

Douglasia

VOLUME 30, NO. 2 SPRING 2006



Journal of the
WASHINGTON
NATIVE PLANT
SOCIETY

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

Prairie visions – a landscape of hope

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Host selection by Northwestern *Castilleja*

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UW Herbarium plant collecting

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Douglasia

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

** Deceased

Editor's note

Spring is here, at long last. I love all the seasons, but I must say spring is my favorite. There's no other place I'd rather be than in the Pacific Northwest at this time of year. I hope you're enjoying spring, too, wherever you are.

As you begin to make plans for the warmer months ahead, we have a couple of ideas inside to get you started. Explore the flora and beauty of the North Cascades by signing up for this year's Botany Washington, coming up in July. Or join Jim Riley on the Annual WNPS Backpack Trip, which this year ventures to Cady Ridge in the Henry M. Jackson Wilderness of the Wenatchee National Forest.

In this issue, we also welcome as a regular contributor John Browne, Jr., who is taking over the Conservation Update column started by Mike Marsh, who is retiring as Conservation Committee Chair. Welcome John! And thank you, Mike, for keeping us all informed these past few years about the conservation issues facing the native plants of our state, and for being such a timely and amiable contributor.

And thanks, as always, to all the contributors. I've been fortunate that so many readers out there are also writers, and volunteer to share their knowledge in *Douglasia*. I, and WNPS, very much appreciate your enthusiasm and generosity. All readers are welcome to contribute—please check the Information for Contributors inside this issue for tips on submissions.

Enjoy,

Karen Gatrell

WNPS State Board of Directors: Meetings 2006

April 8, 2006

October 21, 2006

For more information on agenda and location contact the WNPS office two weeks ahead of the meeting date.

President's message

by Dean Longrie



It is spring!!? It is a time of year I look forward to like no other. I am thankful for the natural bounty of last year. I have slowed down over the winter and... I am excited about the new growth of the new year—my personal, professional and spiritual

growth, the evolution of the Washington Native Plant Society, and our native plants.

One important area of growth and change for WNPS is in the chairmanship of our Conservation Committee. You may have noted in the Winter 2006 issue of *Douglasia* that John Browne, Jr. is our new Chair. Thank you again, John, for stepping up to take this opportunity and responsibility. We all support you in this new endeavor. Going out as chair and still serving as a member of the Conservation Committee is Mike Marsh.

Mike Marsh, like Fred Weinmann, has set a high standard to be met or exceeded by his successor. Mike over the past three years has earned the big letter “A” embossed on all his shirts and coats—the “A” standing for the last word in our mission statement—Advocacy. He has led and participated in countless meetings, work groups and community gatherings focused on protecting, restoring or salvaging individuals, populations, and habitats of threatened native plants.

Mike Marsh’s “Conservation Update” in *Douglasia* since the fall of 2003 details many of the Committee’s involvements and accomplishments. What is not as readily apparent are details on phone calls, meetings with legislators, and written comments on state, federal and county activities affecting native plants and their habitats. I am fortunate, I think my wife, Lynn, would agree, not to have to pay his phone or mileage bill.

These are just a few words about an enormous effort and commitment from Mike. More information about Mike can be found in the member profile written by Fred Weinmann in the Fall 2003 issue of *Douglasia*.

Opportunities for all of us to take part in “growing” our participation along with the evolution of WNPS are here now, with more to come. See you at the Study Weekend June 23-25th.

DL

Conservation update

by J.H. Browne, Jr., WNPS Conservation Committee Chair

About ten years ago, the Washington Department of Natural Resources (DNR) issued a wonderful map of our state, called “Major Public Lands of Washington,” which gives a color-coded picture of 16 categories of state holdings, 6 federal land categories, Indian reservations and municipal watersheds. When I look at this map of Washington that shows the boundaries of ownership (and/or management responsibilities), it becomes clear that the abstract perfection and simplicity of a rectangular overlay imposed upon the physical realities of geography is not a good fit, and that the “victims” of this organizational model will include the various plant communities that suffer arbitrary dissection along these lines. The pursuit of conservation of plant species and of habitat is often impeded, or made more complicated, by the presence of fences, flag lines, and borders.

Some remedies to the non-reality-based lines of ownership have come from governments, such as the federal Endangered Species Act, the state Growth Management Act and establishment of Noxious Weed Control districts, and local zoning laws (which may protect certain habitats, such as wetlands, from development). As for habitat protection, the existence of large blocks of government ownership for specific purposes (such as Ft. Lewis, the Yakima Firing Center, and Department of Energy’s Hanford Reservation), including national parks and monuments, has offered protection to some of our most vulnerable habitat types, including the oak prairie system and the sage steppe. The “multiple use” federal holdings, including national forests, national wildlife refuges and various Bureau of Land Management (BLM) lands, and DNR lands are sometimes managed with habitat conservation as a goal, but they are rarely managed with “conservation of native flora” uppermost among their priorities.

The substantial presence of the four largest Indian reservations (Quinalt, Yakama, Colville and Spokane), despite having experienced the ravages of varying degrees of natural resource extraction, still offer the hope of management models that will maintain large intact ecological communities, without the same population and economic pressures that much privately held property will face in the very near future.

There’s a lot of white space on the map, too. On the west side of the Cascades it includes the majority of

Clark, Cowlitz, Lewis, Thurston, and half of Pierce Counties—the historic range of the Garry oak prairies. The white space includes the lowland forests of most of Pacific, Grays Harbor, and Mason Counties, as well. Around Greater Puget Sound, the only notable exceptions to privately held lands are a few military bases and about a half-dozen Indian reservations.

From the White Salmon River to the confluence of the Yakima and Snake Rivers with the Columbia (and south of the Yakama Reservation), the only public lands are the DNR “Common School” holdings—the 16th and 36th sections in each township—and these are often leased to nearby property owners. The land south of the Spokane and Columbia Rivers and east of the Grand Coulee is nearly all privately owned—again, excluding many of the 16th and 36th sections and also excluding the north part of the Blue Mountains, which is part of the Umatilla National Forest. This includes the Palouse and the Columbia Basin Projectlands—the Breadbasket (and also the “Meat, Potato, and Alfalfa” basket) of the Northwest. The mining district north of the Spokane Reservation and east of the Columbia River is also mostly privately owned.

Population pressures are building across the state, not just in the I-5 corridor. While the areas around Seattle-Tacoma and Vancouver are expecting “more of the same” (having seen strong population influxes over the last 15 years), the Yakima area, the Tri-Cities, and Spokane are also growing rapidly. As baby boomers retire and decide to leave the cities and suburbs for less trammelled environs, the scenic places off the beaten paths in the Inland Empire can expect to see new construction on former ranches and farms, whose owners can’t resist cashing in on the present land rush in the Greater West.

One possible bright spot in a conservation strategy for the shrub-steppe could be a move to convert “Conservation Reserve” (CRP) acreage from non-native crested wheat grass to some indigenous prairie species, perhaps including shrubs as well. This has been a popular federal program and should be supported, especially if the establishment of native flora is encouraged. This might offer smaller growers an opportunity to be providers of native seed as well. The idea of establishing a program to support oak woodlands and prairies in a natural state, perhaps something like the Public Benefit Ratings System that King County uses to maintain and enhance open space areas with property tax benefits to participants, may be an idea with a future.

The challenges that we face with regard to habitat

protection must ultimately address the practices of those who manage the corporately-owned properties around our state. On the small end of the spectrum, these may be family farms and ranches, and at the other, the timber companies. While there are a few large, publicly-traded agribusiness corporations in Washington, the two largest private landholders in our state are Plum Creek and Weyerhaeuser. Their property management philosophies affect millions of acres of land here (as well as millions of acres in other states and countries). Possibly the most problematic area is that both companies have anticipated the growing population pressures by promoting development programs, selling off huge parcels to be logged one last time, and then broken up into real estate developments. In the case of Weyerhaeuser, the Quadrant Corporation has been their wholly-owned development subsidiary for many years, and the selling off of parcels around the Puget Sound metropolitan centers for home sites goes on apace.

My personal observations of Weyerhaeuser practices on their timberlands will, if expressed publicly, require something like a novella. For now, I can say that their routine treatment of logged sites with chemicals (for example, Oust and Escort), a fifty-year rotation plan, which eliminates conditions that a great many indigenous species require to survive (much less “thrive”); their cavalier treatment of wetlands, and willingness to ignore the effects that their logging has with regard to geological conditions (which routinely causes slides and “mass wasting” events, often at public expense to repair infrastructure); and a lack of concern for the dispersion of noxious weeds on sites and along roadways (theirs and others’), has left me with a lasting impression of their ignorance of (or disdain for) the appearance of good citizen and contributor to community well-being.

I’d like to recommend the latest copies of “The High Country News” for extensive coverage of habitat issues in the West (Feb. 20, 2006) and also corporate wheelings-and-dealings in timberland, such as the appearance of Hancock Timber in southwest Washington (Jan. 23, 2006). To anyone who wonders “where did big timber companies come from?”, I recommend the book “Railroads and Clearcuts” by the Inland Empire Public Lands Council, which explains the machinations and outcomes of the 1864 Northern Pacific Railroad Land Grant—legislation signed by Lincoln only nine years after the primary Indian treaties here in 1855 and 25 years before Washington achieved statehood.



Prairie visions—a landscape of hope

Working with landowners to protect and restore South Puget Sound's prairie lands

by Gabrielle Byrne, *The Nature Conservancy*

Michelle Blanchard, a volunteer for The Nature Conservancy of Washington, smiles as she pulls Scot's Broom (*Cytisus scoparius*) out of the rocky soil. She smiles because she knows what's coming.

"Once we finish pulling the Scot's broom, then we plant the native plants," she says, taking a deep breath of the morning air. "People get hooked, I think because of all the wildlife out here." The variety of life on the prairie is inspiring—the slender glide of a Northern Harrier, the blue acres of camas (*Camassia quamash* var. *azurea*) like a stormy sky, interspersed with the splashes of color gracefully offered by buttercups (*Ranunculus occidentalis*), strawberries (*Fragaria virginiana*) and the occasional wild rose (*Rosa nutkana*). The Mima prairie has been a gathering place for humans for a long, long time. Native Americans used it as an open hunting ground and burned it to encourage crops of camas bulbs, acorns

and other plants used in medicines. It is still a place that immediately opens eyes and hearts, and for people who love plants, it's a gold mine—*Solidago spathulata* to be specific. Some common favorites are the lomatium (*L. utriculatum*) and the chocolate lilies (*Fritillaria affinis*), and the shooting stars (*Dodecatheon hendersonii*), and the camas of course...a new love for every season. Then there are the unforgettable oaks (*Quercus garryana*), with their stoic shadowed beauty, their cool shade, their arching greens.

"It was the meadowlarks that first attracted me," Michelle laughs. "One of the first times I was out here was in the spring and the sound of bees was making the prairie hum. I knew there couldn't be another place like this in the world—it's our own little paradise."

There are a number of Washington prairie plants that are in danger of extirpation, including the federally listed golden paintbrush (*Castilleja levisecta*). Other species of concern include Hall's aster (*Aster hallii*), California sea thrift (*Armeria maritima* ssp. *californica*), blue toadflax (*Nuttallanthus texanus*), Bolander's pea (*Lathyrus vestitus* ssp. *bolanderi*), and the rose checker mallow (*Sidalcea malviflora* ssp. *virgata*). There are two protected areas of prairie in Littlerock, including Mima Mounds Natural Area Preserve and the Black River-Mima Prairie Glacial Heritage Preserve (commonly known as Glacial Heritage). However, the mile between the two preserves and the land surrounding them has been subdivided and developed. Today it is estimated that as much as 98%

The Mima Mounds Heritage Meeting

On November 10, 2005, The Nature Conservancy hosted its first Heritage Meeting for Mima Corridor landowners. Funded by U.S. Fish and Wildlife Service, the event was primarily intended as an outreach effort to involve local landowners in the prairie restoration process. Drew Crooks from the Lacey Historical Society gave an entertaining presentation on the history of the area to a crowd of about 30 people who had gathered to share stories and insights about life on the prairie. Eric Delvin of The Nature Conservancy spoke to the ecological importance of prairie landscapes and talked about rare plants and animals that live on western Washington prairies. The goal of the event was to encourage an ethic of conservation in the community—to educate and support interest in the prairie landscape, and to let people know that returning their property to native prairie is an active option. The meeting's highlight was stories told by the landowners themselves. TNC will be producing a booklet of heritage stories to commit some of these stories to paper. This booklet, *Voices of the Prairie*, will then be shared with landowners throughout the area.



of the historical prairie has been lost. Michelle lives just north of Glacial Heritage and is one of many landowners working to save and restore prairies.

“The Nature Conservancy has learned that conservation doesn’t stop on preserve lands,” says Peter Dunwiddie, Director of Research Programs, while watering an oak seedling. “As a community we’re working more collaboratively than ever...trying to determine goals on a landscape scale and then working collectively towards them. Working with landowners in the Mima corridor is vital to restoring these areas—privately owned land could provide key ecological connections that increase the functionality and overall health of preserves and sustain species.”

Many landowners are learning the value of what conservation organizations are doing firsthand through what The Nature Conservancy (TNC) is calling the Mima Corridor Project. The project works to reach out to landowners living in the area surrounding the Mima Mounds preserve and involve them in the process



Prescribed fire is one effective management activity used by the conservation community to help restore prairie land. PHOTO: ERIC DELVIN

of prairie conservation and restoration. One way to include people is to teach them that preserving habitat also supports and preserves the multitude of unique and, in many cases, rare plants and animals that make the prairies such a memorable place to live. But preserving diversity is challenging—it requires reducing the threat of encroaching nonnative plants like Scot’s Broom and increasing the suitability of degraded and fragmented prairie land for native plants.

While the primary restoration action was once cutting and burning to control invading nonnative Scot’s broom or encroaching native Douglas-fir, today seeding and outplanting of native plants is happening on an increasingly larger scale.

In fact, native plants are being propagated specifically for conservation purposes at a TNC site called Shotwell’s Landing, once known in the community as Rainbow Valley. In addition to work on the ground, The Nature Conservancy and their partners are reaching out to landowners and others more than ever before, with heritage meetings, story booklets, plans for plant workshops and display gardens, and Prairie Appreciation Day, where attendance swelled to nearly one thousand people last year. In addition to these efforts, conservation partners have formed a Prairie Landscape Working Group to share ideas and lessons learned through regular meetings and a web site designed for conservationists and prairie lovers alike (www.southsoundprairies.org). Landowners in the Mima corridor are taking notice.

“We’re working with a number of landowners, including the Evergreen Sportsmen Club at the north end of Mima Mounds, providing labor and resources to restore prairie on their property,” explains Eric Delvin, Thurston County Project Manager for TNC. “They get to see firsthand



An area on the Glacial Heritage Preserve that was part of a prescribed burn is now replanted with Garry oak. PHOTO: ERIC DELVIN

Prairie restoration actions within the conservation community

- Removing invasive or encroaching plants (including Scot's Broom and Douglas-fir by hand pulling, mowing, cutting, girdling and spraying herbicide)
- Collecting seed from native plants
- Propagating native plants from seed or cuttings
- Outplanting native plants
- Prescribed burning—This is a very efficient method of restoring prairie land. Fire removes invasive shrubs, keeps succession in its early stages, returns nutrients to the soil, and helps some native plants to germinate. Prescribed fire is used with increasing frequency to maintain and restore prairie land, including a burn last year at Glacial Heritage.
- Captive rearing and/or reintroduction of prairie animals such as the Taylor's checkerspot butterfly (*Euphydra editha taylori*) and the Streaked Horned Lark (*Eremophila alpestris strigata*). These efforts involve ongoing research and are part of the long term restoration strategy.

how acres of Scot's broom can return to open prairie covered in wildflowers, native butterflies and birds...it's really an amazing experience for people."

There are a number of ways that conservation organizations can provide incentives for people to help—everything from providing labor, to growing native plants that will be used in restoring property, to conservation leases or easements. "We're lucky to have some funding from Washington Department of Fish and Wildlife and U.S. Fish and Wildlife Service to help provide those incentives," Delvin adds. "The simple truth, though, is that people want to help out. They want to know 'how can my property support prairie wildflowers and wildlife?' It probably can. And we're getting that message out there."

The challenges of restoring a highly fragmented and degraded landscape can be daunting, but with agencies, non-profits and hard-working people pulling together, there is hope that we'll all be enjoying the diverse and inspiring expanses of western Washington's prairies for a long time to come.

Ad



Everyone loves the Camas! PHOTO: JEFF COMPTON

Find a Photo—A resource for nature lovers

by *USDA Forest Service*

We've all been there. It's two o'clock in the afternoon and you've committed yourself to giving a presentation the following day. The talk you have planned includes the use of photographs to illustrate your points. As you begin to outline the talk you begin to realize your personal stock of photographs is lame—really lame. You need about six photographs of birds and you have three (and two of them are slides!).

No problem you say. I'll just email a few folks and have them email me what I need. Two hours later you get one response from a friend who says "I think I have a slide or two at home. I'll get them tomorrow and find a scanner and send them to you—should be there in about three days."

Now you panic. Aha! I'll just go online and search for what I need—copyright-free nature photos. You do your search and get about 100 sites to try. Funny how every site you go to, there seems to be a catch. You open a photo and it has a big watermark on it, or you click on it and you get an invitation to a membership to join the photo club.

The USDA Forest Service's NatureWatch Program is making great strides to see this never happens to you again with the new release of their "Find a Photo" electronic photo library.

Find a Photo is a nature photography gold mine for the working class. It currently contains over 2,400 copyright-free photographs of wildlife, fish, and wildflower species, plus a complete assortment of wildlife, fish, and botanical management and research photographs.

There is also a whole section on environmental education that includes photographs of people watching wildlife and kids participating in environmental education festivals and activities such as building bird houses.

All of these photographs are for you and anyone else. Brochures, annual reports, presentations, posters, screen savers, school projects, and framing are just a few of the things you can do with the photographs. None of the photographs may be used for profit.

As a courtesy, the Forest Service asks that you credit the photographer. All you have to do is search and find the photographs you want. Click to enlarge the thumbnail and right click to save or copy/paste it. And, it will be saved/copied in the resolution it was donated in! There are no catches. The photographs are yours!

The photographs have been donated primarily by Forest Service wildlife biologists, fisheries biologists, botanists, and recreation specialists. Some of the photographs are donated as part of required accomplishment reporting of field projects, and some are donated from the employee's personal work files. However, more and more photographs are being donated by other employees who have nature photography as a hobby.

Not only that, the web site is now allowing conservation organization members and the general public to also donate their photographs to the photo library. So, if you have some photographs that are just taking up space on your computer, why

not donate them and share you nature photography where it can be used to further raise the level of understanding and appreciation of our natural resources.

Find a Photo is a great example of public service, and highlights what partnerships and collaboration can be. "Credit goes to our people in the field who have donated the vast majority of the photographs," says Don Virgovic, USDA Forest Service National NatureWatch Program Leader and creator of Find a Photo. "The number of photographs increases almost daily so check back often and find a photo!"

See: http://wwwnotes.fs.fed.us:81/wo/wfrp/find_a_photo.nsf/home?openpage

NICE PHOTO, EH?



**IT'S YOURS!
...and many more!**

Visit us at our **Find a Photo Website** and search from over 1600 wildlife, fish and wildflower **copyright-free** photographs to find that special photo you need for a brochure, annual report, presentation, website, or a photo for your wall or computer screen saver.

http://wwwnotes.fs.fed.us:81/wo/wfrp/find_a_photo.nsf/home?openpage

USDA Forest Service NatureWatch Program
"Looking and Learning"



Head for the high country – head for the North Cascades July 21st – July 23rd

This is the time for Mountain Botany and we have some great plans for this year's Botany Washington in the North Cascades. Hitchcock-carrying botanists and others with a keen interest or desire to hone their skills in high elevation botany should join us in late July for this year's Botany Washington.

Friday July 21st

Join us at the fabulous new North Cascades Environmental Learning Center for dinner and an evening learning about the indigenous Northwest mountain peoples from Bob Meirendorf, who has worked for the North Cascades National Park Service since 1989 as the Park Archeologist. We'll learn about the mountain ecology, paleoecology and the natural history of the North Cascades and the first people who made them their home.

Saturday July 22nd

Spend the day exploring the flora of the North Cascades choosing among four field adventures. After a hearty dinner we will all gather around to spend the evening with Dr. Anu Singh-Cundy. Anu is an Associate Professor in the Biology Department at Western Washington University whose research is focused on reproductive development in plants. Anu will highlight the many different ways through which plants co-opt animals for pollen delivery, and how these interactions shape the evolution of plant and beast. Anu believes amateur (and not so amateur) plant watchers can make a significant contribution to this knowledge base.

Saturday field trips (choose one):

1. Ross Lake boat trip

"Captain" Gerry Cook of NPS will skipper an all-day excursion aboard *Ross Mule*. A great chance to experience the beauty of the North Cascades and discuss some of its cultural history and vegetation. Stops and walks will be made at select spots (such as Big Beaver, Little Beaver, or perhaps the eastern side below Desolation Peak). Limit 20 people.

2. Cascade Pass

For good reason, this is the most popular destination in the North Cascades. The first 2 miles are through forest (some interesting wetlands), followed by a lovely 1.5 mile traverse through meadows and avalanche chutes to the pass. Fantastic views. Time permitting, the ridge and vistas of Sahale Arm and Doubtful Lake beckon. Round trip to pass 7 miles, elev. gain 1800 feet. Limit 12.

Moderately strenuous.

3. Boston Basin

For mountain climbers, this trail accesses Forbidden Peak (a classic). For us, a long but rewarding day into a basin of meadows, moraines, and glaciers. Unlike Cascade Pass, this trail is somewhat rough (streams and downed trees). A stiff hike through forest (about 2.5 miles) before breaking into avalanche and moraine zones. Round trip to first high moraine 7 miles, 3,000 feet elev. gain. Limit 12.



Sarah Gage on Easy Pass. PHOTO: WALTER LOCKWOOD

4. Maple Pass

Another popular destination for flowers, lichens, alpine lakes, meadows and views. Can be done in one (or all) of three stages: first, 2 miles, mostly through forest, to lovely Lake Ann; another 3/4 mile to Heather Pass (meadows and larches); and another 1.5 miles to spectacular Maple Pass at 6,600 feet. If all three segments are done, round trip approx. 7 miles, elev. gain 1800 feet. Limit 12.

Moderately strenuous.

Sunday July 23rd

Awake in the beautiful surroundings of the North Cascades and the new Environmental Learning Center's lodges for another day of hiking and mountain flora. Three field trips will be offered and participants head home in their varied directions after a day's worth of field study.

Sunday field trips (choose one):

5. Thunder Creek

One of the major drainages of the North Cascades, this 18 mile "creek" passes through magnificent stands of Douglas fir, cedar and hemlock. The first 2 miles (from Colonial Creek CG) are level, crossing the creek (on a new bridge) at the first mile. An option is to hike another mile or so (up) towards Fourth of July Pass and a couple of lovely balds. Total distance about 6 miles, elev. gain 500 feet. Limit 12. *Easy.*

6. Pyramid Lake

Nestled at the foot of steep cliffs, a small and serene lake at which to enjoy a leisurely day. The trail passes through a mix of new and older growth forest. Round trip 4.5 miles, elev. gain 1550 feet. Limit 12. *Easy.*

7. Diablo Lake Trail

This lovely forest trail starts right at the Environmental Learning Center and, in about 4 miles, ends at the Ross Lake dam. With gentle ups and downs, it invites a leisurely pace to appreciate lower elevation flora and admire an impressive waterfall and some open areas. Round trip a max of 8 miles, but turnaround can be anywhere along the way. Limit 12. *Easy.*

8. Thornton Lakes

For those heading west (to leave on Sunday) this is a good all day hike—start early. Begin by hiking an abandoned logging road (2 miles) and the trail (another 2 miles) to a saddle above the lake—a spectacular spot with views of lower Thornton Lake and Mount Triumph. For the ambitious, follow a track (1 mile) and scramble up Trapper's Peak (5,966 feet) for views of the Pickets, and more. Round trip to saddle 8 miles, elev. gain 2600 feet. Limit 12. *Strenuous.*

8



Lyall's goldenweed (*Haplopappus lyallii*). PHOTO: WALTER LOCKWOOD

Botany Washington 2006

Register early. Registration limited to 40.

Name(s) _____

Address _____

City, State, Zip _____

Phone number _____ Email address _____

TYPE OF MEALS: Regular ____ Vegetarian ____ Allergy Diet ____ *describe below*

FIELD TRIP PREFERENCE: **Saturday** 1st choice _____ 2nd choice _____ 3rd choice _____

Sunday 1st choice _____ 2nd choice _____ 3rd choice _____

REGISTRATION COST:
(Includes 6 meals and two nights accommodations)

\$210.00 per person

TOTAL (\$210.00 x ____ number of people):

Total Fees = \$ _____

Mail Registration Form/Checks payable to WNPS:

Washington Native Plant Society
Botany WA Registration
6310 NE 74th St., Ste 215 E
Seattle, WA 98115

Registration deadline June 1st, 2006. No refunds after June 1st, 2006

Questions: Contact Catherine Hovanic, 206-527-3210, 1-888-288-8022, wnps@wnps.org

Registrants will receive details on logistics and additional directions.

Report on 2005 WNPS Annual Backpack Trip to Twin Sisters Lakes and Tumac Mountain

by Jim Riley, WNPS South Sound Chapter

With: Dottie Riley, Linda Sutor, Marianne Uyeda, Jim Duemmel, Don Knoke, Stu Knoke, Jim Pritchard, Mike and Alex Wright, Bob Tokach and two dogs—Merik and Quila.

July 15, 2005 - Sisters Lakes

Most of us departed the trailhead at the appointed time with checklists in hand. We slowly made our way along, making note of each new plant species we encountered. The sounds of many birds and the wind whistling in the trees accompanied us as we trudged along. About half way into the lakes, Mike and Alex Wright caught up with us. The trail into the lakes is gentle and less than two miles long so we were at the first of the Twin Sisters Lakes by 11:30. Here we planned to make camp for the weekend.

We all went to work setting up our tents and then sat down to eat some lunch. After everyone had eaten, I proposed hiking over to the larger of the Twin Sisters to a



The group takes a photo break on Tumac Mountain. Left to right: Linda Sutor, Stu Knoke, Mike Wright, Marianne Uyeda, Alex Wright, Jim Riley (with Quila), Jim Pritchard, Jim Duemmel, Don Knoke and Bob Tokach (with Merik).

PHOTO: DOTTIE RILEY

large talus slope on the north side of the lake to see what we could find.

We followed the trail to the lake and then worked our way around through the brush taking advantage of any game trail that was going in our direction. The going got tough when we hit a patch of Sitka alder, so we worked our way up the hill and around the brush to the rocky slope we were headed for. Several more species

of plants were observed as we made our way across this new habitat. As you might expect, we saw spreading stonecrop (*Sedum divergens*), lanceleaved stonecrop (*Sedum lanceolatum*), naked broomrape (*Orobanche uniflora*), Menzies' larkspur (*Delphinium menziesii*), Northern buckwheat (*Eriogonum compositum*), scarlet gilia (*Ipomopsis aggregata*), Brewer's monkeyflower (*Mimulus breweri*), and many others to check off our list.

The group then split up and made their own way back to camp. Linda said they saw a large bull elk on their way back. We also encountered very many people on horseback and other hikers during the day.



Clear skies provide a scenic view of the eastern twin of the Twin Sisters Lakes, with Tumac Mountain in the background. PHOTO: JIM RILEY

In the afternoon the weather became cloudy and very windy. After the sun set it was time to put on extra clothing as it rapidly got cooler. After supper we all gathered around and compared what each of us had tallied for the day as we read through the checklist. The final results were 203 species for the day.

July 16 - Tumac Mountain

A breezy, gray and foggy morning greeted us when we arose from our sleeping bags. At one point during the night a few raindrops fell but ended as soon as it started.

We all put together lunches, day packs and cameras and left camp for a hike to Tumac Mountain. Not far down the trail we came upon our big find for the trip. Thanks to the keying expertise of Don Knoke and Jim Duemmel, we found Strickland's *Tauschia* (*Tauschia stricklandii*) along the trail and in several meadows along the way.

The trail soon started gaining elevation very quickly and before long we were in the clouds and on top of Tumac Mountain. The flower displays along the way were fantastic. Magenta paintbrush (*Castilleja parviflora oreopola*) and broadleaf lupine (*Lupinus latifolius*) carpeted the hillside with brilliant color and aroma.

After wandering around on top of the peak looking at new species of flowers and trees for a while, we all gathered together for a group portrait while waiting for the fog to lift. The clouds were persistent however, and everyone soon started heading back to camp. Bob and I dropped down the south side of the peak on the trail about 1/4 mile before turning around. Then as we were descending the north side of the mountain the clouds started to part. So we stopped to eat lunch and we soon could see and take pictures of the lakes around the mountain.

Back at camp after a brief rest, a few of us decided to hike around the lake. A well-used trail works its way around this Twin Sister Lake following close to the shoreline until you get to the south end. Here the many inlets and coves force you to detour in and out around the fingers of water and the trail soon fades away. We picked our way around the best we could, taking pictures as we went along.

It was suppertime when we completed the loop so we set about getting something to eat. The sun was now free of clouds and a light breeze was blowing through the trees. We gathered some wood and sat around a campfire as we once again looked over the checklist. We added about fifteen species that day. The rest of the evening was spent enjoying the fire and good conversation.

July 17 - Home

Before we broke camp this morning, a few of us climbed the hill above camp to see what we could find. The views were spectacular due to a cloudless day and bright sunshine. A couple more species were added, and after we reached the top and took a few pictures we dropped back down to camp. In a few minutes we had our packs on our backs and returned to our cars at the trailhead.



Come join us!

2006 WNPS Annual Backpack Trip to Cady Ridge, Wenatchee National Forest, July 28-31

This year's annual backpack trip will be to Cady Ridge in the Henry M. Jackson Wilderness of the Wenatchee National Forest. We will meet at the Little Wenatchee Ford Campground at the end of FS Rd. 65 at 9:30 a.m. on July 28th. The campground is via the Wenatchee River Road west of Lake Wenatchee. We will hike up the Little Wenatchee River Trail #1525 and camp at Meander Meadows or somewhere near there the first night. We will then travel south on the Pacific Crest Trail #2000, and back to the trailhead via the Cady Ridge Trail #1532. Very good descriptions of the hike can be found at the Washington Trails Association web site: <http://www.wta.org/~wta/cgi-bin/wtaweb.pl?7+reports+search> and do a search on "Cady Ridge." The Northwest Forest Pass will be required for parking and needs to be obtained for each vehicle. Group size will be limited to twelve, so for more information and sign-up contact: Jim Riley, Box 458, Randle, WA 98377, e-mail: dalife@juno.com or phone (360) 497-5193.

If this hike isn't to your liking, I would be happy to have anyone join me for my annual eight-day circuit of Mt. Adams starting on July 7th. (Same contact as above)



Host Selection by Northwestern *Castilleja*

by Dave Nelson, WNPS Columbia Basin Chapter

Paintbrush or *Castilleja* is usually missing from demonstration native gardens, and it is rarely present in gardens of even the most ardent rock gardener. Yet, it is often a predominant flowering forb in the higher meadows of the Northwest. The reason for this lack of horticultural use is the hemi-parasitic nature of *Castilleja*, as well as that of several other genera within Scrophulariaceae. (Be

aware that Scrophulariaceae will soon lose its hemi-parasites to Orobanchaceae [Phoenix & Press, 2005].) *Castilleja* is capable of surviving on its own, but only under optimum conditions of moisture and nutrients. Annual *Castilleja* survive much better than perennial kin during their limited lifespan. In general, survival is greatly improved for the perennial species when its specialized roots (haustoria) can attach and penetrate the roots of a nearby host plant. The degree of successful parasitism varies greatly depending upon the choice of host. This is where the current information starts to become a bit translucent; that is, most information concerning hosts appears correct, but many *Castilleja* species do not divulge their preferred hosts readily.

Grasses and sedges (Luna, 2005) most often are recommended as hosts for *Castilleja* grown for horticultural or restoration purposes. Generally, grasses and sedges are observed within close proximity of *Castilleja* under natural conditions. This should be the final answer for *Castilleja* hosting, but many questions abound. Why do certain forbs appear to be better companions than grasses (Lawrence and Kaye, 2005), and why are multiple hosts even more successful (Marvier, 1998)? Further complicating

the understanding of hosting is the observation that presumed *Castilleja* generalists show a surprising level of specificity (Marvier & Smith, 1997).

In order to gain insight into these questions, I have gathered observations about hosts for Northwest *Castilleja* (Table 1), compiled hosting data from the literature (Table 2), and attempted to draw some conclusions about hosts from my own growth trials, as well as from other literature sources. Hopefully, this information can provide us the necessary penetration into the secrets of paintbrush. Although Table 1 is incomplete, due to the stealthy *C. hispida*, there are a number of common hosts shared by

Table 1. Observed Hosts or Close-Proximity Companions of *Castilleja*

<i>Castilleja</i>	Host	Location *
<i>C. parviflora</i>	<i>Arnica cordifolia</i>	1,2
	<i>Aster alpigenus</i>	1
	<i>Fragaria vesca</i>	1
	<i>Ligusticum grayi</i>	1
	<i>Lupinus arcticus</i>	1
	<i>Pbiox diffusa</i>	1
	<i>Polygonum bistortoides</i>	1,2
	<i>Saxifraga cespitosa</i>	1
	<i>Valeriana sitchensis</i>	1,2
<i>C. miniata</i>	<i>Achillea millefolium</i>	1,2
	<i>Anaphalis margaritacea</i>	1,2,3
	<i>Aster alpigenus</i>	1
	<i>Delphinium glaucum</i>	2
	<i>Festuca brachyphylla</i>	1
	<i>Fragaria virginiana</i>	1,2
	<i>Fragaria vesca</i>	1
	<i>Lupinus latifolius</i>	1,2
	<i>Penstemon cardwelli</i>	3
	<i>Penstemon fruticosus</i>	1
	<i>Penstemon rupicola</i>	1
	<i>Penstemon serrulatus</i>	1
	<i>Pbiox diffusa</i>	1,2
	<i>Polygonum bistortoides</i>	1,2
	<i>Potentilla flabellifolia</i>	1
	<i>Trifolium repens</i>	3
	<i>Valeriana sitchensis</i>	1
<i>C. hispida</i>	<i>Anaphalis margaritacea</i>	1,2
	<i>Lupinus latifolius</i>	1,2
	<i>Penstemon rupicola</i>	1
	<i>Penstemon serrulatus</i>	1

* Locations are designated as: 1, Mt. Rainier and immediate area; 2, Olympic National Park; 3, Mt. St. Helens and immediate area. Hosts were within 2 cm of their respective paintbrush.

Table 2. *Castilleja* and Hosts Noted in Literature.

<i>Castilleja</i>	Host	Family	Reference *
<i>C. affinis</i> spp. <i>affinis</i>	<i>Artemisia pycnocephala</i>	Asteraceae	Marvier, 1996
	<i>Eriophyllum stachaeidifolium</i>	Asteraceae	Marvier, 1996
	<i>Lupinus arboreus</i>	Fabaceae	Marvier, 1996
<i>C. applega</i> <i>tei</i> spp.	<i>Artemisia tridentata</i>	Asteraceae	Hansen, 1979
<i>Martini</i>	<i>Medicago sativa</i>	Fabaceae	Matthies, 1997
<i>C. haydenii</i>	<i>Penstemon</i> spp.	Scrophulariaceae	Nelson, 2006a
<i>C. hispida</i>	<i>Holdiscus discolor</i>	Rosaceae	Guppy, 1998
	<i>Symphoricarpos acutus</i>	Caprifoliaceae	Guppy, 1998
	<i>Symphoricarpos albus</i>	Caprifoliaceae	Guppy, 1998
<i>C. integra</i>	<i>Anaphalis margaritacea</i>	Asteraceae	Nelson, 2006b
	<i>Antennaria microphylla</i>	Asteraceae	Nelson, 2006b
	<i>Erigeron speciosus</i>	Asteraceae	Nelson, 2006b
	<i>Liatris punctata</i>	Asteraceae	Mead and others, 1992
	<i>Medicago sativa</i>	Fabaceae	Matthies, 1997
	<i>Penstemon</i> spp.	Scrophulariaceae	Nelson, 2006a
	<i>Penstemon teuroides</i>	Scrophulariaceae	Stermitz and others, 1993
	<i>Aster alpinus</i>	Asteraceae	Guppy, 1998
<i>C. levisecta</i>	<i>Eriophyllum lanatum</i>	Asteraceae	Lawrence and Kaye, 2005
	<i>Potentilla gracilis</i>	Asteraceae	Lawrence and Kaye, 2005
	<i>Sidalcea</i> spp.	Malvaceae	Lawrence and Kaye, 2005
	<i>Spiraea japonica</i>	Rosaceae	Guppy, 1998
	<i>Artemisia frigida</i>	Asteraceae	Panther, 2001
<i>C. linariifolia</i>	<i>Helianthus annuus</i>	Asteraceae	Panther, 2001
	<i>Lupinus bakeri</i>	Fabaceae	Stermitz and Harris, 1987
	<i>Lupinus argenteus</i>	Fabaceae	Adler, 2002
<i>C. miniata</i>	<i>Medicago sativa</i>	Fabaceae	Matthies, 1997
	<i>Lupinus argenteus</i>	Fabaceae	Adler, 2002
	<i>Penstemon</i> spp.	Scrophulariaceae	Nelson, 2006a
	<i>Thermopsis montana</i>	Fabaceae	Stermitz and Harris, 1987
<i>C. rhexiifolia</i>	<i>Senecio triangularis</i>	Asteraceae	Stermitz and Harris, 1987
	<i>Senecio atratus</i>	Asteraceae	Stermitz and Harris, 1987
<i>C. sulphurea</i>	<i>Delphinium occidentale</i>	Ranunculaceae	Marko and Stermitz, 1997
	<i>Delphinium barbeyi</i>	Ranunculaceae	Marko and Stermitz, 1997
	<i>Lupinus argenteus</i>	Fabaceae	Stermitz and Harris, 1987
	<i>Senecio atratus</i>	Asteraceae	Arsanian and others, 1990
			Stermitz and Harris, 1987

* M. Marvier (1996) reported 6 other forbs in close proximity of *C. affinis* spp. *affinis*. L. Adler (2002) reported 12 forbs in close proximity to *C. miniata* from three Colorado sites.

Northwestern *Castilleja*. In particular, various members of Asteraceae and the genera *Fragaria*, *Lupinus*, *Phlox*, and *Penstemon* are commonly associated with the *Castilleja* in subalpine meadows.

Table 2 addresses several *Castilleja*, particularly those from the Rocky Mountains. Fortunately, Adler (2002) examined *C. miniata* and its hosts at sites in central Colorado. Several Asteraceae were noted, as well as *Lupinus argenteus*, *Fragaria virginiana*, and others from diverse families. Table 2 is particularly important since

visual confirmation of hosting has been obtained by laboratory or field experiments.

From the two tables, one might conclude that *Castilleja* is a true generalist with a multitude of hosts. In fact, Marvier (1998) suggested that multiple hosting may be preferred. From growth and hosting studies with *Penstemon* (Nelson, 2006a) and Asteraceae (Nelson, 2006b), *Castilleja* appears to have distinct forb preferences. For instance, some *Penstemon* are excellent hosts for *C. miniata*; these include *P. ovatus*, *P. serrulatus*, and even the Rocky Mountain native,

P. strictus. However, successful coupling is achieved only if the host *Penstemon* can tolerate the moisture and light conditions required of *C. miniata*. Similar circumstances were observed for *C. integra* (Southwestern source) and its associated *Penstemon*. The conclusiveness of this tends to vary since nutrient level must be also considered. *Anaphalis margaritacea* is such an example. High mulch levels in soil favored rapid *A. margaritea* growth which shaded and reduced growth of the attached *C. integra*. Much better results were observed with *C. integra* and



Castilleja miniata hosted by *Penstemon serrulatus* along the road to Mt. Rainier. PHOTO: DAVE NELSON

Erigeron speciosus. I should note that *C. integra* responded much better than *C. miniata* in Eastern Washington due to its drier conditions.

As previously noted, multiple hosting was suggested by Marvier (1998). She observed that a mixed diet (multiple host) appeared to benefit the hemi-parasite. This suggests that several hosting factors might be involved in haustorial development. Such queries about a hosting mechanism can start with the amount of time required for haustoria connection. In general, about five weeks is required after placing *C. miniata* and *P. ovatus* together (true leaves present at pairing) until obvious rapid growth is achieved. Such rapid growth usually signifies that successful haustorial connections were made. However, if the individual plants are placed further than 2 cm apart, attachment requires up to three months or does not occur. Since the root structure of *Castilleja* is fibrous and not very extensive, the hemiparasite may be quite dependent upon the root architecture of its hosts. The roots of grasses are fairly shallow, but quite extensive laterally. These roots are quite fine and, apparently, allow ready attachment by *Castilleja* (Marvier, 1998).

Although *Castilleja* obviously utilize host grasses, other forbs are preferred when nearby. Lupines and other

nitrogen-fixing Fabaceae should be distinctly preferred due to the nutrient supply, particularly inorganic nitrogen. However, the root structure of lupine is quite vertical (tap root) with minimal lateral extension (Nelson, 2005). My attempts to confirm lupine hosting with *C. miniata* yielded mixed results since pair survival (*L. lepidus* or *L. argenteus*) was quite poor. However, others have had quite good results. I should emphasize that several reports indicate that lupine may not be a host of choice when other forbs are available. Complicating the hosting by lupine may be the protective inclusion of lignin within the roots which may retard haustorial attachment. Forbs, such as asters and penstemon, have root structures intermediate between the previous examples of grasses and lupines. Yet, there is no obvious rationale why there appears to be preferences for specific forbs. However, root-extruded chemicals may provide a clue. Chemicals, such as quinoids and terpenoids, extruded by the host act as a specific recognition system and induce haustoria formation (Chang and Lynn, 1986). Several other parasitic angiosperms within Scrophulariaceae operate by enzymatically degrading the host root surface to seek presence of the haustorium-inducing principle. The chemical mechanisms have not been established for *Castilleja*; however, they probably exist in one form or another since they are so widespread in most parasitic members of Scrophulariaceae (Phoenix & Press, 2005).

Thus, many factors may control the choice of hosts for *Castilleja* including selective chemical presence, root architecture, and compatible growing conditions for host and parasite (moisture, light, and soil fertility). This shows how complicated the growth requirements can be for these natives. With the compiled information concerning host selection, our understanding of *Castilleja* ecology may have been improved. Hopefully, our enjoyment of paintbrush can extend its range into our public and private gardens.

If you desire more information about growing *Castilleja*, please send an e-mail request to daveandlin@verizon.net. Please indicate Manuscript Request in the subject line.

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Update on WTU's Image Collection web site

by Ben Legler

Since its creation in March 2004, WTU Herbarium's Image Collection web site for the plants of Washington has grown substantially. The Image Collection web site now contains photographs of just over 2,000 of the approximately 3,200 vascular plant species in the state, and contains over 12,000 photographs. Nearly 800 species were added in 2005 alone. This fantastic growth has been possible thanks to the contributions of a number of photographers and botanists.

Our efforts to build the image collection continue, and we need your help. Provided below is a link to a list of the 1,200 remaining species for which we need photos. Please browse through the list and if you have photographs of any of these species, consider letting us use them on the web site. Or, keep this list and a camera handy as you botanize this summer. For more information see the Image Collection web site, or send me an email (blegler@u.washington.edu).

<http://biology.burke.washington.edu/herbarium/imagecollection/unphotographed.php>



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Ranging far, high, wet, and dry: UW Herbarium vascular plant collecting in 2005

by David Giblin, University of Washington Herbarium
Burke Museum of Natural History and Culture

It's hard to believe that spring 2006 is already here. Before the current field season gets too far along, I wanted to share some of the interesting places and stories from the University of Washington Herbarium's (WTU*) vascular plant collecting efforts in 2005. Our collecting season began in early April at Ebey's Landing on Whidbey Island and wound up at in late September in the delta of the South Fork of the Stillaguamish River. Between those months, we collectively ventured south to Baja California, east to Idaho, and north to the San Juan Islands and North Cascades National Park. Along the way, we gathered over 2,500 collections that will be permanently stored at WTU. The overwhelming majority of these collections were made in replicate, allowing us to send duplicates to other herbaria in the Pacific Northwest (they in turn send us their duplicates, which helps us add contemporary specimens from places in the region that we did not get to).

As I write this, the days are short and we are working towards one of the wettest Januarys on record. With few hints from the native flora that spring is coming, it seemed like a good time to recount some of the interesting places we visited and the plants that we found.

Ebey's Landing (Island County)

In the spring of 2004, WTU collaborated with Peter Dunwiddie of The Nature Conservancy and Regina Rochefort and Mignonne Bivin of North Cascades National Park to conduct a series of botanical surveys of this unique area on Whidbey Island. Ben Legler and I returned on April 1st to see if there were any early season species that we missed from the previous year. The good news was that the 2004 efforts had been very thorough. The bad news was that because of our thoroughness we only needed to make six collections, and five of those were of introduced species. Nevertheless, it was valuable to know that WTU now has a nearly complete collection of all the vascular plant species found at Ebey's Landing (237 species and subspecies; 57% native, 43% introduced).

Juniper Dunes Wilderness Area (Franklin County)

With permission from Pamela Camp of the U.S. Bureau of Land Management (BLM), Peter Zika, Ben Legler, and I traveled to the Juniper Dunes Wilderness Area in early May to document the vascular plant diversity of this unusual land form in central Washington. The site is 7,000 acres in size and is dominated by enormous sand dunes that reach over 100 feet high in places. Pam had provided us with a list of 68 vascular plant species known from the site. Though we did not see everything on the list, our efforts did add at least two new species to the site



Peter Zika and Ben Legler at Juniper Dunes Wilderness Area in Franklin County. PHOTO: DAVID GIBLIN

list: *Claytonia rubra* ssp. *depressa* (redstem spring beauty), and *Myosurus apetalus* var. *borealis* (bristly mouse-tail). Both *Claytonia* (family Portulacaceae) and *Myosurus* (family Ranunculaceae) represent two new genera for Juniper Dunes, and Portulacaceae is a new family to the BLM list. The bristly mouse-tail collection was a particularly interesting find because it is typically found in areas where the soil is seasonally saturated. The swales in the dunes are capable of capturing moisture-laden air that condenses when it comes in contact with the soil, which may explain why this microsite was "wetter" than the surrounding desert-like conditions.

Bitterroot Mountains, Idaho – 10th Annual UW Herbarium Foray

Herbarium Curator Dick Olmstead started the Foray program when he arrived at UW in 1996, and over the past 10 years the Forays have added over 5,000 specimens to the Herbarium's collections. This year's trip to Idaho was the first time that the Annual Foray was held outside of



Participants in the 10th Annual UW Herbarium Foray to Clearwater National Forest in the Bitterroot Mountains of Idaho. PHOTO: DAVID GIBLIN

either Washington or Oregon. The Bitterroot Mountains are on the eastern edge of the area circumscribed in Hitchcock and Cronquist's *Flora of the Pacific Northwest*, and the bulk of our holdings from this region date back to the years when Hitchcock himself collected extensively in eastern Idaho.

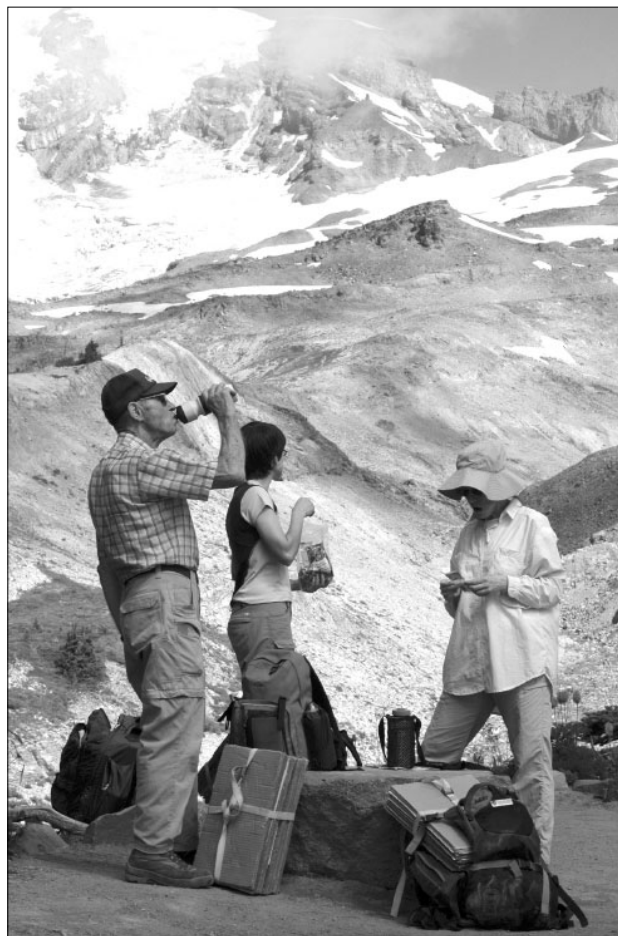
This year we had one of the largest groups ever, with 25 participants ranging in age from 10 to 80+ years of age. Our center of operations was the Hidden Creek Campground of the North Fork of the Clearwater River. This is a particularly unusual region of the Bitterroots due to the presence of plant species typically found west of the Cascade crest. We camped beneath a canopy of old-growth western red cedars (*Thuja plicata*); the forest understory contained deer fern (*Blechnum spicant*); and sierra brookfoam (*Boykinia intermedia*) was abundant along the banks of the nearby river and streams. We collected in places with intrepid names such as Hoodoo Pass, Fly Hill, and Mush Saddle, and by the trip's end made over 550 collections. We are currently meeting one evening a month in the Herbarium to identify all that we collected. Several WNPS members participated, including Barb Smith, Wendy McClure, Jessie and Joe Johanson, Richard Robohm, Suzanne Bagshaw, and Don Knoke.

North Cascades (Chelan County) and Mt. Rainier (Lewis County) National Parks

Since 2002, WTU has conducted botanical surveys for the National Park Service. In 2005, Sarah Gage and Ben Legler continued this project by leading multi-day collecting trips to North Cascades National Park (NOCA) and Mount Rainier National Park (MORA), respectively.

Sarah won the award for the most strenuous trip, as she led a group that included U.S. Forest Service Botanist Laura Potash and Peter Zika to the remote Rennie Peak area on the eastern edge of NOCA's boundary in Chelan County. The highest collections made by the group were at an elevation of 7,809 feet (2,381 meters), and they included *Draba paysonii* (Payson's whitlow-grass), *Dryas octopetala* (eight-petaled mountain avens), and *Phacelia sericea* (silky phacelia). NOCA botanist Steve Hahn not only participated in the collecting efforts, but also helped Student Conservation Association interns carry the fully-loaded plant presses from the backcountry collecting sites to the trailhead where the trip started.

Ben Legler was joined by WNPS members Sharon Rodman and Don Knoke, and WTU volunteer Deanna Goldy on a two-day outing to MORA. Peter del Zotto, MORA botanist, had coordinated two-night's accommodations at the seasonal worker's huts located just behind the lodge at Longmire. The group spent the first day collecting in the Pinnacle Peak area of the Tatoosh Range, which is located just south of Reflection Lakes. The second day was spent



Don Knoke, Deanna Goldy, and Sharon Rodman (l to r) take a break from collecting near Stephen's Ridge at Mount Rainier National Park. PHOTO: BEN LEGLER

collecting along Stevens Ridge, which is located above the road descending to Ohanapecosh on the southeast flank of Mt. Rainier. The group collected 107 species in their efforts, five of which were not previously represented in MORA's herbarium.

Gray's Bay, Columbia River (Wahkiakum County)

WNPS member Cathy Maxwell hosted Ben Legler, Peter Zika, and me for a two-day outing to collect aquatic species in southwestern Washington. Over the last few years we have prioritized collecting aquatic vascular plant species, because they are typically overlooked and underrepresented in herbaria for a variety of reasons (not the least of which is that you have to get wet and muddy to collect them, and they can have very small, non-showy flowers that make identification difficult). We spent the first day in the freshwater intertidal zone of Gray's Bay at the western end of the Columbia River. Freshwater intertidal zones are unique habitats because the water level fluctuates daily in response to the ocean's tides, but the water is not brackish. Saltwater is denser than freshwater, so the incoming ocean water slides under the Columbia River water and pushes it up on a rising tide (the water level then recedes when the tide goes back out). Some of the interesting and unusual plants that we collected here included several species of pondweed (*Potamogeton*), *Crassula aquatica* (water pygmyweed), *Murdannia kiesak* (a nonnative member of the dayflower [Commelinaceae] family), and *Samolus valerandi* (seaside brookweed). We spent the second day at Silver Lake, just east of Mt. Saint Helens, where we collected several species of bladderworts (genus *Utricularia*). We made close to 100 collections over the course of the two days and added several new county records to the Washington flora.

Final thoughts

The flora of any region is dynamic over time periods short and long—new species enter a region, while other species may decline and disappear locally (think of what the flora of Seattle looked like 150 years ago). The source of this ebb and flow may be natural, human-caused, or both. The best way to document these changes in a scientific manner is to build a comprehensive collection of specimens that remains current over time and is readily available for examination and study. Though species lists are helpful, field identification of many species is notoriously difficult and the accuracy of an identification

found on a list cannot be verified by others.

WTU's exploration and interpretation of the region's flora results from a community effort both inside and outside of the Herbarium. We are grateful for the support that we receive from our volunteers and WNPS members. Successful partnerships with The Nature Conservancy, as well as federal and state agencies, have had a tremendous impact on the growth of WTU's vascular plant collections over the last several years. 2006 should be a productive year too, with collecting trips planned for the San Juan Islands, Padilla Bay, Mount Rainier National Park, North Cascades National Park, the Wenatchee Mountains, and Idaho. I look forward to reporting to you next year on what we found!

* *Herbaria worldwide adopt a unique acronym to identify the respective institution to which they belong. WTU stands for Washington Territory University, the name by which the current UW was known by after its founding in 1861. The University of Washington Herbarium (WTU) was established in 1882, and Washington was granted statehood in 1889.*



Plant lists available online

Before you set out on your next hike, check out the "Native Plant Lists" link at the WNPS web site www.wnps.org. Here you'll find plant lists from more than 300 sites throughout the state, compiled by some of the most respected names in Washington botany. Updates will be done once a year and members are invited to contribute their own lists. If you have suggestions about the plants lists or would like to contribute a plant list, please contact Don Knoke at donknoke@yahoo.com.



Armitage's Native Plants for North American Gardens

By Allan M. Armitage

Timber Press, Portland, Oregon 2006

Reviewed by Alan Yen

I was excited to receive the news about the publication of this new book by Allan Armitage, a professor of horticulture at the University of Georgia and a prolific author of garden books. My last experience with books on the broad subject of gardening with North American native plants came from two books published by William Cullina at the New England Wildflower Society. These two books, one on trees and shrubs, and the other on wildflowers, are detailed, thorough, and provide useful information on native plant gardening for plants from across North America. The title of Armitage's new book led me to think that it would be another good general reference in this subject area; however, I discovered that the plants discussed in this new book are mostly from the eastern United States, and I think that this new book is of limited value for gardeners in the Pacific Northwest.

Armitage's book includes about 160 genera and 570 species of plants native to North America. The author uses "availability to mainstream gardeners" as the main criterion for including or omitting a plant—a criterion that the author admits is "highly subjective." Another criterion used to select plants is the author's experience with them as a teacher and gardener, and he includes mostly plants with which he is familiar. The beginning chapter contains background information on native plant gardening, such as plant availability, cultivars, sales and marketing of native plants, "good" and "bad" native plants, and a discussion on the meaning of "native plants."

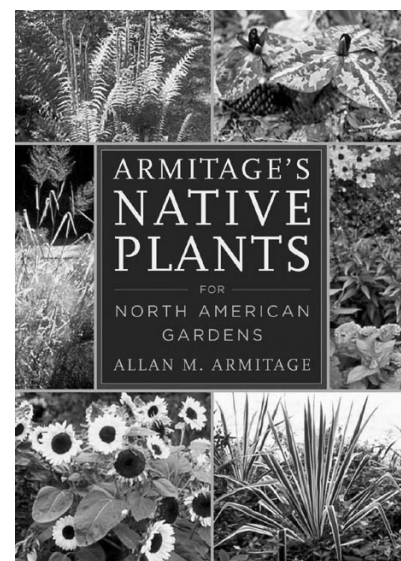
The bulk of the book (over 400 pages) is devoted to the plants themselves. Plants are arranged alphabetically by genera from A to Z (*Aconitum* - *Zizia*) and only herbaceous flowering plants, ferns, and grasses are included. A brief overview of each genus is provided. This is followed by discussions of selected species for that genus. At the species level, the author provides information on plant distribution, hardiness (using the USDA zone system), growing condition requirements, garden values, and available cultivars. The discussion on plant cultivars is extensive. For example, no fewer than ten cultivars and their horticultural history were presented for *Echinacea purpurea*, the purple coneflower. At the end of discussion for each genus, the author provides

information on propagation, other species for the garden, and etymology of the plant names. The book is illustrated generously with color photographs, many of which were taken from plants in garden settings.

Armitage chose genus *Aconitum* as the first genus for the book. This genus is not easy to grow and the author acknowledges that. I have tried to grow *A. columbianum* with little success. From the perspective of the Pacific Northwest, a better choice for the first genus may be *Achillea* (yarrow) or *Achlys* (vanilla leaf). The book discussed several issues that I see rarely in books of this kind, such as the issues of native plant cultivars, "good" or "bad" native plants, and marketing issues. I welcome the author's inclusion of these subjects and I was curious to learn what he thinks about them. These are important issues that affect plant choices for our own gardens and how we advise the public on gardening with native plants. For example, several known cultivars of *Ribes sanguineum* (red-flowering current), including a white form, are available commercially and more education about them would be helpful.

Missing from this book are subjects related to the science of botany, plant ecology, and horticulture, such as soil, plant nutrition, wildlife and gardens, natural history, and garden designs. Perhaps the author assumes that his readers are interested primarily in the plants themselves. I would have liked to see a more in-depth discussion on the plants, their natural history, and their environment; I believe that a better understanding of plants in their larger ecological context would help make one a better gardener.

I like the inclusion of native ferns and grasses in this book. Ferns and grasses have diverse textural and color attributes that help add attractive visual effects in a garden. I also enjoy learning about plants from eastern North America. Gardeners in eastern North America face different environmental conditions from those in the Pacific Northwest. For example, plants in eastern North

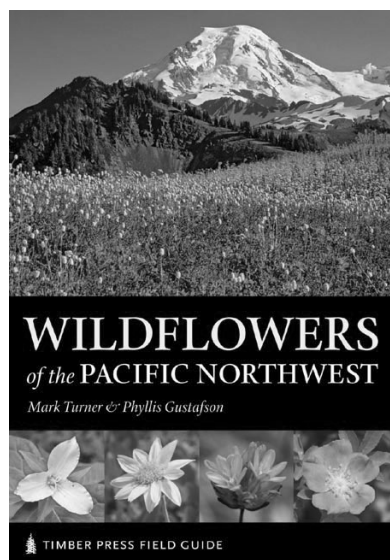
*Continued on page 21*

Wildflowers of the Pacific Northwest

By Mark Turner and Phyllis Gustafson
Timber Press, Portland, Oregon 2006

*Reviewed by David Giblin, University of Washington
Herbarium*

In the trough of a Pacific Northwest winter, it can be challenging to remember the diversity and magnificence of our flora. Gray skies, bare trees, and snow-covered hills have a way of erasing the memories of the plants one enjoyed seeing and learning about only a few months earlier. I was



feeling this way the other day before receiving a copy of Mark Turner's and Phyllis Gustafson's new field guide, *Wildflowers of the Pacific Northwest*, published by Timber Press. One look at the cover's photo of Mt. Adams behind a meadow of bistort and lupine immediately reminded me of why I chose to make the Pacific Northwest my home.

Turner and Gustafson devoted two years to the production of their

field guide, which covers southern British Columbia, Washington, Oregon, and northern California. In all, the authors provide over 1,240 images of 1,200+ species to be found in the area circumscribed. The vast majority of the species treated are native, though the authors wisely chose to include several showy nonnative species that are well-established in the flora and commonly encountered (for example, common St. John's wort [*Hypericum perforatum*] and redstem storksbill [*Erodium cicutarium*]).

Using flower color as the primary organizing principle for their book and omitting identification keys, Turner and Gustafson's primary target is the lay audience with an interest in knowing the names of the plants they see around them. For each species they provide at least one image, the scientific and common names, the family to which the species belongs, a comment on its abundance (e.g., common, rare), bloom period, life history (annual,

biennial, perennial), height, habitat, and origin (native, nonnative). To assist with proper identification, the authors include a detailed description of each species' overall appearance, including growth habit, leaf arrangement and type, inflorescence structure, flower morphology, and additional information regarding the type of habitat and growing conditions in which one is likely to encounter the species. This is a tremendous amount of helpful information that is written in a style that does not require users to have previous training in botany.

There are many aspects of *Wildflowers of the Pacific Northwest* that I find very appealing for a field guide. The compact size (about 8" x 6") makes it very easy to put in a daypack or glove compartment. The flexible plastic cover and strong binding ensure that it will stand up to years of being leafed through by users who consult it extensively. The photos that accompany each species are outstanding in terms of their clarity and depiction of important floral features that are essential for making identifications. Capturing the defining details of a species' flower or inflorescence in a single image is a challenge that few field guide users can comprehend, and Mark Turner has done an exceptional job in tackling this impossible task. The county (U.S.) and forest district (Canada) range maps that accompany each species' description are one of my favorite features of the book. My bias for this detail no doubt stems from my work as a herbarium collection manager, where distribution information at this scale is of great interest. Nevertheless, these maps help users understand that some species' distributions are determined by ecological (e.g., serpentine soils) or geographical (e.g., east or west of the Cascades) features.

Another feature of the book that I particularly enjoyed was the introductory chapter, "Climate, Geography, and Plant Habitats." The authors devote 25 pages to covering these topics, and they support the very informative text with an outstanding ecoregion map of the Pacific Northwest and exemplary photos of the concepts they discuss. This chapter will be of particular value to those not familiar with how the breadth of landscape features in the region shapes the diversity of its flora. In the back of the book, users will be pleased to find a simplified glossary of botanical terms and a bibliography of references for further learning on a wide range of topics related to Pacific Northwest wildflowers.

Like all field guides, *Wildflowers of the Pacific Northwest* is not without its shortcomings. Perhaps my greatest concern is whether the authors chose too large of an area to cover. Southern British Columbia to northern California is a

long stretch, and the flora changes dramatically over this area. C. Leo Hitchcock chose to exclude the Siskiyou Mountain region of southern Oregon from his Pacific Northwest floristic work because of the distinctiveness of the flora there. Few of the species treated by Turner and Gustafson have distributions restricted to southern Oregon/northern California, so my concern may not be warranted.

The inside cover of the book contains line drawings of floral and leaf morphologies for instructional purposes. I was disappointed to see the “style” was not included, as part of the pistil, sepal and calyx appear to be used interchangeably, and “sessile” and “petioled” leaves are included under the title “Leaf Arrangements.” I believe that “Leaf Attachments” was the intended term. It would have been nice to see the concepts “opposite” and “alternate” leaves illustrated, and the drawing for “whorled” leaves does not communicate the true appearance of this leaf arrangement at all.

Once one gets beyond flower color and morphology, I found puzzling the choice of first organizing the entries alphabetically by family. I would have preferred just alphabetically by genus and species because the target audience is unlikely to have the background, and perhaps lacks the interest, to understand family-level associations among the genera treated. The placement of some of the genera is also questionable. For example, the genus *Vaccinium* (blueberries and huckleberries) is in the category “5 symmetrical petals” alongside *Silene* (catchfly) and *Geranium* (cranesbill), rather than in “5 symmetrical petals forming a bell,” which contains *Symphoricarpos* (snowbell) and *Ribes* (currant).

Through their long hours, diligence, and dedication, Mark Turner and Phyllis Gustafson have given us a well-written and beautifully illustrated guide to the common wildflowers that hikers and travelers are likely to encounter while out and about in the Pacific Northwest. Just having the photos and maps in one place is reason enough to buy the book, regardless of whether your abilities may be beyond the field guide level. I value and appreciate the wealth of information that the authors have compiled in this compact and durable volume. I am confident that owners of the book will find it an extremely helpful, easy-to-use guide for learning about our wonderful flora.

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Armitage's Native Plants continued from page 19

America are more adapted to the summer rain. This makes growing our native plants, many of which are adapted to dry summers, more difficult back East. Perhaps this is one reason why the author did not include too many of our native species in his book.

Of the roughly 570 species included in this book, only a small number are from the Pacific Northwest. The species that are discussed in the main text include *Adiantum pedatum* (maidenhair fern), genus *Camassia*, *Aruncus dioicus* (goatsbeard), *Campanula rotundifolia* (Scotch bellflower), *Dicentra formosa* (bleeding heart), *Epilobium angustifolium* (fireweed), *Geum triflorum* (prairie smoke), *Sedum spathulifolium* (broad-leaf stonecrop), *Smilicina*, *Sisyrinchium*, *Tellima grandiflora* (fringe cup), *Thalictrum dioicum* (meadow rue) and a few others. Other Northwest species, such as *Aquilegia formosa* (western columbine), *Asarum caudatum* (wild ginger), *Disporum hookeri* (hooker's fairy bell), *Dodecatheon hendersonii* (Henderson's shooting star), *Heuchera micrantha* (small flowered alumroot), *Lilium columbianum* (tiger lily), and *Tiarella trifoliata* (foam flower), are discussed only briefly in the “other species for the garden” section. Northwest species of penstemons, irises, senecios, lupines, asters, phlox, trilliums, and others, were missing entirely from the book. Many of our beautiful herbaceous genera, including *Fritillaria*, *Mimulus*, *Eriogonum*, *Fragaria*, *Lewisia*, *Clarkia*, *Douglasia*, *Carex*, *Allium*, genera in Asteraceae Fabaceae, and Brassicaceae, and grasses, to name just a few, also are missing. Wouldn't it have been nice to have whole chapters on our beautiful species of *Astragalus*, *Carex*, *Eriogonum*, *Allium*, and *Mimulus*?

Armitage's new book misses many of our choicest native plants. Fortunately, gardeners in the Pacific Northwest have a good selection of regional references, such as Kruckeberg's *Gardening with Native Plants of the Pacific Northwest*; Petinger and Costazo's *Native Plants in the Coastal Garden*; and Rose, Chachulski, and Hasse's *Propagation of Pacific Northwest Native Plants*. For those wishing to expand their plant selection to include species from further south, Schmidt's *Growing California Native Plants*; Bornstein, Fross, and O'Brien's *California Native Plants for the Garden*; and Emery's *Seed Propagation of Native California Plants* are useful. Writing a book on the subject of gardening with North American native plants is a challenging endeavor, and although Armitage could have included more plants from our region, he should be applauded for his efforts in undertaking such a project.

Sh

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