘sugar’ is the sweet excreta of aphids, which crystallizes and collects on the leaves of certain plants, especially common reed (*Phragmites australis*) and [softstem bulrush]. The plants were cut off at the base of the stem, placed on a flat tule mat, and beaten with sticks to dislodge the crystalline sugar. Winnowing by tossing the sugar and leaf bits on a flat basketry tray yielded the pure sugar, which was then dampened slightly and molded into balls. Such sugar, eaten as a treat or dessert, was a welcome change from the rather pallid staple, acorn mush.” General J. Bidwell similarly describes a “honey” that is gathered from tule by the Native Americans in Nevada (Harvard 1895). The Mono and Paviotso obtained a “candy-like substance” from the dry leaves of common reed (Curtis 1926 15:72).

The tubers of sturdy bulrush were used by the Klamath (Curtis 1924, 13:170) and the roots of an unidentified bulrush were eaten raw or ground into a flour and cooked by the Costanoan (Bocek 1984). Interestingly, I could find no accounts that were definitively describing river or maritime bulrushes, despite the edibility of both species.

Accounts of chufa are more precisely labelled by species. Victor Harvard (1895) in his *Food Plants of North American Indians* describes the small edible tubers of two species of *Cyperus*, the chufa (*C. esculentus*) and the nut-grass (*C. rotundus*) to be “sweet and palatable” and favored by Native Americans, but does not specify which groups. In California, both species are eaten raw or ground into a meal and cooked by the Paiute (Murphey 1990 and Fowler 1989). The tubers of chufa are also eaten by the Costanoan (Bocek 1984) Kashaya, and Pomo. The latter two traditionally eat them raw, baked, or boiled and describe their flavor as “crisp” and “nutty” (Goodrich et al. 1980). The tubers of other *Cyperus* species are traditionally eaten in the Desert Southwest and Southern California by the Acoma, Apache, Kamia, Keres, Laguna, and Pima (Moerman).

## Conclusions

Many bulrush species have edible rhizomes or tubers. Indigenous use of these roots is documented throughout the Pacific Northwest, but the reports are often vague and can sometimes be difficult to attribute to a particular species. I found the flavor of the roots to range from dessert-like sweetness in *Bolboschoenus* to a sustaining starchiness in *Schoenoplectus* with reported savory nuttiness in *Cyperus*. Despite the fine flavor present in *Bolboschoenus*, this was the most difficult genus to parse out in the ethnographic record.

The fresh and estuarine marshes in which bulrushes thrive are some of the most productive ecosystems in the world. This productivity is facilitated by water: flowing water leaches, erodes, and transports soil, detritus, and nutrients from an entire watershed downstream to marshes, where still water allows carbon and nutrients to settle. Standing water and brackish water largely inhibit woody plant growth in marshes, so robust herbaceous species can take full advantage of the abundant,

sun, water, and nutrients to maximize growth. It is no wonder that bulrushes are a traditional breadbasket for Native Americans and migrating waterfowl. Why are they eschewed by modern Americans? These are the fields that need no fertilizing, weeding, watering, or replanting.

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*Abe is an instructor at Western Washington University and enjoys researching indigenous foods. He can be reached at [Thomas.Lloyd@wwu.edu](mailto:Thomas.Lloyd@wwu.edu).*



## Washington Flora Checklist: Chronicling the Richness, Taxonomy, and Nomenclature of Washington's Vascular Plants

by David Giblin, University of Washington Herbarium,  
Burke Museum

Aldo Leopold wrote that “To keep every cog and wheel is the first precaution of intelligent tinkering.” He applied these sentiments to the nascent field of restoration, but of course the broader conservation message was “to keep every cog and wheel.” From my narrow view as a botanist that means ensuring that all of our native plant species, subspecies, and varieties (minimum rank taxa) persist into the future for the duration of their natural existence (species do go extinct through natural processes and causes).

Of course, successful plant conservation efforts require a range of approaches that include protecting habitat, field monitoring, lab/greenhouse experiments, financial support, etc. Fundamental to such endeavors is a comprehensive, taxonomically accurate list of all of the minimal rank taxa that occur over the targeted geographic area. It is not possible to fully conserve anything until one has a full accounting of the entities (taxonomy) and the names by which they are known (nomenclature).

### Brief History of the Checklist

Perhaps because they are also birders (a group renowned for “listing”), Washington Native Plant Society (WNPS) Kruckeberg Fellow Fred Weinmann and University of Washington Herbarium at the Burke Museum (WTU) Research Associate Peter Zika initiated a project in 1998 to list all of the vascular plants, native and introduced, occurring in Washington. To

fully appreciate the enormity of this task it is important to remember that there were no in-house or online databases at that time.

It took four years for Fred, Peter, and a crew of other Washington botanists to compile the list, which included the currently accepted name and formerly used names (synonyms). Long-time WNPS member Sharon Rodman's husband, Paul, had the computer skills to create the checklist database and publish it online from his own server. In so doing this group accomplished an important act of plant conservation—they provided a way to track the future increases and decreases in native and introduced taxa richness in Washington. Similarly, by using taxonomy contemporary at the time, they provided a current account of the evolutionary diversity of the state's flora.

In 2007, I secured WNPS and U.S. Bureau of Land Management funding to hire Ben Legler to overhaul the checklist to facilitate editing, place it under WTU management on a Burke Museum server, and link it to the Plants of Washington Image Gallery (<http://biology.burke.washington.edu/herbarium/waflora/checklist.php>). I have been managing this website on at least a weekly basis ever since.

### Deciding What is Added to the Checklist

Many taxa that are considered native to other parts of the Pacific Northwest are considered native to Washington when discovered here. Most of these additions occur when botanists visit previously unsurveyed areas (e.g., remote alpine locations). However, other regionally native taxa are in fact introduced in Washington. This most often occurs through ornamental planting escapes (e.g., California bay laurel – *Umbellularia californica*) or when people intentionally outplant taxa in Washington that clearly have not occurred here naturally since European settlement of the mid-19th Century. A good example is cobra-



*Lomatium klickitatense* (Klickitat biscuit-root; photo) and *Lomatium papilioniferum* (butterfly-bearing biscuit-root) were recently (2018) segregated from *Lomatium grayi* (Gray's biscuit-root). Both new species names appear on the Washington Flora Checklist. Sharing this information through the Checklist helps botanists keep track of additions and changes to Washington's flora. PHOTO: GARY BRILL

lily (*Darlingtonia californica*), which is native to southern Oregon but is documented from a lake in Skagit County.

The harder situation is determining whether a non-native species is an established/naturalized element of the flora. Kathy Darrow and Walt Fertig have covered this nicely in previous *Douglasia* issues recently. In short, if a non-native taxon is collected in an urban, suburban, or otherwise managed setting that in some way benefits from cultivation, then it does not make it onto the Checklist. I only add taxa that are clearly, or appear to be, reproducing or persisting on their own in uncultivated settings and for which a herbarium specimen exists.

### The Importance of Herbarium Specimens to the Checklist

Almost all of the 3,902 taxa on the Checklist as of May 16, 2020 have a specimen documenting their occurrence in Washington. Specimens are the gold-standard for documenting the flora because the identification serves as scientific evidence that other botanists can confirm or reject. In rare instances we rely on the word of our colleagues that a specimen of a taxon in Washington exists elsewhere. For example, the *Flora of North America* project lists every state in which each taxon occurs, and the criterion for that series is that a specimen must be confirmed from each state listed.

In even rarer circumstances we will accept an image confirmed by a taxonomic expert even though a specimen does not exist. For example, in 2018 Dr. Robert Carr (a *Hackelia* expert) sent me a photo of *Micropus californicus* (cotton-tips; Asteraceae) from Klickitat County. This was the first known occurrence of this species in Washington. Dr. James Morefield in Nevada, a *Micropus* expert, confirmed the identification.

### Sources of Washington Flora Checklist Taxonomy (Classification)

Unlike the ornithological (bird) community, there is no “committee” that decides which taxonomy and names to use. The field botany community in general uses a system of taxonomy that has passed the peer-review process of published scientific literature and has been adopted by a consensus of users. In short this works like this: researchers publish their results in journals and those results make it into regional, national, and international floras. When WTU published *Flora of the Pacific Northwest* 2nd edition in 2018 (<http://www.pnwherbaria.org/florapnw.php>), we were very careful to use both contemporary taxonomic thinking (e.g., put *Penstemon* in the Plantaginaceae and not the Scrophulariaceae) and to be consistent to the extent possible with our peers (e.g., *Flora of Oregon*, *Jepson Manual*, *Flora of North America*). These factors continue to influence how I manage the Washington Flora Checklist.

### How the Checklist is Used

Having an online, editable checklist of all of the state’s vascular plants allows me to add taxa (an average of 10-15 a year over the past 15 years), and change species, genus, and family names as new information becomes available (frequently for

genus and species), assign nativity (native vs. introduced), and record endemic taxa. Audiences for this information include federal agency botanists, weed control practitioners, wildflower guide/natural history book authors, rare plant biologists, and WNPS Plant List authors. For me professionally, it simplifies communication if everyone is using the same taxonomy and nomenclature when discussing Washington’s flora. Ideally, the Washington Flora Checklist serves as a primary reference for determining what is the currently accepted name for a taxon (singular of taxa) that occurs in Washington and whether it is native or introduced.

### The Present and Future Checklist

The coronavirus pandemic has required me to work at home for past two months, during which time I have had a chance to extensively edit the Washington Flora Checklist. This has led to a significant reduction in the total number of minimum rank taxa, both native and non-native. In the case of the natives, we simply did not have specimens from Washington, and other printed floras did not suggest that these taxa should occur here. For non-natives it has been mostly determining that several taxa are not truly naturalized in the flora based on the specimens available.

In 2020, I think that we now have the most accurate count of the total number of wild-growing vascular plant taxa that occur in Washington (about 3,900) since the Checklist was created. This accuracy results from the extensive collecting that has occurred over the past 20 years, the databasing of vascular plant specimens at over 40 Pacific Northwest Herbaria during that time, the availability of that specimen data online at the Consortium of Pacific Northwest Herbaria (<http://www.pnwherbaria.org/data/search.php>), and the 2018 publication of *Flora* 2nd edition.

Our efforts going forward “to keep every cog and wheel” of Washington’s native flora surely benefit from past and present efforts to maintain an up-to-date inventory of what we have.



Green corn lily (*Veratrum viride*) foliage. PHOTO: MARK TURNER

# The Challenges of Early Life for Coniferous Trees of the Pacific Northwest

(Peer Reviewed)

by Cole Lysgaard<sup>1</sup>, James A. Lutz<sup>2</sup>, Margaret R. Metz<sup>3</sup>,  
Janneke HilleRisLambers<sup>1</sup>

coleylsgaard@gmail.com  
541-399-6528

<sup>1</sup>Department of Biology, University of Washington, Seattle, Washington, 98105

<sup>2</sup>Department of Wildland Resources, Utah State University, Logan, Utah, USA 84322-5230

<sup>3</sup>Department of Biology, Lewis & Clark College, 0615 SW Palatine Hill Road, Portland, OR 97219

## Abstract

Climate change may alter germination of Washington's dominant trees through changes in plant-relevant climatic factors such as soil moisture and snowpack. Responses may be species-specific, altering relative abundances of co-occurring species and changing forest structure. We examined this possibility for conifers in Washington State by: 1) quantifying mortality at early life history stages; 2) identifying environmental variables that influence germination and 3) assessing community composition across adult, seed, and seedling stages. We found high mortality rates from seed to second-year seedling stages for all focal species (*Pseudotsuga menziesii*, *Thuja plicata*, and *Tsuga heterophylla*). Climatic factors likely to be altered by climate change affected the germination of all focal species in ways that could further benefit the successful *Tsuga*. However, understory cover consistently influenced germination, suggesting responses to climate change will be complicated by factors like competition. Community composition differed between adult, seed, and germinant stages, with *Tsuga* dominating at all stages. In all, our results imply responses of early life stages to climate change could affect forest communities in the Pacific Northwest (PNW).

**Key Words:** Coniferous forests, recruitment, climate change, Wind River Forest Dynamics Plot

## Introduction

All trees must begin their lives as seeds. These seeds, and the seedlings they germinate into, experience high mortality because they are sensitive to many factors, including climate (Kroiss and HilleRisLambers 2015). Indeed, the differential effects of climate on tree seedling species may influence the composition of current as well as future forests in a changing climate (Kroiss and HilleRisLambers 2015, Ettinger and HilleRisLambers 2017, Das et al. 2018, Zolbrod and Peterson 1999).

Previous work demonstrates that climate change will influence adult trees (Ettinger et al. 2011, Legendre-Fixx et al.

2018); however, less is known about climate impacts on seeds and seedlings (but see Kroiss & HilleRisLambers 2015, Ettinger & HilleRisLambers 2017). To address this, we examined germination of dominant conifers in a low elevation old-growth forest in Washington State. We first quantified mortality across early life stages (from seeds to germinants to second-year seedlings). We then determined how environmental factors, including those likely to be altered by climate change (Salathé et al. 2010), affect germination. These factors were both climatic and biotic, and their role in recruitment has been the subject of previous studies (Mallik and Prescott 2001, Christy and Mack 1984, Harmon and Franklin 1989). Finally, we quantified diversity across three life stages: adult, seed, and germinant, to assess changes in community composition between stages.

## Methods

### Study Site

The 27.2 ha Wind River Forest Dynamics Plot (WFDP) is located in southern Washington (45.8197° N, 121.9558° W) at a mean elevation of 370 m (Lutz et al. 2013). The WFDP is old-growth forest (~525 years) dominated by Douglas-fir (*Pseudotsuga menziesii*) and western hemlock (*Tsuga heterophylla*). Western red cedar (*Thuja plicata*), silver fir (*Abies amabilis*), and Pacific yew (*Taxus brevifolia*) occur at lower abundances (Lutz et al. 2013). Understory indicator species include vine maple (*Acer circinatum*), sword fern (*Polystichum munitum*), Oregon-grape (*Mahonia nervosa*), salal (*Gaultheria shallon*), vanilla leaf (*Achlys triphylla*), and foamflower (*Tiarella trifoliata*) (Lutz et al. 2013). Plant nomenclature follows Hitchcock and Cronquist (2018).

### Sampling

In summers from 2014 to 2017, we surveyed 40 subplots within the WFDP (32 in 2017), each consisting of a 0.127 m<sup>2</sup> seed trap and a 1 m<sup>2</sup> quadrat (Figs. 1 and 2). Seed trap contents were sorted annually to quantify species-specific seed abundances (Kroiss and HilleRisLambers 2015). Seedling

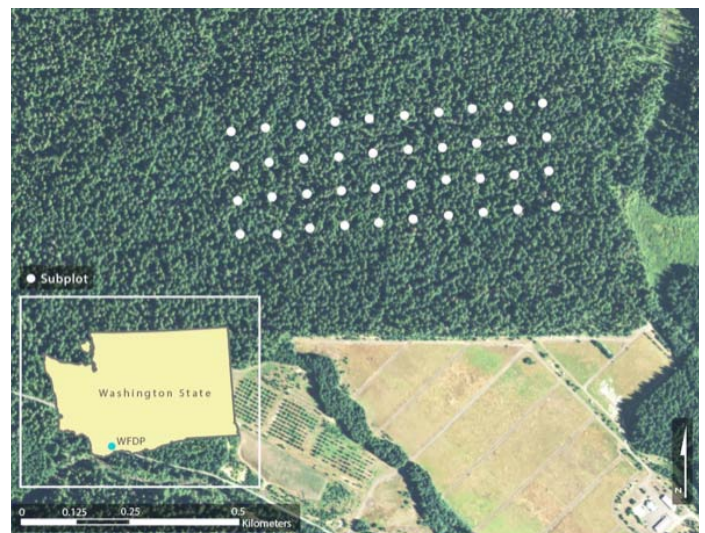


Figure 1: Forty subplots (white dots) were distributed in an 80 m grid throughout the WFDP.

identity, density, and age were surveyed in adjacent quadrats. The WFDP tree demography study provided information on the identity and diameter of all trees  $\geq 1$  cm diameter at breast height (DBH) surrounding subplots (Lutz et al. 2013).

We quantified environmental factors at each quadrat (Table 2). We visually estimated the percentage of each quadrat covered by understory vegetation and nurse logs. We quantified canopy openness using a densiometer (Lemmon 1956) and soil moisture using a Decagon Devices ECH20 probe (Decagon Devices, Pullman, Washington, USA). Finally, we calculated snow cover duration (in days) from temperature readings collected using HOBO temperature loggers (Onset Computer;



Figure 2. Lewis and Clark College students survey a seed trap (left) and seedling quadrat (right).

Bourne, Massachusetts, USA; see Kroiss and HilleRisLambers 2015, Raleigh et al. 2013).

## Statistics

We calculated the density of seeds, germinants, and second-year seedlings from all subplots and years for three focal species (*Pseudotsuga*, *Thuja*, and *Tsuga*) and used analyses of variance and a post-hoc Tukey test to show how these densities varied between stages. We also estimated average mortality from year-subplot specific transition rates.

We fit generalized mixed effects models with binomial error and a logit link to subplot-year seed and seedling data with non-zero seed or germinant values (288 out of 456 possible combinations), to quantify effects of soil moisture, snow duration, canopy openness, vegetation, and nurse logs on germination of focal species. When seed densities were less than germinant densities (23 out of 288 instances), we assumed seed densities equaled germinant densities. Subplot ID and year were random effects, except for *Pseudotsuga* models with only subplot ID random effects due to model convergence issues.

We standardized explanatory variables to facilitate comparison of coefficients, and did not fit interactions due to a lack of power.

We next determined the relative abundance of all tree species at adult, seed, and germinant stages across subplots. For seeds and germinants, we considered averages across all four years of sampling. For trees, we considered relative abundances of trees  $>10$  cm DBH in 2017 within 20 meters of each seed trap. We used these data to calculate Shannon-Wiener diversity at each subplot, and applied analyses of variance with a post-hoc Tukey test to analyze how diversity changed across stages.

All analyses were conducted using R (version 3.4.4) and RStudio (RStudio Team 2016) and the package lme4 (version 1.1.21) for generalized mixed effects models (Bates et al. 2015).

## Results

All focal species densities declined significantly from seed to germinant stages, while declines from germinant to second-year stages were not significant (Fig. 3). Mortality was high for

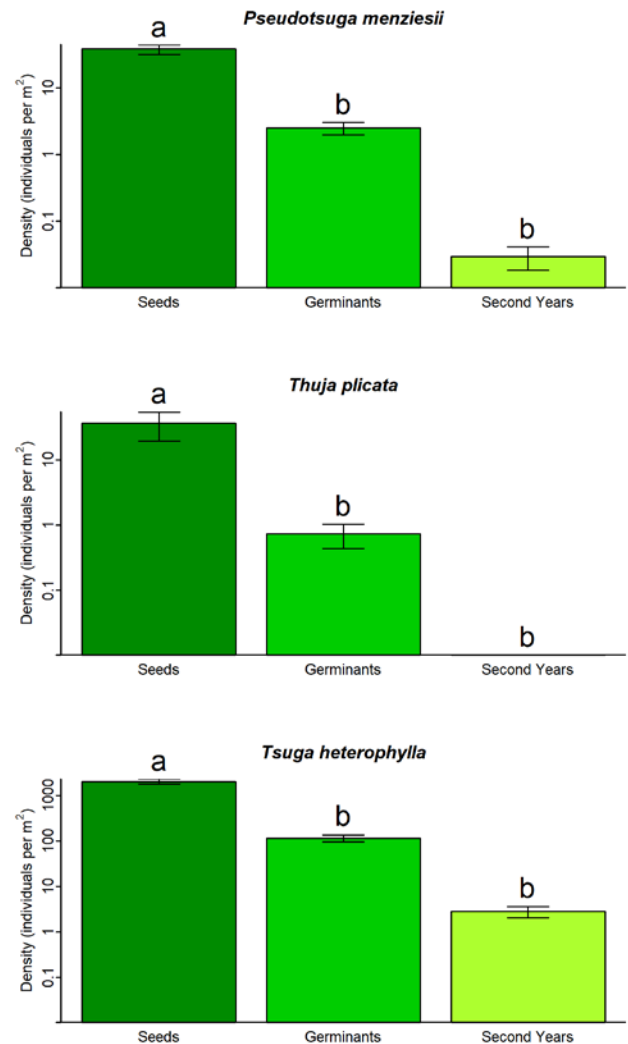


Figure 3. Mean  $\pm$  SE seed, germinant, and second-year seedling densities (log-transformed, 0.01 set as the baseline) for three focal species. Different letters indicate significant differences between means at  $\alpha < 0.05$ .

all species and all transitions (Table 1). Seed density was much higher for *Tsuga* than for *Pseudotsuga* and *Thuja*.

Some effects of the environment on germination were generalizable (Table 2): understory vegetation negatively and nurse logs positively affected germination of all species (although not significantly for all). Other variables had less consistent effects; for example, canopy openness only significantly influenced germination of one species (*Thuja*). Soil moisture positively affected *Thuja*, but negatively affected *Tsuga* germination. Similarly, snow duration positively affected *Pseudotsuga* germination, but negatively affected *Tsuga* germination.

| Transition         | <i>Pseudotsuga menziesii</i> | <i>Thuja plicata</i> | <i>Tsuga heterophylla</i> |
|--------------------|------------------------------|----------------------|---------------------------|
| Seed-germinant     | 88.1                         | 72.6                 | 93.8                      |
| Germinant 2nd year | 95.2                         | 100                  | 86.5                      |
| Seed-2nd year      | 99.4                         | 100                  | 99.2                      |

**Table 1.** Mortality (%) observed during early life stages.

| Coefficient                      | <i>Pseudotsuga menziesii</i> | <i>Thuja plicata</i> | <i>Tsuga heterophylla</i> |
|----------------------------------|------------------------------|----------------------|---------------------------|
| Canopy Openness                  | -0.137                       | 2.205*               | -0.050                    |
| Percent Cover Nurse Log          | 0.351*                       | 1.181                | 0.272*                    |
| Percent Cover Vegetation         | -0.307                       | -4.819*              | -0.383*                   |
| Soil Moisture                    | 0.097                        | 3.807*               | -0.103*                   |
| Snow Duration                    | 0.830*                       | 1.881                | -1.125*                   |
| * significant at $\alpha < 0.05$ |                              |                      |                           |

**Table 2.** Model coefficients describing environmental effects on germination of three focal species.

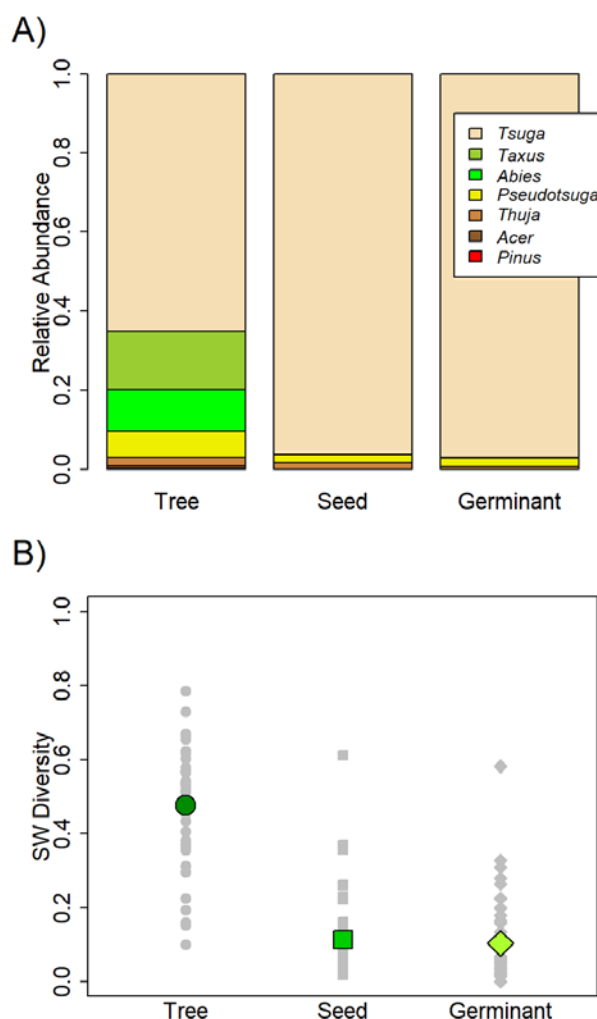
Composition varied from tree to seed to seedling, with *Tsuga* dominating at all stages, especially at seed and germinant stages (Fig. 4A). This was driven by extremely high seed production in *Tsuga* (Fig. 4A – note y axis scale). As a consequence, the diversity of seeds and germinant communities are both lower than that of adults (Fig. 4B).

## Discussion

Our findings suggest early life history stages may strongly influence forest community composition, with at most 8 in 1000 dispersed seeds surviving as seedlings two years after dispersal (based on *Tsuga* mortality, the lowest rate we observed; Table 1). We also found that environmental factors, including those influenced by climate change, explained some variation in germination success, suggesting that these dynamics could structure future forests. Community composition of adults differed from juvenile stages largely because of the high fecundity of *Tsuga*.

Soil moisture and snow duration, both predicted to decrease with warming climates (Salathé et al. 2010), influenced germination of the region's dominant conifers in our study (Table 2). Positive effects of soil moisture and snow duration may occur if seeds and seedlings are protected from desiccation in moist or snow-covered microsites. Conversely, negative effects of these factors could result if moist soils are associated with fungal pathogens or if longer snow duration shortens the growing season (Ettinger and HilleRisLambers 2017). Our study suggests that declining snow and soil moisture with climate change could benefit *Tsuga* over two other dominant conifers (Table 2), although a similar study found opposite effects of soil moisture on *Tsuga* (Kroiss & HilleRisLambers 2015). Regardless of the direction of effects, our results demonstrate climate change could differentially alter germination success, and thus, forest structure.

However, factors other than climate will also influence seed and seedling dynamics. For example, understory cover negatively affected germination, suggesting competitive interactions (Table 2). This is consistent with previous studies documenting negative effects of canopy cover on germination (Kroiss and



**Figure 4.** A) Community composition and B) Shannon-Wiener diversity at tree, seed, and germinant stages. Seed and germinant communities were significantly less diverse than trees ( $p < 0.0001$ ), but similar to each other ( $p = 0.942$ ).

HilleRisLambers 2015, Mallik and Prescott 2001) and inhibitory effects of large trees on the growth of small trees (Lutz et al. 2014). Positive effects of nurse log cover on two focal species are also consistent with previous studies (Christy and Mack 1984, Harmon and Franklin 1989), and may arise because decaying logs maintain higher moisture in dry summers.

Our study adds to others suggesting climate change will have complex effects on forests, both due to species-specific responses to climate and the effects of non-climatic variables (HilleRisLambers et al. 2015, Table 2). For example, the predicted decrease in snow duration in the PNW (Salathé et al. 2010), which will likely be associated with declines in soil moisture, could negatively affect *Thuja* and *Pseudotsuga* while benefitting *Tsuga* (Table 2). However, the effects of climate change on understory cover and nurse logs, which had more consistent effects on germination (Table 2), are unknown. These non-climatic factors thus complicate our ability to predict impacts of climate change on early life stages.

In conclusion, we believe forest composition can be influenced by dynamics at early life history stages. For example, forest community composition in seed and seedling stages was markedly different than that of adult trees (Fig. 4; Larson et al. 2015), presumably due to the high fecundity and lower mortality of *Tsuga* at seed and seedling stages (Fig. 3). With climate change, the differential effects of plant-relevant climatic factors on fecundity, germination (e.g. Table 2) and seedling stages (e.g. Ettinger & HilleRisLambers 2017) may further change the community composition of seedlings and eventually forests. Because seed and seedling dynamics are understudied in comparison to adult trees, we suggest future studies should explore how climate change effects on early life history stages can influence forest composition.

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# Gardening for Hummingbirds

by Walter Fertig

It is hard to find anyone who doesn't like hummingbirds. What isn't there to like about a bird that can hover in mid-air or even fly backwards? Or that lays the smallest eggs of any bird and has, proportionally, the largest heart? Or that pollinates some of our prettiest wildflowers and consumes large quantities of pesky mosquitoes and gnats—all for free? Or that is adorned in all sorts of iridescent green, orange, red, and purple plumages? Best of all, hummingbirds are not especially shy of people and will readily visit our urban and suburban landscapes, so long as we provide for their basic needs.



Anna's Hummingbird (*Calypte anna*). PHOTO: ROBERT D. MCMORRAN, U.S. FISH AND WILDLIFE SERVICE

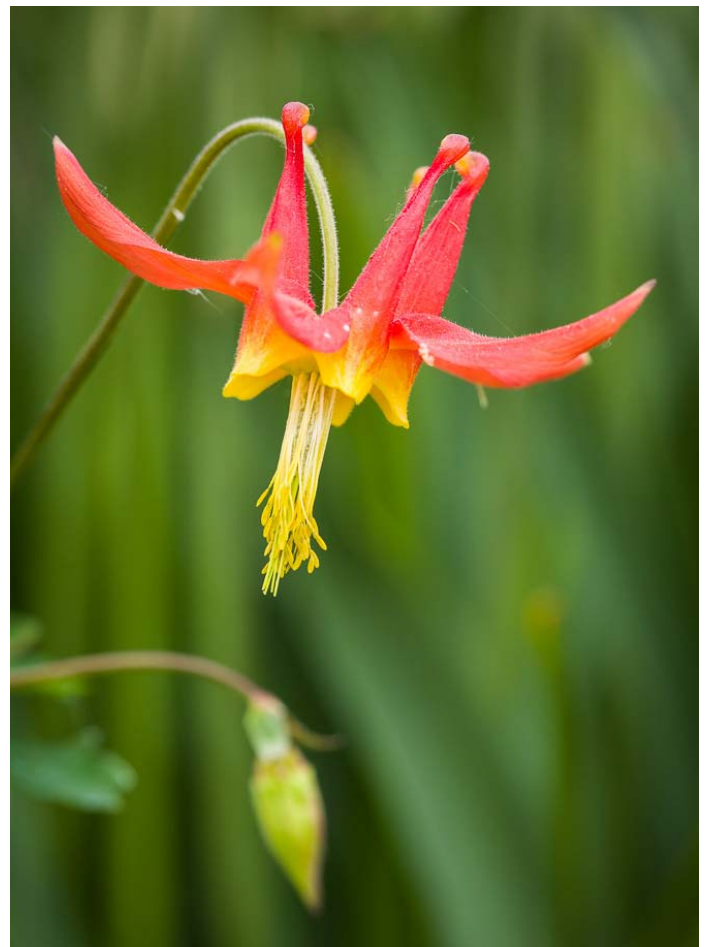
Like all wildlife, hummingbirds need three basic things to survive: food, water, and a secure place to rest and nest. In nature, hummingbirds derive much of their sustenance from nectar. Produced by flowers as a bribe to entice visitors to pick up and unload pollen needed for fertilizing the next generation of seeds, nectar is like a high-energy sports drink—loaded with carbohydrates. These carbs help power a hummingbird's rapid daytime metabolism and bursts of speed (in flight, a hummingbird strokes its wings up to 90 times per second and can attain top speeds of 66 miles per hour). A well-balanced hummingbird diet also needs protein, which comes in the form of small insects and spiders. Hummingbirds perch on branches in wait of flying insects, much like a flycatcher, before taking off to snatch their prey in mid-air. Rather than catching bugs with their slender, forceps-like bills, recent slow-motion photography studies show that hummers can open their mandibles quite widely and form a surprisingly wide gape, not unlike their distant relatives, the swifts.

Hummingbirds have almost no sense of smell, relying instead on their exceptional vision to locate flowers for feeding. They are especially fond of red or orange flowers, but will also visit blue, pink, or white blooms (though they tend to avoid yellow ones). Flowers adapted to hummingbird pollination typically have elongate, cylindrical floral tubes and secrete precious nectar at its base or in a terminal spur or sac. Hum-

mingbirds use their long beaks and tongues to lap up the nectar reward, and in the process get their heads liberally dowsed with pollen from anthers borne near the rim of the flower tube. This pollen then gets deposited on receptive stigmas when the hummingbird repeats the process at another flower. Hummingbirds may visit 1,500 flowers in a day, so a lot of pollen is getting moved around.

To supplement their nectar diet, hummingbirds will also feed on sugar-water in specially designed hummingbird feeders. Some older gardening books recommend using a honey-water mix, but honey ferments quickly and can grow a fungus that is harmful to hummers. A four parts water to one part table sugar mixture that is either boiled or stirred until the sugar is completely dissolved works best (serve chilled). In hot weather, hummingbird juice can also go bad, so it is best to wash the feeder or refresh the fluid frequently.

Water and secure nesting and foraging habitat can also be provided by the careful hummingbird gardener. Hummers will enjoy a birdbath, especially if there is somewhere they can perch with their ridiculously undersized feet. Alternatively, a mister or waterfall will allow them to drink while on the wing. Hummingbirds prefer relatively open areas for feeding, but also like a few scattered trees and shrubs for perching and nest-building (too much brushy cover, however, encourages their predators). Willows, thistles, dandelions, milkweeds, and other



Red columbine (*Aquilegia formosa*). PHOTO: MARK TURNER

plants that produce fluffy or fuzzy down provide raw materials for hummingbird nests.

Even a modest yard can become a beacon for neighborhood hummingbirds, if the basics of good habitat are provided. Ideally, a hummingbird garden should include a variety of species that will be in flower over the course of the spring and summer to provide an uninterrupted food supply. The following are a few native wildflowers that are especially well-suited for attracting hummers in Washington:

**Red columbine** (*Aquilegia formosa*). Columbine flowers are specially built for hummingbirds, with their five nectar-packed spurs. Red (or Sitka) columbine occurs in all the mountain ranges of the state except the extreme northeast and in lowland settings in the Puget Sound and coast. In the wild, it grows in moist meadows, streambanks, and rockslides. It can be easily propagated by seed sown in the fall in shallow, well-drained soil. Sixty days of cold stratification may be helpful, though some gardeners have success without any treatment. Wild plants transplant poorly, so should be left alone. Most columbines flower from late spring to late summer. Taking a cue from hummingbirds, the Gitksan nation in British Columbia used red columbine nectar to make candy.



Scarlet gilia (*Ipomopsis aggregata*). PHOTO: MARK TURNER

**Indian Paintbrush** (*Castilleja* spp.). The actual corolla of an Indian paintbrush is typically green, but is enclosed by brightly colored sepals or leafy bracts that have assumed the role of attracting pollinators. Paintbrushes are hemi-parasitic, meaning that they derive some (though not all) of their nutrition by parasitizing the roots of other plants. This can make them difficult to transplant from the wild (which we shouldn't do under normal circumstances anyway). Paintbrush can be grown from seed, provided appropriate host species are also present in the garden. In western Washington, orange-flowered species such as harsh paintbrush (*Castilleja hispida*) or scarlet paintbrush (*C. miniata*) might work in dry and moist sites, respectively. In the Wenatchee and Ellensburg areas, Elmer's paintbrush (*C. elmeri*) is a yellow, orange, or red-flowered species adapted to local conditions. Gardeners in eastern Washington might have better luck with the yellow-flowered Thompson's paintbrush (*C. thompsonii*) if it can be grown with sagebrush or rabbit-brush. Paintbrush seeds usually require at least 30 days of cold stratification and are best planted in the fall on the surface to facilitate light exposure.

**Larkspurs** (*Delphinium* spp.). Although not red or orange, hummingbirds do show a strong affinity for blue or purple-flowered tall larkspurs, such as Sierra larkspur (*Delphinium glaucum*). Relatives of the columbine, larkspurs also produce ample nectar in a single spur formed by the uppermost sepal. The tall larkspurs tend to grow in mountain meadows or streamsides in the wild, and so tend to do best in partially sunny gardens with consistently moist but well-drained soils. A native of the Columbia River Gorge, poison larkspur (*D. trollifolium*) will grow in the Puget Sound area and is an interesting accent plant with broad, rounded (*Trollius*-like) basal leaves. This species can monopolize a garden, if you let it (and as the common name suggests, don't eat it). Shorter larkspurs, like two-lobed delphinium (*D. nuttallianum*) are adapted to drier environments and would do well in more arid eastern Washington.

**Scarlet gilia** (*Ipomopsis aggregata*). This biennial or short-lived perennial has long-flaring tubular flowers that are red, pink, salmon, or white and can grow in a variety of habitats. It can be purchased from a native plant nursery or grown from seed in sunny, well-drained sites. Once established, it readily re-seeds.

**Flowering currant** (*Ribes sanguineum*). For those in need of some flowering shrubs, this native of western Washington and the Cascades is hardy in many garden settings. It does prefer well-drained soil and sunny sites, but can also grow in shade. The hanging clusters of deep red flowers are well-positioned for hummingbirds to sip while in flight.

**Honeysuckles** (*Lonicera* spp.). True to their name, honeysuckle flowers offer a sweet nectar reward. Twinberry (*L. involu-crata*) is a shrubby species adapted to moist, shady stream sides in the mountains of Washington. In the garden, it can grow in sun or shade but will require extra water. The yellow tubular flowers of twinberry are not especially showy, but after the corolla falls and the fruits mature into black berries the sepals

enlarge and become bright red and fleshy. The related trumpet honeysuckle (*L. ciliosa*) is a common native vine with a large umbel of orange tubular flowers above a single, shield-like bract (actually a pair of fused leaves). This species is under-utilized in garden settings, given its unusual growth habit and stunning blooms.

For their size, hummingbirds are remarkably intelligent and can quickly learn where good habitat is located and return to the same spots year after year. Some gardeners worry that providing sugar water and attractive plants will entice the birds to stay too long in the fall, putting them at risk from unseasonably cool weather. They need not worry about three of the four hummingbird species regularly found in Washington (Black-chinned, Calliope, and Rufous) which have the good sense to winter in Mexico or the Gulf Coast. Only the Anna's hummingbird lives year-round in the greater Seattle area—largely due to supplemental feeding. Anna's have actually been expanding their range north out of California for several decades, and now breed as far north as SE Alaska. If you happen to have an Anna's hanging around in the winter it is especially important to keep the sugar water supply going and to keep feeders from freezing (a string of Christmas lights provide just enough heat and add a festive glow).

Some might question the intelligence of Anna's hummingbirds for choosing a gray, rainy winter in Seattle over the Mexican Riviera. But I think these tiny birds are actually outsmarting us. After all, it is not as though we have tricked them into feeding us 12 months a year!

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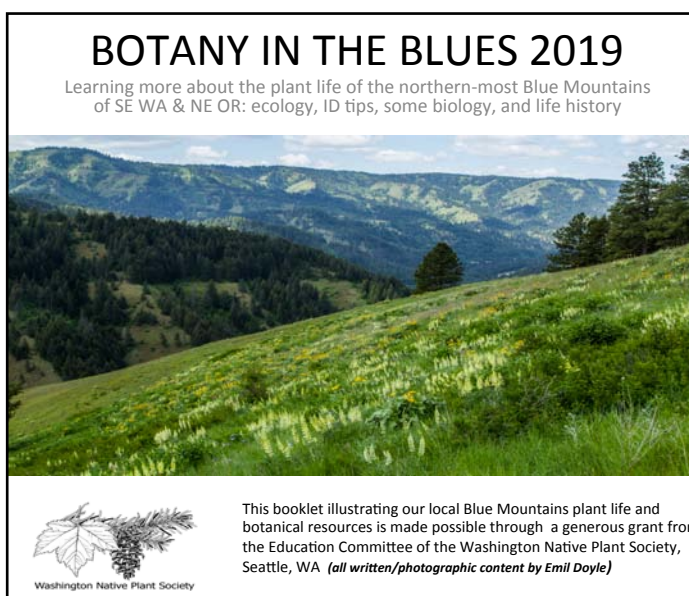
## Botany In The Blues 2019

*Connecting people to the plant diversity wonders in THEIR northern-most Blue Mountains*

by Emil Doyle

After completing a nine-year work stint in New England, I relocated back to Washington State and embraced Walla Walla and the Blues as my new home. During that time away, I took advantage of The Native Plant Trust's Field Botany Certificate Programs. I began learning how to monitor rare plant sites, which left me eager to add my voice to those already trying to draw attention to our local, threatened native plant heritage.

I wanted to design a region-specific field event that would be FUN, attract area residents of all enthusiasm levels, and simultaneously find ways to communicate complex plant-related principles, without watering them down.



BITB booklet cover: A typical spring-time meadow on Indian Ridge, laden with sulfur lupine (*Lupinus sulphureus*). PHOTO: EMIL DOYLE

Forging partnerships to execute the inaugural event of Botany in the Blues in May 2018 was a very satisfying process. The Blue Mountain Land Trust was eager to add a botany offering to its educational program series called "Learning on the Land". WNPS member Darcy Dauble connected me with the owner of that first event site, a beautiful, conscientiously managed, mid-elevation tract, featuring three basic plant communities and easy, early-season access to well over 70 plant species. Darcy also volunteered as co-leader in the field.

Any project has its challenges. Some students have a resistance or a short attention span relating to scientific details. There's a flipside—if those details can be shown to be 'unexpectedly stunning', they may cease being 'gory'!

Also, individual student takeaways are unpredictable, based on their own curiosity levels. But with support of a **WNPS Education Grant**, I was able to produce a 55-page, easy refer-



Student examining the delicate flowers of the inflorescence of side-flowered miterwort (*Ozomelis stauropetela*). PHOTO: BLUE MOUNTAIN LAND TRUST

ence booklet for the students to re-visit the curriculum on their future personal journeys.

The aim of the booklet is to facilitate recognition and identification of our Blue Mountain plant diversity, provide quick reference to the principles that influences it, and to introduce tools to acquire more information.

Highlights of the booklet approach:

- Uses Level IV eco-regions as a jumping off point
- Introduces the plant community concept to help students fine-tune their surroundings
- Provides an abridged roadmap to the groups of “living land plants”
- Contains discussion of monocots, dicots, and the gist of current views about angiosperm relationships
- Offers useful ID tips for trees/shrubs, wildflowers and graminoids
- Covers plant morphology and basic botanical terminology
- Includes a brief introduction to lichens

Extensive additions are planned for the 2020 booklet and new events in summer 2020 are anticipated. Students will select a short indoor lecture event to go over the booklet materials, and then will select one (or more) of four field events dates. This should help satisfy wait-list demand, allow for more

exploring time in the field, and help keep group sizes at manageable levels.

The preparatory photography, writing, and fieldwork, and the collaborations and generousities of local naturalists and scientists, have been a great joy to me. Let’s hope these efforts play some small role to better prepare the region’s populace to understand and grapple with current and future environmental challenges.

*Emil is a field botanist and naturalist living in Walla Walla, and dedicated to discovering, photographing, and sharing the wonders of the plant life of the Blue Mountains. He can be reached at [emildoyle@gmail.com](mailto:emildoyle@gmail.com).*



## Ahead of the Bulldozers

*by Anne Laird*

Beside the old highway I gather plants  
with my hands, screwdrivers, a tire iron,  
whatever I find in my car.

I bag wild rhodies less than a foot tall,  
baby red huckleberry,  
an Oregon grape so new its leaves are petal-soft.

One trillium I find in duff so deep  
my shoulder bumps the ground as I dig.  
Following the stem, as if it were a geoduck neck  
sunk along the edge of a low summer tide,  
three fingers find the rhizome  
just before my reach runs out.

*Anne is a poet and gardener on Bainbridge Island. She enjoys observing and writing about native plants, and encourages their planting in her cohousing neighborhood of 30 homes. She can be reached at [aynabet@msn.com](mailto:aynabet@msn.com).*



## Conservation Amidst Cancellations

by Becky Chaney, WNPS Conservation Committee Chair

Conservation on the land is often accomplished off the land, inside at our office desks or volunteer tables. In March, Covid-19 event cancellations landed in my email inbox side-by-side with message alerts regarding WNPS conservation concerns and opportunities. WNPS chapters, related agencies, and concerned individuals enable the Conservation Committee to function statewide. Whatever the origin, every alert is assessed for relevance to the WNPS mission, timeliness, and appropriate action.

On March 24, the Wenatchee Valley Chapter (WVC) alerted us of a significant proposed expansion of the Mission Ridge Ski Resort. Skiers compete with trees for high elevation space on Washington's mountains. Whitebark pine (*Pinus albicaulis*) high elevation habitat is shrinking as the climate warms.<sup>1</sup> The pine is a US Forest Service sensitive species and a candidate for federal listing as threatened or endangered. The Environmental Assessment recognizes that "The whitebark pine in the Project Area is unique in its low elevation in relation to the species' general distribution and its low apparent susceptibility to blister rust."<sup>1</sup> Forest Service has identified blister rust-resistant candidate trees in the reproductive area at Mission Ridge. To mitigate impacts to existing whitebark pines, the Mission Ridge proposal requires up to 1,305 seedlings be planted, but this may not adequately protect the existing trees.

Without rigorous protection, the Mission Ridge Expansion Project threatens the area's whitebark pine resource value. This population is a valuable seed source for genetic diversity in the propagation of seedlings for out-planting. It is critical that the seed source is protected. WNPS has urged the Forest Service and Chelan County to require detailed stand delineations so that ski run designs and structure placement minimally affect healthy trees.

On March 26, Forterra requested support in securing purchase funding for a 6.5-acre undeveloped forested parcel, referred to as the Arrowhead property, that lies immediately north of Saint Edward State Park. Consisting primarily of mature Douglas-fir, western hemlock, western red cedar, and madrone,

the property adds close to 300 feet of additional shoreline to the park. The lush native understory includes sword fern, salal, Oregon-grape, and vine maple. It also contains parts of two unnamed streams that combine to form a larger stream that leads off the property and connects to Lake Washington. Riparian vegetation includes salmonberry, maidenhair fern, and devil's club. Wildlife including river otter, deer, and bobcat have been observed in the adjacent park and likely inhabit the property.

This is a park that is frequently used by WNPS Central Puget Sound members. It is also used by students from University of Washington's Seattle and Bothell campuses, and was the site of a very successful symposium on invasive holly. The Washington Native Plant Society (WNPS) strongly supports Forterra's grant request for Conservation Futures funding that, combined with grants from the Washington Wildlife and Recreation Program, will enable conservation of the Arrowhead property adjacent to Saint Edward State Park in Kenmore.



Whitebark pine (*Pinus albicaulis*) on the Okanogan-Wenatchee National Forest. PHOTO: MARK TURNER

By April 14, three additional requests for action had arrived. First, an individual inquired about possible wildlife impacts on a parcel dominated by pasture grass and slated to become a park. The Conservation Chair replied that over time the benefits would likely outweigh the temporary disruption as the new plan includes dedicated and restored wildlife areas. Second, two WNPS members contacted the Conservation Committee requesting support for a city purchase of a parcel proposed for development. After an initial assessment by the Conservation Committee, the members were referred to their local WNPS chapter for further input and possible support. And finally, an agency requested WNPS support for a restoration project at Lower Crab Creek in eastern Washington. After reviewing and providing suggestions on the proposal, WNPS has agreed to submit a letter supporting the agency's grant request.

Obviously, we could use additional help! How can you take part? Your chapter may need a Conservation Chair. If interested, get in touch—we'll let you know what it takes. Not ready to jump in? We expect to offer at least two new webinars next fall: How to be an Advocate for Native Plants and Understanding Advocacy, both online. Look for an announcement of these as the rains start to fall and the days shorten. We hope you'll join us!

Becky Chaney, WNPS Conservation Chair (drawn from the Conservation Committee approved Mission Ridge Advocacy letter written with support from Connie Mehmel and the Wenatchee Valley Chapter Board). Becky can be reached via e-mail at [conservation@wnps.org](mailto:conservation@wnps.org). She is always happy to hear your conservation interests, concerns, and comments. Ideas for webinars are also welcome.



<sup>1</sup> Mission Ridge Expansion Project: Draft Environmental Analysis. Page 66. February 2020.

# Cowiche Canyon Conservancy Announces Success of Uplands Capital Campaign

by Celisa Hopkins, Executive Director, Cowiche Canyon Conservancy

Cowiche Canyon Conservancy (CCC) has announced the success of a Capital Campaign to purchase and protect 245 acres of private land in the heart of the Cowiche Canyon Uplands. The purchase, which is set to close this fall, will preserve one of Yakima's most accessible wild spaces and outdoor recreation areas.



Grass widows (*Olysinium douglasii*) among spring whitlow grass (*Draba verna*) on the Cowiche Canyon Uplands. PHOTO: MARK TURNER

CCC needed to raise \$1,248,000 by September of this year. Since opening the campaign to the public in January, CCC received hundreds of individual donations for the cause. Donations came from both the organization's long-standing support network as well as from many first-time supporters. In late April and early May, a few large gifts allowed the organization to meet its fundraising goal ahead of schedule.

We're thrilled and grateful to witness the community's overwhelming support to protect this land. CCC has been working to acquire this property for decades and it is so exciting to see it come to fruition. Yakima is incredibly generous. I am especially impressed with our community's support over the last month, when so many individuals and businesses have been financially impacted by the pandemic.

Some of the most beloved and used trails of the Uplands run through the newly protected property. The land will preserve the existing trail network as well as quality shrub-steppe habitat. The land offers sweeping views of the Yakima Valley and miles of hiking and biking trails meandering through sagebrush, grasslands, and flowering meadows.

Those interested in more information about the property and the campaign are invited to contact CCC at (509) 248-5065 or [info@cowichecanyon.org](mailto:info@cowichecanyon.org). CCC is a private, non-profit land trust committed to protecting shrub-steppe habitat and

connecting people to it via recreation and education opportunities. CCC owns and manages 5,000 acres of land and provides nearly 30 miles of trails for outdoor recreation.



## Remembering Terri Knoke and Lou Messmer

Along with all of the other challenges that we have faced this spring, WNPS was saddened to learn of the passing of two influential and renowned members — Terri Knoke and Lou Messmer. Both Terri and Lou are WNPS Kruckeberg Fellows, past board/committee members and/or chairs, and long-time and committed members of our organization — Terri most active in the central part of the state and Lou on the coast. Both left well-deserved botanical legacies that will continue to serve and grow the native plant community in our state. WNPS has received many remembrances, gifts, and tributes in their names and are pleased to share a few of them in this issue of *Douglasia*.



## Terri Lee Knoke

Terri Lee Knoke, 67, passed away on April 16, 2020, at her home in Burbank, from complications due to metastatic breast cancer. She was born on December 16, 1952, in Palo Alto, CA, to Alton and Evelyn Knoke. She married Gary Seymour in 1973, and they had one daughter, Lorraine. The couple divorced in 1979.

Terri was a champion shower of Arab and half-Arab horses during her teen years, winning first place at the 1970 Evergreen State Fair in Purebred English Pleasure Riding among many other awards. With her father and first husband she built houses during her twenties. Terri graduated from the University of Washington in 1985 with a degree in chemical engineering and moved to Burbank to work for the Boise-Cascade Paper Company.

She met her husband Mark in 1987 and the couple married one year later.

In 1996, she left full-time employment to become an engineering consultant working in paper mills and other industries across the country.

In 2014, she turned her attention to botanical art. After having two submissions of technical plant illustrations accepted by the University of Washington publication, *Flora of the Pacific Northwest*, she turned to watercolor painting. In 2017, she entered a nationwide contest sponsored by the University of Colorado, Boulder, for paintings of cannabis plants. Her 21st-ever watercolor painting, "Harlequin Seduction" of a *Cannabis indica* plant, won Best of Show.

Terri was very active in environmental causes. She strove to bring like-minded groups together in public events to increase the knowledge base of these groups and to increase public awareness of the unique environment of the Columbia Basin shrub-steppe habitat.

Some of Terri's many hobbies included gardening, especially the use of native plants, camping, hiking and backpacking, birding, and sudoku puzzles.

She is survived by her husband Mark Mease, of Burbank, and her daughter Lorraine Seymour, of Prosser. She was loved and will be missed by many.

There will be no traditional memorial service. Terri's ashes will be mixed with soil and clay, along with the seeds of native plants, then scattered in the Columbia Basin that she loved so well. In lieu of flowers, Terri requested that people make a contribution to the Cowiche Canyon Conservancy at [cowichecanyon.org](http://cowichecanyon.org), a cause that she truly cherished.



## Tributes to Terri Knoke

One of the brightest moments in my life was the introduction of Terri by her daughter Lorraine Seymour. Lorraine was program director for Columbia Basin Chapter of WNPS. Terri joined me leading field trips for our native plant chapter in 2017. Terri's passion for native plants and our environment was infectious. Because of Terri my world expanded to include Rare Care, volunteer activism with the National Wildlife Refuges, and the Friends of the National Refuges. My most memorable experience was a two-year study and search for rare plants on the Columbia Wildlife Refuge near Othello. For me the highlight was when Terri discovered our only reddish Indian paintbrush in the Columbia Basin, *Castilleja minor* or seep paintbrush. Not only was Terri my best friend, but, I considered her my "Steppe Sister." I am with her now when visiting our special outdoor places. She will truly be missed by many. — *Ernie Crediford, Columbia Basin Chapter*

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When Terri Knoke turned to look me in the eye, smiled, and laughed a bit, I couldn't refuse her request. It was during my first Native Plant Appreciation Week (NPAW) Committee Zoom meeting in December 2018. Listening to the committee members' talk, I felt an immediate connection to Terri. I was

brought up to date with what the committee hoped to accomplish for the April 2019 NPAW event. It was announced that the chairperson had resigned, and that's when Terri turned to me with that smile and said, "Gail, what about you?" I said that I would think about it, and a day or two later I called Denise Mahnke and accepted the position. As we met often, I began working with Terri on letters and we emailed and spoke on the phone. We had similar thoughts about advocacy and many other topics. We became, in Terri's words, "Spirit Sisters."

After Terri became ill, we spoke frequently about the future of WNPS and the advocacy of our beloved native plants. She

told me about the Cowiche Canyon Conservancy's fundraising attempts to acquire another 245 acres of shrub-steppe in the Uplands of Cowiche Canyon. After she passed, I made a contribution in her memory. Saturday the Conservancy sent me an email saying they had met their goal and were about to purchase the land. I could feel Terri's smile. While we only met on Zoom, Terri and I truly were Spirit Sisters. I plan to continue to advocate for native plants for both of us. — *Gail Sklar, South Puget Sound Chapter*

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Terri began participating in the University of Washington Herbarium Forays in 2016, and was a regular participant through 2019. Three things stood out immediately from Terri's company—her endless energy, her passion for learning about the flora, and her culinary expertise in baking. Terri was among the early

risers and always up for the most challenging of the day's collecting outings. Upon return she would set up her microscope (yes, she packed one with her), to study the things she found that day that she didn't know. She set unparalleled standards in the Foray's dessert contest: one year she recreated a Dana Visali photo in the Plants of Washington Image Gallery of two botanists on their bellies observing *Eritrichium argenteum* (pale alpine forget-me-not); another year she decorated a cake with the technical floral character differences she had recently learned for distinguishing between two *Collomia* species. Terri's impact on the Herbarium is enduring through her collections, her camaraderie, and her illustrations in the 2nd edition of the Flora of *Lomatium knokei*, named after her uncle and WNPS Fellow Don. — *David Giblin, University of Washington Herbarium, Burke Museum*

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Terri Knoke on the trail in the shrub-steppe.

I first met Terri and her husband Mark on a “Wilderness Wildflower Backpack” class that I was teaching for The North Cascades Institute about thirty years ago. We hiked along Sawtooth Ridge for five days, looking at the characteristics of flowering plant families; Terri said that it was a little too technical for her, but she somehow survived it. Then, many years later a deep passion for botany suddenly grabbed her, and she took off like a rocket in learning the native flora and working on conservation. One project we worked on together several times was monitoring *Eriogonum codium*, Umtanum desert-buckwheat, on a ridge above the Hanford National Monument. I remember one day up there especially well, because the wind was blowing so hard that it was knocking people over. When people started falling on the rare plants we had to quit.

Mostly, though, I thought of Terri as an artist. Though she worked through a professional career as a chemical engineer and became a dedicated botanist and conservationist later in her life, her discovery of her artistic dimension was an inspiring transition to watch. I saw her drawing of *Cannabis indica* when it was in process and had never seen anyone apply such detail and focus, literally drawing under a microscope. I am sorry that her life was not longer, she was doing a lot of good things in those later years.

When I retired a couple of years ago, Terri gave me one of her earliest paintings of lupine along a fence row in the grasslands of eastern Washington. It reminds me of her, and some of the beautiful places where we were lucky enough to botanize together. — Joe Arnett, WA Natural Heritage Program botanist, retired

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I first met Terri and her daughter Lorraine while doing surveys of the rare plant, Umtanum desert buckwheat. Terri’s enthusiasm and curiosity about the natural world was infectious, and allowed easy conversation and an instant bond over our shared passion for conservation of the unique plants of the arid shrub steppe of the Columbia Basin. Terri’s energy and passion led her to become an active volunteer with the National Wildlife Refuges and a member of the “Friends of the Mid-Columbia National Wildlife Refuges.” For me, as a biologist for the Refuge System, it is a reality that it is difficult to know everything about all of the aspects of biology and ecology across a vast area under our management. I am trained as a Wildlife Biologist and therefore, my botany skills have been learned on the job over time. And I think this is also where Terri and I bonded. Terri’s professional life as a chemical engineer didn’t necessarily involve plants or conservation, but her skills in “learning” transferred and she and I both became plant “experts” through experience. Further, I can say I rely so much on many of my volunteers to bring expertise and talents that compliment my work, because there is no way I can do it alone. Terri was very detail oriented, wonderful with data, great with people, and good at asking curious questions. Like many of my volunteers, Terri’s helpful nature and passion helped me to get more work done than I ever could have on my own.

She expanded her help to include surveys of the White Bluffs bladder pod, surveying for rare plants at Columbia National Wildlife Refuge, and helping with pollinator gardens at both McNary and Toppenish NWRs. She helped with habitat restoration and enhancements and she even jumped in to help with artificial burrows for burrowing owls. Terri also was instrumental in many educational and outreach events on our refuges, such as Native Plant Appreciation day and wildflower walks highlighting native plants on refuge lands.

In addition, and more important, while working together and driving to various locations we would chat and share about our lives. We developed a real friendship that was beyond just “work.” Terri understood very well that working for the government can be a thankless job, and that resources to conduct projects are generally scarce, regulations and paperwork are often overwhelming, and desk work and deadlines can be a slog that doesn’t always fuel the soul. She supported me personally numerous times through well-timed phone calls, conversation, lunches of delicious French food, and even gave me the gift of an original painting (which I treasure). I can’t express how much her presence, during events like the long “government shut down” and the internal reorganization of our Refuge Complex, gave me comfort and hope. Terri always cheered me up and kept me focused on the unique resources that are under our care and need management attention. And that’s what really counts! This quote from Willa Cather from *My Antonia* fits with how I imagine Terri now: “*I was entirely happy. Perhaps we feel like that when we die and become a part of something entire, whether it is sun and air, or goodness and knowledge. At any rate, that is happiness; to be dissolved into something complete and great.*” — Heidi Newsome, Wildlife Biologist, U.S. Fish and Wildlife Service

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My first recollection of Terri was a phone call I received from her back in 2016. Although I did not know her at the time, I knew her name because her uncle, Don Knoke, also volunteered for Rare Care. It quickly became clear over the course of the one-hour call that Terri was not only interested in becoming a Rare Care volunteer, but she wanted her whole community of native plant enthusiasts to become volunteers too!

That phone call kicked off a 3-year collaboration with Terri to revitalize Rare Care’s activities in the Tri-Cities area. Terri became Rare Care’s unpaid volunteer coordinator for the Tri-Cities area. She helped recruit 17 people for the 2017 Rare Care training, organized outings to monitor rare plant populations and helped set up trainings each year.

In 2018, Heidi Newsome, the refuge biologist for the Mid-Columbia River National Wildlife Refuge Complex, contacted Rare Care about conducting botanical surveys at Columbia National Wildlife Refuge to look for new populations of rare plants. Terri enthusiastically picked up the assignment, developing detailed plans to survey the area based on reconnaissance

surveys and aerial imagery. She also researched the list of potential rare plants that might occur in the area, developed a slide presentation on how to identify the species and provided it to volunteers participating in the surveys. Through sheer determination and infectious enthusiasm, she recruited 12 volunteers to participate in the surveys who contributed over 1,200 hours to the effort in two years! To say that Terri was a force of nature understates the impact she can have when she puts a goal in her crosshairs.

Although Terri had so much more she wanted to do for native plants, her efforts will continue to benefit native plant for years to come. She advocated tirelessly for plant conservation, preparing educational material, giving presentations to her community, and connecting people who shared a love of plants. Her passion for plants inspired her fellow field partners to become active participants in plant conservation. I am truly honored to have had an opportunity to work Terri over these past several years and cherish the friendship we built through a shared love of native plants. — *Wendy Gible, program manager, WA Rare Plant Care and Conservation*



## Louis Messmer

Louis Messmer, 99, died April 28, 2020 in Hoquiam, WA. Lou was born to home-steaders Fred Messmer and Helen (Holmes) Messmer in Forsyth, Montana on June 5, 1920. At the age of three his family moved to Aberdeen and established a home in Finch Farms on Aberdeen's south side.

He attended a two-room primary school-house, St. Mary's School and graduated from Weatherwax High School 1937. He was President of "Side Hill Dodgers" hiking club in high school and lettered in swimming. These became lifelong activities of his. Graduating Grays Harbor Junior College 1939, he completed his bachelor's degree at the University of Washington.

After enlisting in the naval reserve he received a commission as an ensign deck officer in 1942, joined the fleet for active duty in January of 1943, and served on the aircraft carriers USS Saratoga and USS Randolph. Upon returning from 18 months service in the South Pacific he married Anna Kovar on July 31, 1944 at Treasure Island, California where Ann was stationed as a WAVE telegrapher second class. Their romance continued until her death in 2011.

Lou completed his Masters in Botany at the UW after his Navy service. His first teaching position was in the public school at the Simpson Logging Company's newly formed Camp Grisdale. He was principal, teacher, and bus driver from

1947-1950. For four summers he served as a ranger in the Olympic National Park at the Queets, Hoh, and Lake Crescent. Beginning in 1953 he taught botany, biology, marine biology, microbiology, and zoology at Grays Harbor College for 33 years.

He retired in 1986 but continued to teach a Spring Botany course for 16 years as Emeritus Faculty. Lou remained active in many local efforts to identify and protect sensitive ecological habitats throughout western Washington. As a wetland consultant he completed over 70 projects in the Grays Harbor area. He was a Founding Fellow of the Washington Native Plant Society and a charter board member of the Washington State Nature Conservancy.

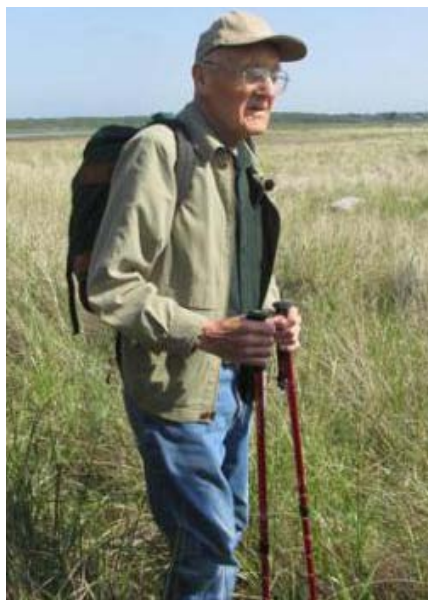
Lou and Ann raised six 'free range kids' in Bear Gulch, outside of Aberdeen. They grew or foraged for much of their food including keeping honey bees and ducks. The Messmer family rarely missed a razor clam dig. The garden included a wide collection of native plants.

Lou and Ann travelled the world and hosted 28 Elderhostel programs highlighting Washington's natural environment. He was a board member of the Grays Harbor Community Clothing Bank and volunteered ever since Ann and others opened it in the early 1970's. The Clothing Bank building was recently

dedicated to Lou and Ann Messmer. Lou served as a member of the Grays Harbor Noxious Weed Board for 20 years until 2019. In 2014 the Aberdeen Daily World named him Harborite of the Year and in 2016 he shared the Polson Museum Pioneer of the Year Award with Eugene Stensager. As a member of the St. Mary's Parish, he was active in the planning for the parish hall.

Besides community involvement, Lou cared deeply about the natural environment and was a treasured local resource in all things biological. His love of nature started at a young age when he recalled playing in the drainage ditches on the south side. He spent his teaching career at Grays Harbor College within one mile of where he was raised. Preserving the wetlands surrounding Grays Harbor was especially important to Lou. He was active in public processes

speaking and writing on behalf of preservation of the natural environment. He inspired many through his teaching and field trips. Thousands of students will remember Lou's biology classes and his favorite Spring Botany class. Anyone who knew him will remember his subtle puns.



Lou Messmer

## Tributes to Lou Messmer

It is difficult to write a short piece about a person who lived several full lives. Lou Messmer was a charter member of the WNPS, a Kruckeberg Fellow of the Society, served on the Research and Inventory committee when he was 99 years of age, and was always a friend no matter what the circumstance. There will be few who would have the time or the dedication to put together the history of service accomplished by Lou. I was honored to work with Lou during my 15-year tenure working as a federal employee on environmental issues in the Grays Harbor area. He was depended on as someone who knew the story, the back story, and the science of issues. Due to his calm nature he also had tremendous credibility with the local community.

More important personally, I knew Lou through our mutual membership in the Native Plant Society. Ann and I often traveled to the Grays Harbor and Ocean Shores areas for birding or for a wetland botanizing busman's holiday. Contacting Lou ahead of time was worth the effort. He knew which shorebirds were migrating through and where to find them. He also knew where the most interesting botanizing hotspots were to be found and he never hesitated to share such information. And if at all possible, he would not just tell us but would show us the best places.

All in all, I am honored to have known Lou Messmer. Our Society has lost an iconic member. —*Fred Weinmann*

• • •

I can't say that I knew Lou well, but I did serve with him on the board in the 1980s. Most of all I remember Lou for his warm, kind smile. He seemed soft-spoken, but when he spoke I paid attention, because he only spoke when he had something important to say. The last time I saw Lou was in the late 1990s at Ocean Shores. He and I were both there to speak at a Master Gardener Conference. I had just been collecting specimens for a native plant ID session, and I had him confirm the identity of some of the plants. Lou was a true gentleman—a term that almost sounds quaint in this day and age. —*Van Bobbit*

• • •

My father's botanizing was something that we took for granted in our household. We all became accustomed to abruptly stopping along a highway to get out and collect a specimen that was spotted at 50 mph, perhaps collecting enough for an entire lab section. Our family did a lot of hiking and backpacking, and these trips were also infused with the floral accents. Many of these trips were with the Kruckebergs and there was always a tension between Art's desire to go to the mountains and Lou's wanting to go to the river valleys. I suspect that Art found it easier to botanize on an uphill grade and Lou wanted to have fresh fish for dinner. Since meeting at the UW in 1951, together they explored the mountains and rivers around the northwest and even the world.

My father's interests in all things natural, extended well beyond botany and for many, especially in Grays Harbor County, he was the go-to source for identifying anything once living and of undetermined origin, from road kill, to mushrooms, plant pests, fossils, and even strange sounds. Most often though, it was plants. Someone once showed up at our house with a wild cucumber root (*Marah oreganus*) on the back of a truck! It was as big as a garbage can and well over 100 pounds! My Dad always enjoyed researching these sometimes-challenging mysteries, but especially relished interacting with those bringing the questions and developing long-lasting friendships with them. His web of human and natural connections, especially in the Grays Harbor area, reminds me of mycelia...tightly woven, far reaching, and always expanding. — *Jim Messmer*



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## Book Review

### Tahoma and its People

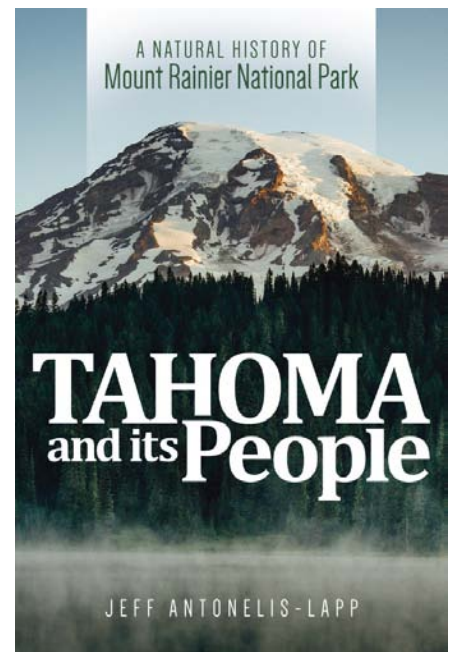
**A Natural History of Mount Rainier National Park: Tahoma and its People.** By Jeff Antonelis-Lapp. Washington State University Press 2020, 266 pages

*review by Fred Weinmann*

We know it as Mt. Tahoma, it is known officially as Mt. Rainier, and those with deep roots in Washington simply refer to it as The Mountain. Mt. Rainier National Park, when established in 1899, became the third of the sixty-two Parks of the US. It was preceded only by Yellowstone (1872) and Yosemite (1890). Yet, when Jeff Antonelis-Lapp searched diligently for a book about the natural history of

The Mountain or Mt. Rainier National Park he found no such thing—although there is an early book by Floyd Schmoie (published in 1959) based on a year in the Paradise area in 1920. There are multiple books about hiking the trails, about the plants (Biek 2000), and the climbing history (Molenaar 1971), but no recent comprehensive treatment of the natural history.

Antonelis-Lapp is the right person to have remediated this deficiency. He has been prowling about and teaching about Mt. Tahoma for over 40 years. During this time, he has climbed



the mountain and hiked all the named trails, including the 100± mile Wonderland Trail, six times. The Mountain clearly ignited his passion as he observed it through a natural historian and environmental biologist's eye. The result of these decades of dedication is his book: *A Natural History of Mt. Rainier National Park: Tahoma and its People*.

One of the strengths of the book is the author's field time spent with the native peoples of the area and with investigators actually doing research on the mountain. This includes geologists, anthropologists, glaciologists, and wildlife biologists. This gives Antonelis-Lapp firsthand knowledge of current research and the results thereof.

Antonelis-Lapp's book begins in standard fashion with a chapter on the geologic history of the mountain. This treatment proceeds from the initial eruptions about 500,000 years ago up to the present, including speculation about the future. The second chapter concerns the people, both ancient and contemporary. The author is particularly well versed in this subject, as he has spent many years both learning from the native peoples about their history and their language as well as teaching classes to tribal members. When describing the use of natural resources by Native Americans he provides one of the better quotes I have seen about western red cedar (*Thuja plicata*): "In every spiral of life, from an infant's first cry to an elder's last breath, cedar wove itself into the fabric of the first people." In this chapter we also learn that William Tolmie, a renowned early Pacific northwest botanist, visited The Mountain in 1833 on a botanizing trip led by Native Americans. Tolmie was the first European to penetrate deep into the forests of the mountain's interior.

The remaining chapters are sectioned geographically beginning with the Nisqually River watershed. The history and current status of the river and its glaciers is well explained. Woven into this chapter is a description of the unparalleled wildflower meadows at Paradise near the headwaters of the Nisqually. Over half of the Nisqually chapter is devoted to Puget Basin prairie restoration and other environmental issues in the watershed.

This is followed by similar chapters on the Longmire area (I was unaware of the important history of this area. To me it has mostly been an area to drive by on the way to botanizing at Paradise). Then follows the Puyallup River, the Carbon River (tributary to the Puyallup), and finally the Sunrise area. The Puyallup chapter describes well the physical and biological features of the watershed. Also, as with the Nisqually, much of the Puyallup discussion describes the history and current status of environment issues in the watershed. However, these environmental issues sections of the book read like digressions from the book's natural history epicenter.

The Sunrise chapter is much more typical of a natural history essay as it focuses on the flowers, the rocks, and the glaciers of the alpine zone. The Carbon River chapter provides a nice explanation of the weather dynamics that create an inland rain forest in the Carbon River Basin. Epiphytic plants and fungi,

such as mosses and lichens, and their growth habits are also lightly treated in this section.

Within each chapter Antonelis-Lapp expands on the historic relation of native peoples to the area under discussion. There is also extensive explanation of the source, magnitude, and risk of lahars emanating from Mt. Rainier, particularly from the south and southwest sides of the mountain.

While there is no section of the book specifically devoted to the plants and animals of The Mountain, a description of many species is included in the description of individual geographic areas. Flowering plants, mountain goats (*Oreamnos americanus*), marmots (*Marmota caligata*), and other species are discussed. The presence, size, and longevity of a few trees is covered; and a few plants (devil's club [*Oplopanax horridus*] and western trillium [*Trillium ovatum*] for example) are given extensive coverage. However, the hard-core botanical enthusiast will be left wanting. For example, the occurrence of rare, endemic, and/or invasive species is not discussed. The past presence of wolverines (*Gulo gulo*) and the restoration of fishers (*Pekania pennant*) to the park is explained; while the pika (*Ochotona princeps*), a most interesting animal of the high country, is omitted.

I love biobits. Antonelis-Lapp satisfies my interest by dropping in a few here and there. An example: The Clark's nutcracker (*Nucifraga columbiana*) can hold up to 70 pine seeds in a pouch under its tongue and stores up to 98,000 seeds per season. Read the book for more such details.

In general, this book is a three-way hybrid between a history of human presence on the mountain, a natural history of the plants and animals, and an explanation of exigent environmental issues, past and present. There are just enough color photos to pique your interest. The line drawings and other illustrations are quite helpful. The black and white photos are less so. If you are already very familiar with Mt. Rainier, read the book in the winter. It will bring forth multiple images worth remembering. If you are new to the mountain bring it with you and read it while you are there. The details will provide a fine evening supplement to a day's activities on the mountain. Whatever your inclination, Antonelis-Lapp's book will make a worthy addition to your natural history library.

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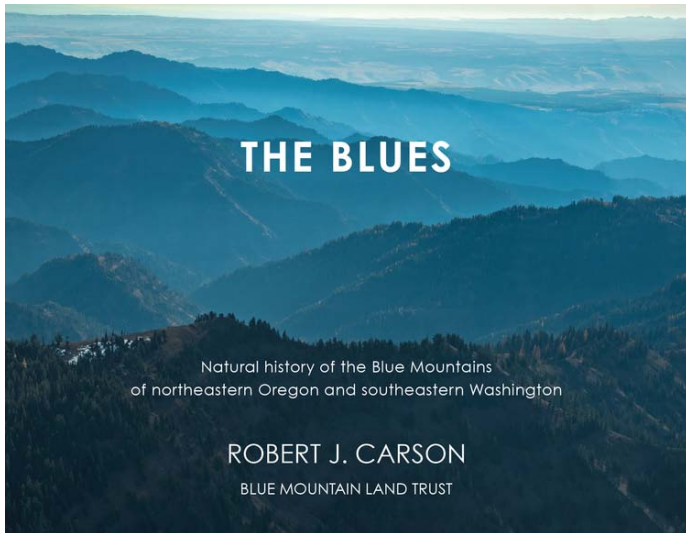
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## Feeling the Blues

review by Walter Fertig

**The Blues: Natural history of the Blue Mountains of northeastern Oregon and southeastern Washington.** By Robert J. Carson. Blue Mountain Land Trust, Keokee Books, Sandpoint, ID. 208 pp.



You will not find any of the summits of the Blue Mountains on a list of the 100 most prominent peaks in the state of Washington (as measured by the height of the tallest point relative to the nearest pass with a neighboring peak). Based on elevation, the highest point in the Blues is 6,391 feet (1948m) at Oregon Butte—nothing to sneeze at, but number 45 in height in Washington, and less than half the stature of Mount Rainier. And you won't see the Blues on a Google search of the “twenty can't miss peaks” of Washington.

But that is ok. The Blue Mountains may not be the most prominent, highest, or showiest range in the state, but they are definitely one of the most interesting geologically, ecologically, and botanically. Their remoteness from the major population centers of Washington and Oregon is an added bonus. It means they can be explored in solitude, even in the height of summer (try that at Tiger Mountain or Paradise Meadows in July).

The story of the Blue Mountains is told in a new book, *The Blues: Natural history of the Blue Mountains of northeastern Oregon and southeastern Washington* by Robert Carson, emeritus professor at Whitman College in Walla Walla. Carson has assembled a dozen geologists, foresters, biologists, photographers, and poets to produce a lavishly illustrated coffee table-style ode to the subtle charms of one of Washington's least known mountain ranges.

The modern Blue Mountains are a “modest” range as essayist Don Snow writes in the Foreword, with “[n]o towering drama on the horizon, no craggy peaks or snow-filled couloirs, no sense of the brow of God glowering over town.” It is a landscape with many contrasts. There is snow in the winter,

but no surviving glaciers. The mountains are too low to support true alpine vegetation, though wind-blasted rims contain stunted cushion plants that give the vibe of tree line tundra. There are no natural lakes, but plenty of springs emerging from the sponge-like basalt. The range is relatively flat-topped, but gouged by deep canyons of the Grande Ronde and other tributaries of the Snake River.

It has been said that “geology is destiny,” and so not surprisingly nearly half of *The Blues* is devoted to Earth Science. (Probably no accident that lead author Bob Carson is a geologist too.) At first glance, the geology of the Blues seems boring—lots and lots of basalt, not unlike the adjacent Columbia Plateau. Around 17 million years ago the great hot spot or mantle plume over SE Washington, NE Oregon, S Idaho, and NW Wyoming spewed hot lava from the bowels of the Earth in a series of large floods laying down thick beds of basalt and ash. The oldest, the Grande Ronde Basalt, is named for the sinuous river that carves through the northern Blues to meet the Snake River in extreme southeastern Washington below Hells Canyon. This was followed by the Wanapum and Saddle Mountain Basalts which inundated much of central and eastern Washington. At the conclusion of this spasm of volcanism, the region uplifted to form the present Blue Mountains and rivers began carving deep canyons to bring the range back down to Earth.

The present blanket of basalt covers an even older layer of volcanic rocks produced by a series of Cascades-like volcanoes in northeastern Oregon 40-55 million years ago. Ash from these eruptions buried the warm, moist vegetation and fauna of Eocene times, which included such organisms as bananas, magnolias, palms, chestnuts, horses, tapirs, and crocodiles. The fossil beds are exposed today at Clarno and John Day in Oregon and reveal a semi-tropical rainforest world quite different from the modern sagebrush steppe.

Below these rocks is the core of the Blue Mountains, exposed here and there from the blanket of basalt in anomalous places, such as Lime Hill in the far southeast corner of the state. The craziest thing about the Blues is that this basement originated as an archipelago of volcanic islands off the coast of Southeast Asia in the Paleozoic Era. These islands were ringed by limey coral reefs. Over time the islands were worn down by erosion and buried in their own debris of sediment and mud, all the while slowly (about an inch a year) being “whisked” northeast-ward on one of the myriad plates forming the crusty skin of the earth. About 100 million years ago this island-arc made landfall on the west coast of North America, which at the time was western Idaho (Washington and Oregon did not yet exist!). This block of basalt, sandstone, shale, and limestone, called the Wallowa Terrane, was the first of at least five large blobs of foreign rock to slam into the west coast and form the core of the Blue Mountains (only the Wallowa Terrane is present in the Washington portion of the Blues, however).

More recent (and ongoing) geologic processes help explain the distribution of plant life within the Blues, and are the subject of an extensive review of Quaternary geomorphology

in the middle section of the book. This segues into a chapter on the forests of the Blue Mountains and short photo essays on wildflowers and animal life. The most notable vegetation pattern in the Blues is the sharp contrast between the distribution of forests and grasslands. In a nutshell, forests are restricted to cooler, north-facing exposures, while meadows and grasslands prevail on drier and sunnier south and east exposures. The sharp boundary between these communities is obvious from a distance and can lead some first-time visitors to incorrectly surmise the pattern is the result of past clearcutting.

The geology of the Blues helps account for some of the interesting rare and endemic plants of the area. For example, the previously mentioned Lime Hill is one of the few outcrops of calcareous bedrock in southeastern Washington and supports two species found nowhere else in the state. Rocky Mountain rockmat (*Petrophytum caespitosum*) is a densely matted subshrub, with small spikes of Spiraea-like white flowers that is restricted to steep, limestone cliffs. This member of the rose family is widespread outside of Washington and globally common, despite being exceedingly rare in the state. The Asotin milkvetch (*Astragalus asotinensis*) is only found on Lime Hill and similar outcrops across the Snake River in Idaho. Not found elsewhere in the entire world, it is an example of a local endemic; and only grows on steep, grassy slopes underlain by chalky white limestone that originated in ancient coral reefs surrounding extinct volcanoes off southeast Asia hundreds of millions of years ago!

The final section of *The Blues* describes contemporary human impacts to the environment and what the future might hold to these ancient mountains. These range from logging and wind farm development to water pollution and climate change. The purpose of the final essays is to bring attention to the need to conserve remaining patches of the Blues. This is the mission of the Blue Mountain Land Trust, the local conservation group behind this book and several others about the range. For as Scott Elliott notes in the Afterword, “[w]e might cherish protected wild mountain spaces and all they offer all the more for recognizing that these places can be lost.” *The Blues* is a reminder of what this remarkable mountain range contains, and why it is important that these wild places remain in perpetuity.



Yeti phlox (*Phlox solivaga*). PHOTO: WALTER FERTIG

## The Blue Mountains Ecoregion

by Walter Fertig

Washington is a big state and sometimes for the sake of analyzing the flora it is handy to organize the state into more natural subunits. Counties are one obvious way to do this, but these subunits are based on political, rather than biological, criteria.



### Washington Ecoregions

- |                     |                     |
|---------------------|---------------------|
| 1. Pacific NW Coast | 6. Okanogan         |
| 2. Puget Trough     | 7. Canadian Rockies |
| 3. West Cascades    | 8. Columbia Plateau |
| 4. North Cascades   | 9. Blue Mountains   |
| 5. East Cascades    |                     |

An alternative are ecoregions, which are large geographic areas that share similar climate, landforms, hydrology, and vegetation. Based on a nationwide system developed by The Nature Conservancy, there are nine recognized ecoregions in Washington. The Blue Mountains of southeastern Washington comprise their own ecoregion, which extends beyond the state to northeastern Oregon and adjacent Idaho. This ecoregion is defined by the plateau-like uplift of the Blue Mountains and its steep canyons carved by the Grande Ronde River and consists of a mix of Rocky Mountain conifer forest, Palouse grassland, and riparian ecological systems.

The Blue Mountains are the smallest ecoregion in Washington and not surprisingly has the smallest flora with 1,019 taxa (848 native and 171 introduced). The area is also one of the least botanically explored areas of the state, so this number of species is likely to increase with more survey effort. Forty-four state threatened, endangered, or sensitive plant species occur in the Blues, based on the classification of the Washington Natural Heritage Program.

Thirty-nine plant species only occur in the Blue Mountains in Washington. One of these is the narrow endemic, *Phlox solivaga* (Polemoniaceae). Also known as the ‘Yeti phlox’ for its unkempt (abominable?) white-hairy herbage, this species was only described in 2015. It is known from at least half a dozen flat-topped ridges with cobblestone-like surfaces of weathered basalt rock occupied by cushion plant communities kept low and hedged by strong winds.



## High Divide Flowery Meadows and Rock Gardens

by Mark Turner, Koma Kulshan Chapter



Glacier lilies (*Erythronium grandiflorum*) on High Divide in June, 2019 looking toward Mt. Baker. PHOTO: MARK TURNER

My High Divide is a long ridge east of Bellingham between the Nooksack River and the Canadian border, not to be confused with a ridge of the same name in Olympic National Park. There are three trails leading up to High Divide, with varying degrees of difficulty. Upon reaching the ridge, there's over 11 miles of up and down rambling among flower meadows and rock gardens. You won't find anything rare up here, but many of the west slope North Cascades alpine and subalpine plants can be found somewhere along the route.

From west to east, the three trailheads accessing High Divide are Damfino Lakes, Excelsior Pass, and Welcome Pass. While there's no official trail, you can also get to High Divide by hiking west from the tarns below Yellow Aster Butte. The easiest route, with the least elevation gain, is the Damfino Lakes trail. Don't get your hopes up about taking a dip in the lakes because they're really just shallow ponds, but you can explore for a variety of wetland plants in the area.

You can also hike up a series of switchbacks through nice forest on the Excelsior Pass trail, with a trailhead right on Mt. Baker Highway and gaining 3,600' in just under 4 miles. This trail and the Damfino Lakes trail meet up at Excelsior Pass, elevation 5,375'. If you're a glutton for thigh-burning exertion then hike up the 66 unrelentingly steep switchbacks of the Welcome Pass trail, gaining 2,800' in less than 2.5 miles and reached off an unsigned road just west of the Shuksan garage. That's how Brian Small and I reached the ridge early in the season in 2019, doubting our sanity while enjoying solitude and the beautiful mature forest.

Once you reach the ridge, it's time to ramble. The trail mostly follows the ridge, generally out in the open. You'll enjoy



Spreading phlox (*Phlox diffusa*) near Excelsior Pass. PHOTO: MARK TURNER

views to Mt. Baker and Mt. Shuksan to the south and Mount Larrabee and the Border Peaks to the northeast.

My favorite section of the High Divide ridge is the first couple of miles east of Excelsior Pass. You'll find steep rock gardens dotted with spreading phlox (*Phlox diffusa*), various sedums, penstemons, louseworts, columbine, saxifrages, and more. The flower meadows have pink and white heather, Cascade blueberries (*Vaccinium deliciosum*), green corn lilies (*Veratrum viride*), and glacier lilies (*Erythronium grandiflorum*).

The ridge-crest forest is mostly mountain hemlock (*Tsuga mertensiana*) and subalpine fir (*Abies lasiocarpa*), both "usual suspects" in this part of the North Cascades.

Find the Excelsior Ridge plant list on the WNPS website here: [wnps.org/plant-lists/list?Excelsior\\_Ridge](https://wnps.org/plant-lists/list?Excelsior_Ridge). The Washington Trails Association web page for High Divide is [wta.org/go-hiking/hikes/high-divide-trail](https://wta.org/go-hiking/hikes/high-divide-trail).





Koma Kulshan chapter members Marie Hitchman, Lyle Anderson, and Keith Kemplin work to key out a plant on High Divide. PHOTO: MARK TURNER



Green corn lily (*Veratrum viride*) foliage, Sitka valerian (*Valeriana sitchensis*) and broadleaf lupines (*Lupinus latifolius*) surround Natalie McClendon hiking along High Divide. PHOTO: MARK TURNER

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Join our community of plant lovers and be the first to learn about the programs in your area. Contact the office or go online at [www.wnps.org/store-membership/membership](http://www.wnps.org/store-membership/membership).

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- By mail: Please make checks payable to WNPS Endowment Fund.

### Make A Planned Gift

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

Here are examples of how to make a planned gift:

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

There are many other ways you can make a charitable gift through estate planning—consult your lawyer or financial planner.

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Learn all the ways you can support WNPS at [www.wnps.org/donate](http://www.wnps.org/donate). For more information on giving options, call the WNPS office 206-527-3210.

# WNPS Awards 2020

by Van Bobbitt

## WNPS Arthur R. Kruckeberg Fellow Award

“The highest accolade given to a member by our society is to be named a WNPS Honorary Kruckeberg Fellow.” (wnps.org)

Typically, these awards are only made every five years. This out-of-cycle nomination by Fred Weinmann was considered and approved by the WNPS Executive Committee due to the special circumstances. **Terri Knoke** is the newest WNPS Arthur R. Kruckeberg Fellow. Denise Mahnke and Elizabeth Gage presented the framed Fellow certificate to Terri at her home on March 10. Terri recently served on the WNPS Native Plant Appreciation Month Committee, Conservation Committee, and Strategic Planning Committee. She contributed an extraordinary amount of volunteer time to WNPS at the Columbia Basin chapter and the state level. She was an active Rare Care volunteer, monitoring many rare plant populations on a regular basis. Fred Weinmann pointed out that Terri was a “driving force in furthering the mission of the Society,” especially in the way she “forged relationships with other agencies and non-profit organizations.” In addition, her botanical illustrations of *Lomatium knokei* and other species were included in *The Flora of the Pacific Northwest*, 2nd edition. Sadly, Terri passed away on April 16.

## WNPS Outstanding Partner Award

This award is presented annually to an agency, organization, or individual which has made significant contributions to native plant conservation, research, or education in Washington. This year’s winner is **University of Washington’s Rare Plant Care and Conservation Program** (better known as **Rare Care**). According to Walter Fertig, State Botanist, Washington Natural Heritage Program:



“Rare Care was established in 2001 as a partnership between the University of Washington Botanic Gardens and the Washington Natural Heritage Program. The goal of Rare Care is to train citizen scientists in relocating known occurrences of rare plant species and recording information on the abundance and extent of the population, habitat conditions, and possible threats. . . . Most of the work done by the Rare Care volunteers would not otherwise be completed by professional staff in state and federal agencies because of budget limitations.”

## WNPS Mentzelia Award

This award is presented to a WNPS member(s) who has made a significant contribution to native plant conservation, research, or education in Washington. This year’s Mentzelia Award winners are **Sarah Verlinde** and **Rob Smith**.

The letter nominating **Sarah Verlinde** stated:

“Sarah has been an exemplary Director of WNPS and used her many talents to advance our communications strategy with an improved website and electronic newsletter. As a scientist and educator, she has been a driving force in advancing the University of Washington, Bothell (UWB) Herbarium, where she is now the Collections Manager.



Sarah Verlinde

“In 2016, Clay Antieau recruited Sarah to fill a vacancy on the Board of Directors . . . she joined the newly formed Communications Strategy Committee, and by the October 2016 Board meeting she had crafted a proposal to rebuild the WNPS website. This was a high-priority need identified in a special meeting of the Board of Directors. . . . Sarah’s proposal was accepted by the Board and she immediately began implementing her plan.”

In nominating **Rob Smith**, Becky Chaney said:

“Rob contributed to the society during a transitional time of approximately six years that included significant changes in finances, staffing, and office and technology needs. In some ways, this period of time can be considered WNPS’s lost years; annual



Rob and Marcia Smith

reports from 1999 to the present give a historical overview of the society, except during the years of 2011 through 2016 when none were issued—an indication of the struggle WNPS went through during this time. Rob’s steady leadership is a primary reason WNPS is back on stable ground.”

Denise Mahnke, WNPS Business Manager, says: “The current staff attribute much of their success to the strong organizational foundation that Rob provided. In addition, Rob was the technology guy in the background who made sure our previous website remained functioning.”



# Washington Native Plant Society State Board Directory

## Officers & Elected Directors

(Director's term follows name)

### President\*

Van Bobbitt 2017-2020  
president@wnps.org

### Immediate Past President\*

Don Schaechtel 2018-2021  
treasurer@wnps.org

### Vice-President\*

Keyna Bugner 2017-2020  
vicepresident@wnps.org

### Secretary\*

Joshua Morris 2019-2022  
secretary@wnps.org

### Treasurer\*

Don Schaechtel 2018-2021  
treasurer@wnps.org

### Directors at Large\*

(one vote per person)

Don Hardin 2019-2022  
director.1@wnps.org

Nina Kidd 2019-2022  
director.2@wnps.org

Gail Sklar 2019-2022  
director.3@wnps.org

Gretchen Graber 2018-2021  
education@wnps.org

Mark Turner 2018-2021  
Douglasia Layout Editor  
Education Committee Member  
douglasia\_layout@wnps.org  
Sarah Verlinde 2017-2020  
Communications Chair  
website@wnps.org

### Chapter Chairs

(one voting position per chapter)

#### Central Puget Sound Chapter

Janka Hobbs  
centralpugetsound@wnps.org

#### Central Washington Chapter

Cathy Reed  
centralwa@wnps.org

#### Columbia Basin Chapter

Dr. Steven Link  
columbiabasin@wnps.org

#### Koma Kulshan Chapter

Allan Richardson  
komkulshan@wnps.org

#### Northeast Chapter

Vacant  
northeast@wnps.org

#### Okanogan Chapter

George Wooten  
okanogan@wnps.org

#### Olympic Chapter

Fayla Schwartz  
olympic@wnps.org

#### Salal Chapter

Viva Worthington  
salal@wnps.org

#### San Juan Chapter

Bill Engle  
sanjuan@wnps.org

#### South Sound Chapter

Gail Trotter  
southsound@wnps.org

#### Suksdorfia Chapter

Sue Kusch  
suksdorfia@wnps.org

#### Wenatchee Valley Chapter

Connie Mehmel  
wenatcheevalley@wnps.org

### Standing Committees

#### Conservation Committee

conservation@wnps.org  
Becky Chaney\* Chair

Clay Antieau

Casey Leigh

Edward Lisowski

Mike Marsh

Joshua Morris

Susan Saul

#### Fundraising Committee

treasurer@wnps.org  
Don Schaechtel\* Chair

Gail Sklar

Sarah Gage

#### Editorial Committee

douglasia@wnps.org  
Walter Fertig\* Chair

Andrea Cummins – Editor

Mark Turner – Layout Editor

David Giblin – Technical Editor

Sarah Gage

Ellen Kuhlmann

Steven Link – Peer review

T. Abe Lloyd

#### Research and Inventory Committee

researchinventory@wnps.org  
Wendy DesCamp\* Chair

Elizabeth Binney

Peter Dunwiddie

Richard Olmstead

Susan Schwab

#### Education Committee

education@wnps.org  
Gretchen Graber\* Chair

Franja Bryant

Nina Kidd

Mike Marsh

Fayla Schwartz

Mark Turner

#### Stewardship Committee

stewardchair@wnps.org  
Vacant\* Chair

Bill Brookreson, Past Chair

Jim Evans

Allan Richardson

Aaron Rosenblum

Sharon Rodman

Katrina Strathmann

### WNPS Ad Hoc Committees\*\*

#### Communications Committee

website@wnps.org

Sarah Verlinde – Chair

Sarah Gage – WNPS Blog

Cate Oliver – WNPS eNews Editor

Ashley Shattuck – WNPS Instagram

Mark Turner – WNPS Facebook Group

Jennifer McDonald – WNPS Facebook Page

#### Native Plant Appreciation Month

npaw@wnps.org

Gail Sklar – Chair

Van Bobbitt

Elizabeth Gage

Denise Mahnke

#### Strategic Planning Committee

strategicplan@wnps.org

Ostara Group Consultants

Karen Hirsch

Bailey Disher

Board Committee Members:

Van Bobbitt

Keyna Bugner

Denise Mahnke

Joshua Morris

Don Schaechtel

\* Denotes a voting position

\*\* Ad hoc committees are formed to address society business and are not defined by WNPS bylaws, as are standing committees.

## WNPS Arthur R. Kruckeberg Fellow Award—Call for Nominations

*by the WNPS Arthur R. Kruckeberg Fellows Committee:  
Nina Kidd, Gail Sklar, and Van Bobbitt*

The highest accolade given to a member by our society is to be named a WNPS Arthur R. Kruckeberg Honorary Fellow. There is a call for nominations only every five years. The next award year is 2021.

Nominations may be made by individuals or chapters by writing a letter to the WNPS Fellows Committee explaining how the nominee meets the award criteria.

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

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

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

The deadline for nominations is November 1, 2020. The WNPS Fellows Committee will review the nominations and make recommendations to the WNPS Board of Directors, who will vote on the recommendations at the spring board meeting.

Submit applications to the WNPS Fellows Committee, c/o Nina Kidd at [director.2@wnps.org](mailto:director.2@wnps.org).

**Douglasia**  
c/o Washington Native Plant Society  
6310 NE 74th Street, Suite 215E  
Seattle, WA 98115

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Hardstem bulrush (*Schoenoplectus acutus*) at the edge of Susan Lake, Seep Lakes Wildlife Management Area near Othello, Washington. PHOTO: MARK TURNER

