

Douglasia

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Journal of the

WASHINGTON
NATIVE PLANT
SOCIETY

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

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Erigeron basalticus

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A Note About This Issue

By the time you receive this issue of *Douglasia* we will be well into summer, and many of you will have been spending time around the state fulfilling the main purpose of the Society: conserving and appreciating our native plants and their habitats. Inside this issue you will find several articles to encourage you in your efforts.

Wendy Gible has written about the preservation of rare and endangered species, and will be contributing to future issues to raise awareness of plants that are threatened in our state. We also have two articles on propagating natives, and three articles on destinations worth visiting: David Giblin on Table mountain; Dick Olmsted and Sarah Baker on the Kruckeberg Garden; and Kathy Murray on Stonerose, for those of us interested in paleobotany. The South Sound Chapter sponsored a very successful Study Weekend in May, and we hope that the reports from the weekend will encourage you to sign up for next year.

You will also find in this issue the annual election ballot. There are three candidates presented for election to the Board and we hope that you will take the time to read about them, and to vote.

As usual, we would like to thank all who have taken time out of their busy schedules to contribute, and remind you that if you have a project or an interest that you would like to share, you are welcome to contribute as well. See the Information for Contributors in this issue, or go to WNPS.org, click on Publications, and then Information for Contributors. Feel free to e-mail with any questions as well.

Cynthia Spurgeon
Managing Editor

Thoughts on Conservation

by John H. Browne, Jr.
Conservation Committee Co-Chair



Since some of the air has been let out of the housing bubble, it would seem that rampant development would at least slow a bit in the near term. This might allow various local governments, aided and abetted by a variety of non-governmental organizations, a chance to advance more thoughtful land use policies, with the aim of accommodating burgeoning regional growth. This can only happen without running afoul of the legal mandates of habitat protection for regional endangered species or distressing the “quality of life” lobbyists (for whom our part of the country is justly famous). This was, really, a short moment between \$3.00 and \$4.00 a gallon gasoline—a time that biofuels moved from consideration as an entrepreneurial gambit to a national imperative. Suddenly, the landscape and what it bears has changed, and the usefulness of everything from wheat stubble to pre-commercial tree thinnings is being considered in the pursuit of independence from oil imports. It is no longer just the arcane home chemistry of converting retired fry oil into biodiesel which has produced a glut of glycerine and the smell of French fries in certain neighborhoods. It is newly capitalized refineries worth millions, and flow charts of materials and distribution pathways. It is the latest intensive assault on the environment, gearing up for production.

A Big Picture of what this means will look like this: much marginal farmland taken from various “reserve” and “habitat enhancement” programs and put back under the plow (or possibly plowed and planted for the first time); a narrowing of the spectrum of crops under production to those that produce either good oilseed yields or fermentable plants for alcohol production; and tree farms harvested more thoroughly and at even shorter intervals than at present, perhaps including changes in the mix of species—maybe phasing out tree species altogether, in favor of some other, higher-yielding crop, maybe not even a crop that’s native to our region. We’re also quite likely to see more of the kind of dilemmas facing vegetable seed growers in the Skagit delta, who will have their livelihoods compromised if oilseed growers plant acreage in canola nearby, introducing airborne pollen that affects the vegetable seed crops (since all are members of the tribe

of Mustards)—and I’m not even going to bring GM issues into this.

There are, presently, strong forces assembled to keep development out of the Cascade foothills and to concentrate on density around existing infrastructure, by means of “development rights marketing,” that is, letting owners of farm and forest land sell their rights to develop their land to those who could then build up other designated locales, using the rights they purchased. The principal disadvantage to this scheme, from my view, is that the only remaining place to develop will be the Puget Trough, the I-5 corridor, which is also the locale of our remaining oak prairies. This is where the railroad is, as well as the small towns around which the infrastructure awaits “densification.”

There’s a cultural proclivity to value farms and forests for their productive natures and to dismiss the value of prairie and sage/steppe (unless they bear livestock) as wasted space.

(As a side note, neither of my Washington native parents knew that salal berries are edible.) Education values have been heavily weighted towards a utilitarian view which may explain why our universities have Colleges of Mining rather than of Geology, and Colleges of Forest Resources rather than of Forest Ecology. Obviously, Business came before Science and remains pre-eminent. Given this reality, and the present individual ownership ethic, anything that we may wish to do to save prairie ecology beyond the “meadow museum” model is likely doomed to failure.

A recent area of discussion on our WNPS list-serve, which weighed the relative merits of distributing native plants via home landscaping and gardening means, did provide some food for thought and caused me to reflect on an incident one spring day 15 years ago at a crossroads grocery near Little Rock. The racks of 4” pots of primroses and pansies were evident on the porch of the store, while camas blooms were opening around the edge of the parking area (and along the local roads, generally). In a moment of curiosity (not entirely free of malice) I asked the produce manager who was watering the racks of potted plants if he knew the name of the blue flower there along the road, and if he knew of a place where some could be purchased. He didn’t know what they were but invited me to help myself to a fine colony out near the loading dock behind the store.

Today I wonder what it would take to fill the racks at regional grocery stores with camas, shooting star,

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Conserving Washington's Rare Plants

by Wendy Gible, Rare Care Program Manager

Nestled into crevices of south-central Washington's basalt cliffs, the basalt daisy (*Erigeron basalticus*) came under unusually intense scrutiny one sunny weekend in June 2007. Fifteen native plant enthusiasts and scientists spent a weekend searching for the daisy along a 10-mile stretch of the Yakima Canyon, the entire known range of this rare endemic plant. The goal of this group effort was to estimate the size of all known populations of the basalt daisy.

A year later and 55 miles to the north, a similar group of observers sought out another endemic cliff-dweller, Seely's silene (*Silene seelyi*). Their goal was to estimate the number of individuals inhabiting the granitic cliffs of Tumwater and Icicle Creek drainages. The group was also helping document the locations of other endemic plants to assist the Washington Natural Heritage Program (WNHP) with its assessment of the status of Wenatchee Mountain endemic plant species.

In both instances, the observers shared the same objective: to evaluate how well each species was thriving and whether human activities or invasive plants threatened their populations. In the case of the basalt daisy, the survey was prompted by a request from the US Fish and Wildlife Service (USFWS) to Washington Rare Plant Care and Conservation (Rare Care), a self-supported program affiliated with the University of Washington Botanic Gardens. Rare Care trains volunteers to monitor populations of rare plants around the state to assess their conditions and gather data on their habitats. Populations monitored by volunteers are often requested by biologists at state and federal agencies to assist with managing their land and protecting sensitive species.



The basalt cliffs of the Yakima River canyon of south-central Washington are home to the rare basalt daisy. PHOTO BY JENNIFER YOUNGMAN

That was the case with the basalt daisy. USFWS needed an updated assessment of the basalt daisy's overall population size in order to determine whether the daisy, which was a candidate species under the Endangered Species Act (ESA), should be listed as threatened or endangered. Over a two-day period, Rare Care's staff and volunteers visited all 10 known occurrences of the basalt daisy. The Rare Care group had to rely on binoculars, spotting scopes, and in some cases kayaks, to get a close enough view of the cliffs to see individual plants. Despite these challenges and a few rattlesnakes, population estimates were developed for all 10 sites, two of which had never before been determined. USFWS, after considering these and previous population estimates, and evaluating potential threats to known populations, decided to remove the basalt daisy from candidate status, though it remains a threatened species on WNHP's sensitive species list.

Three of Washington's native plants remain as candidate species (*Botrichium lineare* was also recently removed from candidate status), and only 10 species, representing less than 1 percent of the state's flora, receive protection under the ESA. Nationwide, approximately 5 percent of the native plants are listed under the ESA,

Thoughts on Conservation continued from previous page

native buttercups, *Eriophyllum*, *Castilleja*, *Erythronium*, *Sisyrinchium*, *Fritillaria*, *Aster*, *Viola*, and lupine, maybe even some bunchgrasses, to entice the would-be gardener in the neighborhoods that are sprouting all over our former prairies. Would it require an education, a tax break, both maybe? Would such a rag-tag checkerboard of habitat

provide enough continuity, when combined with regional parks, highway rights-of-way, and riparian corridors, to be useful to the creatures (other than Man) that have looked to the prairie for sustenance? Is there still time left to make a difference in the "sacrifice zone"?

JD

yet the Switzerland-based International Union for the Conservation of Nature considers 24 percent of native flora in the U.S. to be imperiled. At this rate, the U.S. ranks fourth highest in the world for imperiled plant species.

For those few species that receive federal protection, being listed under the ESA does not necessarily equate to adequate protection and resources for recovery. Unfortunately, the ESA provides protection to plants on public lands but not on private lands, unlike animals that are protected on both public and private lands. Furthermore, plants only receive a fraction of the federal funding that animals do: despite representing over 50 percent of the species listed under ESA, only 3 to 5 percent of the federal money for recovery is spent on plants. Granted, it is far less costly to work on plants than large mammals, but so little is known about most plant species that basic research is needed to understand their ecological requirements, codependent relationship with pollinators, and what needs to be done to secure their future.

For species not listed under the ESA, the funding picture is gloomier. The biology and ecological needs of most rare plants remain unstudied and their populations are not well documented. In fact, while we have a reasonable

idea of how many populations there are of many rare plants species, only patchy data exist on the number of individuals in those populations, and much of those data are outdated.

This is where Rare Care's rare plant monitoring program comes in. WNHP asked Rare Care to help update census data on Washington's sensitive plant species. WNHP is

responsible for tracking the status of native plant species across the state and for determining which species are sensitive or imperiled. Currently, they consider over 380 of our native species, or approximately 15 percent of the state's flora, to be sensitive and vulnerable to decline. With only one rare plant botanist on staff, it is impossible for



The basalt daisy is one of only three species in the *Erigeron* genus that occur in Washington State and have tri-lobed leaves. PHOTO BY RICHARD RAMSDEN

WNHP to visit all or even a majority of the populations of these species and they must rely on sightings by others to help gather information. Consequently, many rare plant populations are rarely visited, and the most recent sighting report in WNHP's records can be decades old.

A lot can happen in a couple of decades. Washington's human population can increase in size by nearly 50 percent. Sagebrush-covered hills and Puget Sound prairies can turn into subdivisions and shopping malls. Invasive plant species can expand their ranges and push farther into wilderness areas. Intense wildfires due to nearly a century of fire suppression can render forested hillsides to ashes. Clearly, with the intense pressure of habitat destruction and alteration that is occurring throughout the state, the fate of rare plant species remains precarious. These are the species that we are most likely to lose: they have only a small number of populations, so each population lost to development represents a bigger chunk of their overall numbers. And, species with small, isolated populations are more likely to be lost even if their little patch of ground remains intact. Small populations often have low genetic diversity and therefore less ability to adapt to novel environments, and they are more likely to be lost due to chance events.

Working in partnership with WNHP, Rare Care developed the rare plant monitoring program and modeled it after a similar program developed by the New England Wild Flower Society. These programs are successful examples of community science: they link land managers, scientists, and concerned citizens together to develop scientific data needed for conservation to be effective and timely. Community science programs are more commonly applied to projects like water quality monitoring where



Rare Care volunteer Richard Ramsden scans the cliff face for basalt daisies. PHOTO BY WENDY GIBBLE

volunteers do not need any prior experience to participate. Monitoring plant populations is different. The challenge for the volunteer is to correctly locate and identify the rare plant species in the wild where there may be several other species that closely resemble it. Volunteers participating in Rare Care's program are screened through an application to ensure they have the skills necessary to be successful as a rare plant monitor. Many are members of the Washington Native Plant Society and graduates of the Native Plant Stewardship Programs.

Over 200 volunteers from across the state have been trained by Rare Care since 2001. Volunteers visit known sites of rare plants to collect data on the size of the population, the characteristics of the habitat, and threats such as invasive species. Rare Care provides their field reports to land managers on whose land the population occurs as well as to WNHP. WNHP shares the data with NatureServe, a non-profit organization that works with the network of Natural Heritage Programs nationwide to compile scientific data on rare and endangered species and ecosystems and makes it available for conservation and research purposes. Therefore, data collected by Rare Care volunteers contribute to local, regional, and national conservation programs. Since the program's inception, over 600 reports have been provided to WNHP on 173 sensitive species. Rare Care volunteers have also documented 19 new locations for rare plant populations. Unfortunately, some of the populations that volunteers looked for could not be found, and after three attempts by at least two different observers, we consider these sites to have failed.

Often, these failures are a result of habitat degradation or development. These populations are gone for good, including local genetic adaptations that allowed them to thrive at that site and that may have been important for the species to survive in the new human-dominated landscape. That is why we also practice *ex situ* conservation—work occurring *off site* of the wild population. In 2003, with a generous gift by the Pendleton and Elizabeth Carey Miller Charitable Foundation, Rare Care constructed the Miller Seed Vault at the Center for Urban Horticulture. The seed vault contains a climate-controlled room and freezer to store seeds. The Miller Seed Vault—and it is a vault, with concrete walls and a fire-rated door—provides a secure facility where seeds from wild populations can be stored indefinitely to safeguard against the loss of a population or a species. These seeds will only be used for reintroductions or research undertaken for conservation of the species and advancement of scientific knowledge of plant species.

Ex situ conservation is a valuable conservation tool that supplements *in situ* conservation work. Unlike animals, it is relatively inexpensive to do with plants and requires very little infrastructure to maintain. It turns out that many seeds of temperate latitude species can survive for decades if they are properly dried and then stored at cold temperatures. Research conducted at the National Center for Genetic Resources Preservation in Fort Collins, Colorado, showed that to achieve optimal storage life, orthodox seeds (those that tolerate desiccation and freezing) should be dried to a water content of approximately 5 to 8 percent and stored at -18 degrees Celsius. Drying is key—if the seeds are not dried properly they can be killed when water inside them expands as it freezes.

Ex situ seed storage has several advantages. Most apparent is that many seeds can be stored in a very small space. When you consider that each seed is a living organism with its own unique genetic makeup, you realize that a significant portion of the genetic diversity of a population or species can be captured in a relatively small collection of seeds, on the order of 1,000 seeds or so. In fact, *ex situ* seed conservation is really conservation of genes—the unique genes that are represented in each plant population. Another advantage is that we can minimize artificial selection on the *ex situ* population. Inevitably, in a living collection such as a botanic garden, significant selection can occur because the individuals that are successful in the garden and produce the most seeds for the next generation are those best adapted to growing in a *garden* environment. By storing seeds from wild populations, we capture the genetic diversity of the population that resulted from generations of evolution in the natural habitat.

Ex situ conservation will likely play an increasingly important role in conserving species threatened by global climate change. Many rare plant species may not be able to migrate northward because they are adapted to special habitats that are completely isolated. Species with small population sizes may not have the genetic diversity in their population to allow them to adapt fast enough to the new environment. The first plants that may be impacted are endemic alpine species, such as the Olympic Mountains' Cotton's milkvetch (*Astragalus cottonii*). Alpine regions as well as arctic regions are expected to see more immediate changes due to faster rising temperatures and reduced snow pack. Because we do not know what impact global warming will have on specific species and plant communities, Rare Care is working with the National Park Service and the Forest Service to collect and bank

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A Look at Washington's Rare Plants: Cotton's Milkvetch (*Astragalus cottonii*)

Washington State Threatened Species

This is the first of a regular series featuring Washington's rare plants contributed by Washington Rare Plant Care and Conservation. Future articles contributed by Rare Care staff and volunteers will feature rare plants monitored by Rare Care.

by Wendy Gobble, Rare Care Program Manager

Washington Natural Heritage Program's list of sensitive plants includes 15 species of milkvetch, but most occur east of the Cascade Mountains. Cotton's milkvetch is one of only two milkvetches found in the Olympic Mountains and is easily identified by its inflated, reddish pods. In fact, it is endemic to the Olympics, occurring only at elevations above 4,800 feet on mountains in the northeastern corner of the peninsula. All documented populations occur on sparsely-vegetated talus slopes rich in limestone. The specialized habitat requirements of this species and the limited amount of available habitat are likely significant factors contributing to its very narrow geographic range and the small number of populations.

Although all known populations occur in wilderness areas of the Olympic National Forest and in the Olympic



The distinctive inflated pods of Cotton's milkvetch act as miniature greenhouses to help the seed ripen and are likely an adaptation to the short summers of their alpine habitat. PHOTO BY MIKE DAWSON

National Park, the future of this species is at risk. At least one population lies along a popular hiking trail where I have personally observed hikers and scooters passing within inches of individual plants. But the greatest risk to the future of this plant is global warming. It cannot migrate higher – it is already near or at the summit of mountains. Its rather large seeds do not disperse far from the parent plant, preventing long distance migration. In 2007, Rare Care collected seeds from two populations for the Miller Seed Vault, and one more collection is planned in 2008. These seeds may represent the future of this species if it cannot adapt to the coming future of a warmer earth.



Conserving Washington's Rare Plants continued from previous page

alpine species of the Olympic and Cascade mountains that may be particularly vulnerable to extinction due to global climate change.

Our state's rare plants face tremendous challenges in the coming decades. Their future is threatened by continued habitat destruction, competition and habitat alteration by invasive species, and changing climatic conditions and water availability due to global climate change. Scientists think we are in the fifth major extinction crisis in the history of the earth and that humans are the cause. The future survival of these plants is our responsibility. These challenges may seem overwhelming, but we can all help to ensure a future for these beautiful species. Share your interest in native plants with your friends and families.

Talk to your local governmental representatives and let them know that plant conservation is important to you. Remove invasive species from your yard. Volunteer for governmental agencies to help remove invasive species from natural areas or with Rare Care to help conserve rare plant populations. And as you can, help support groups that are working to protect our imperiled plant species.

Learn more about conserving Washington's rare plants and the Rare Care Program at: <http://www.depts.washington.edu/rarecare/> For more information on volunteering with Rare Care or to receive our semi-annual newsletter, email us at rarecare@u.washington.edu or call 206-616-0780.



On Selling Rare Plants

by Joe Arnett, *Rare Plant Botanist*,
John Gamon, *Program Manager, Washington Natural
Heritage Program*

We have been following recent discussions on the WNPS listserv, and elsewhere, about whether rare plants, particularly from salvage efforts, should be sold. Because making recommendations about rare plant conservation in Washington is central to the mission of the Natural Heritage Program, we would like to add our views to the discussion.

Most simply stated, the Natural Heritage Program, in agreement with WNPS policy, discourages the sale of rare plants. We make this recommendation primarily for one reason: we think that making rare plants commercially valuable increases the risk to natural populations. And conserving rare plant populations within natural ecosystems is the single most important action that we can take to maintain these species and the habitats in which they grow.

That said, it is clear that establishing new populations will continue to be an important component of rare plant recovery efforts. The recovery plans for federally listed plants, our rarest species, specify the need to establish new populations within the historical range of the species, and the Natural Heritage Program is actively involved with this work. It is reasonable to think that other rare species may also benefit from intentional plantings in areas where they are not currently found.

But there are risks that come along with manipulation of rare species, and moving them around the landscape, including the following:

- Genetic contamination of natural populations by plants from other geographic areas:** While not restricted to rare species, this is one of the dangers of moving genetic material around the landscape. Established populations may include a genetic identity distinct from other populations of the same species, and this part of biodiversity can be lost through interbreeding.

- Genetic changes from cultivation:** Growing plants under artificial conditions can exert a powerful selective pressure for plants that thrive under conditions radically different from those that occur in natural habitats.

- Shifts in priority away from conservation of existing populations:** Restoration and *ex situ* conservation, while beneficial, can bring the danger of diverting attention from protecting existing populations.

- Misinterpreting plantings as natural populations:** Maintaining a database of rare plant occurrences statewide is a major responsibility of the Natural Heritage Program. If

plantings occur without our knowledge, we may not know whether populations that are discovered are natural. We carefully track introductions of federally listed species; for our database to be accurate we also need to know about any plantings of other rare species in natural sites.

Efforts to establish new populations of federally listed species are coordinated under the guidance of recovery or technical teams. These groups of scientists evaluate risks, including those described above, and make recommendations from a species perspective. Volunteers contribute long hours of labor, implementing these recommendations, and we are deeply grateful.

People skilled in propagating and salvaging native plants also have contributions to make to rare plant recovery, and this effort benefits from the knowledge gained from horticulture. We learn a great deal from salvage efforts, and from growing species in greenhouse and garden settings. Even failures yield important information about the complexity and specificity of natural ecosystems.

But we are extremely concerned about people digging up wild plants, and the experience of the conservation community suggests that this is a real danger. Poaching is our foremost concern, but legally digging rare plants on private land could also be detrimental. The Endangered Species Act in Section 9(a)(2) prohibits commerce in federally listed species, or their removal from Federal lands. In Washington, there are no other legal restrictions on collection and sale of rare plants. Plants, even very rare ones, are legally the property of the owner of the land on which they occur, and landowners are free to remove them if they wish. We understand that most people interested in selling rare plants would use appropriate sources of salvaged plants, seed, or cuttings, and there is logic to the view that if plants are commercially available, people won't need to dig them up. But a few unprincipled individuals can cause major damage if there is a financial incentive. If rarity becomes a commodity, then the rarest species, which can least afford it, become the most at risk.

Salvaging rare plants from certain destruction is a worthy undertaking, and, depending on the skill of the salvagers, may be one way that existing plants are kept alive. Using these plants in demonstration gardens may provide important educational functions, and incorporating these into restoration projects may be an additional contribution to the large efforts to conserve biodiversity. Placing them in private gardens may provide enjoyment to the gardeners and yield insight into the biology of the species, and seems unlikely to cause harm.

But selling them? Our view is that this is a bad idea.



Bringing Alpines Low: Contrary Gardening in Seattle

by Richard Ramsden, Central Puget Sound Chapter

When I moved into my Seattle home, it had a yard with the usual plantings—an ottoman-like hybrid rhododendron, slouching junipers, and a purple Japanese maple tree—all set in a patchy lawn typical for the neighborhood. The source of the plantings would have been the local garden center where many more similar shrubs are available along with more purple trees, overly petaled roses, and white striped perennials. Most are horticultural varieties or hybrids, grafts, or clones springing from clones—genetic oddballs native to those long lines of black, one-gallon containers.

I was obstinate enough to want to grow what the garden centers did not have: plants natural to the landscapes familiar to me from Washington state and the west, the natives that are beautiful and evoke a sense of place. I wanted my garden to have *Penstemon* that grow in the rock cliffs of the central Cascades, whose rose-pink flowers are bright enough to be spotted a hundred feet away, as well as *Fritillaria*, whose brown bells are nearly imperceptible even when under foot. I wanted my garden to have the elegant, creamy torches of bear grass from the mountains, as well as the lowly balsamroot of drier hills and prairies—the ones with the small sunflowers that smell like melting Hershey bars. And I wanted *Lewisia*, *Campanula*, *Douglasia*, *Eriogonum*, *Erigeron*, and *Phlox*, in short, the alpine plants of the mountains and the rock plants of the Gorge and shrub-steppe, not purple trees and petunias. The simplest way to obtain the natives was to grow them myself from seed.

Small amounts of seed may be obtained simply by returning to the mountain areas that were full of flowers earlier in the season. Some organizations like the North American Rock Garden Society (NARGS) and the American Penstemon Society have exchanges of both wild and garden collected seed in which members send in certain species and request others in return. Seed of western American natives may even be purchased from professional collectors. However the seed is acquired, the next thing is for the grower to decide what to do with it.

One could try the scientific approach by purchasing a Seed Starter Kit from the garden center, a chance to relive



Richard Ramsden's garden in Seattle. PHOTO BY RICHARD RAMSDEN

Mr. Clark's high school science class. It's all there, the plastic trays, specially formulated soil, and the translucent dome that creates the mini-greenhouse. Just plant, water, and seal, then watch as the seedlings wither at their bases, collapse and die, succumbing to the fungus attack "damping off." Mr. Clark would again be in despair. Seed starting soil is often nearly 100 per cent peat, so the kit has re-created a humid bog with minimal air circulation—a hostile environment for native plants from airy slopes in a cool climate.

Similar organic-heavy thinking comes from garden authorities on the subject of transplanting. They will advise to dig a hole, fill with compost, and then plant. But although such wisdom may apply to a verdant garden in Britain or a vegetable patch in the Midwest, it may not be the best for the growing of native alpines and rock plants from western North America. Species like the *Eriogonum* and *Lewisia* of the open steppe or the *Penstemon* and *Douglasia* of the mountain slopes are unlikely to be found in rich organic soils or growing from holes brimming with compost. The sites where they grow are open, stony, and infertile, with little more than a crust of topsoil, and are arid (like the scablands) and acutely free-draining. Examples are porous scree, rock outcrops, or a seam in an upright cliff.

Put the compost aside and seek advice from the actual growers of alpines and other western natives. I learned from members of the northwestern chapter of NARGS to start seed in very lean mixes, approximately one part peat or loam, and two parts inorganics, generally mixes of coarse sand, crushed pumice, perlite or chicken grit (still sold at feed and tack stores) plus a pinch of slow release fertilizer. Some *Penstemon* growers start seed in a mix that omits soil entirely. Whatever the mixture, it should be

permeable and free draining, yet retain moisture. Critical to success is the addition of a layer of stone grit to the top of the seed pot, and exposure to the breezes of the open air. The grit layer passes water freely to the growing mix below, then dries quickly, minimizing seedling losses to molds and fungi.

Seed of alpine and other natives can be sown in early winter, and then left outdoors exposed to the cool, damp weather. Keep moist, elevate off the ground to protect against bugs and slugs, and protect from torrential rains. A platform beneath the eaves of a house is a good choice, for example. Many species will germinate in one to three months, though some will not break dormancy until exposure to a second winter or even a third. Transplant into a suitable spot the following fall or spring, or grow on in larger pots until the plant is big enough to withstand predation. *Mimulus* may flower in its first year, but most species will wait until their second to fourth years. Some species, like *Fritillaria*, *Lilium*, and *Calochortus* can take five years or more. It is not frustrating to wait for the slower species, as so many others have been maturing in the meantime, and new seedlings of new species are always coming on each spring.

I grow many species like *Penstemon*, *Lewisia*, and *Eriogonum* in an open, sunny, location in what is essentially an 18 inch berm of coarse builders sand void of organic matter, following the advice of Rick Lupp of Mt. Tahoma nursery in Graham, Washington. This medium allows for the porous drainage needed to get alpine through a wet Seattle winter, wicking away rains to keep the plants healthy and rot-free while acting as a mulch to retain moisture. Besides occasional weeding, little maintenance is required except the addition of a slow release fertilizer each spring. A few pails with lateral drain holes can be sunk beneath the surface within the bed and filled with scoria, sand, pumice and leaf mold to supply a moister habitat for the likes of *Epipactis*, *Gentiana*, and *Mimulus*. Basalt rock added can help create contours of varying slope and aspect, as well as provide shade to some root crowns. A test area of an open garden bed with a layer of just 4 to 6 inches of coarse sand should be adequate for many species, allowing the plants to root into the soil beneath while the sand layer keeps the root crown open, aerated, and well drained. Another area of the garden with a mixture of humus, crushed stone, and sand overlaid with coarse sand seems suitable for balsamroot, bunchgrass, paintbrush, and others.

The junipers and the purple tree are gone, and my garden now is growing with dozens of native western species. The seed parents will again be flowering on some

remote, airy slope, rooted in decomposing rock. Growing in sand is one way to try to mimic the exceptional drainage and poor fertility of these plants' natural setting. This is just one method for the grower to try to bring the high alpine to a low garden.

Some favorites to try:

Ipomopsis aggregata: The deeply dissected, fuzzy-leafed Firecracker Plant will elongate in its second summer, branch, and flower with scores of red trumpets. The sight draws hummingbirds to feed with an ecstatic intensity. This biennial from the east slope of the Cascades lightly re-seeds itself in well-drained, humus free sites.

Lewisia columbiana var. *rupicola*: This *Lewisia* has 2 to 4 inch rosettes and succulent, blade-like leaves arranged in such regular perfection that a case might be made for the grower's horticultural prowess. It is easy and trouble-free with or without a grower. Sprays of light pink flowers appear mid-spring in the garden, and in July in its natural rock outcrops in the mountains.

Lewisia rediviva: The Bitterroot of the scablands likes plenty of moisture during its winter growing season followed by a dry dormant period in summer, exactly the weather pattern of the Puget Sound area. Growing in a free-draining sand bed, a single plant can produce more than a dozen of its naked flowers in late spring. Blossoms open with the warmth of the midday sun. From low elevations in the east Gorge and the Columbia Basin to open slopes in the east Cascades.



Lewisia rediviva. PHOTO BY RICHARD RAMSDEN

Erysimum arenicola: A small perennial with dark green strap-like leaves that enlarges itself 5 to 10 fold with fistfuls of bright yellow blossoms in mid-spring. The rich, sweet, intense fragrance of its flowers has few equals. This mountain wallflower self-sows.

Sedum spathulifolium: A succulent that spreads gently through offsets. The rounded leaves of each rosette

are intricately colored from lime-yellow in the center to crushed strawberry on the edge. Grows on low elevation embankments often in shade, though it will tolerate sun.

Castilleja miniata: The orange paintbrush may best be grown in association with a bunchgrass species. Give the grass one or two years head start, then plant the *Castilleja* seedling as close as possible (no more than a pencil-width away) in early spring. They are attractive to hummingbirds and one of the plants that can flower spring through fall. Found throughout the western US.

Penstemon spp.: Many species from which to choose from the flat, trailing, *P. davidsonii* and *P. rupicola*, to the small uprights, *P. procerus* and *P. subseratus*, to the relatively large, free-flowering shrub *P. cardwellii*. Many are excessively beautiful. *P. richardsonii* extends the flowering season into summer, after the others have finished in spring. Found in open areas throughout the west.

Eriogonum ovalifolium var. *nivalis*: The snowy buckwheat forms low rounded mounds with white, felted leaves. Its balls of cream colored flowers on short stems deepen toward red with age. The dead-rat look in winter will tempt most growers to dispose of the corpse, but those who can resist the impulse will see it cover itself again in spring with fuzzy leaves and flowers. Found in open rocky areas above tree line in the Olympics and Cascades.

Erigeron spp.: Little asters, often white, yellow, or pink. Easy to gather, easy to germinate, easy to grow. Simplicity. Grows in the mountains and the Columbia Basin.

Some suggested reading:

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Kruckeberg, A.R. 1982 *Gardening with Native Plants of the Pacific Northwest*. University of Washington Press



Eriogonum ovalifolium var. *nivalis*. PHOTO BY RICHARD RAMSDEN

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Lupp, R. 1999. *Strategies for Growing Choice Alpines*. In *Northwestern Chapter North American Rock Garden Society Newsletter* April and June, 1999. Cockcroft, C., editor. Reprinted 1999 in *Garden quarterly: Bulletin of the North American Rock Garden Society*. 50 (4): 249-260.

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Nelson, D. *Castilleja, Host Selection*. In *Douglasia* Spring 2006

Nold, R. 1999. *Penstemons*. Timber Press



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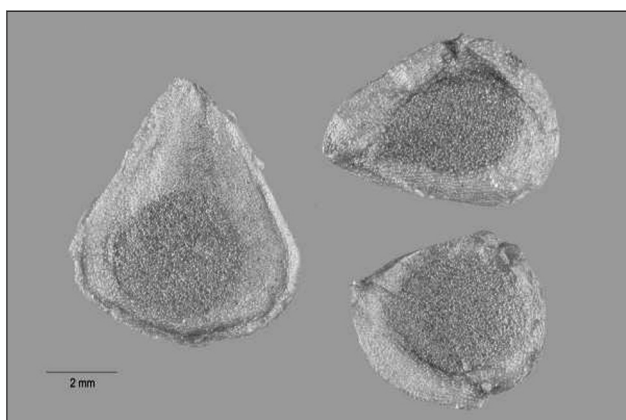
Want to get involved with discussions about native plants and related issues with other WNPS members? The WNPS list serve offers announcements, news, and discussion relevant to native plants and the WNPS membership.

How to sign up: Email wnps@wnps.org and ask Catherine Hovanic to be added to the list. You must be a current WNPS member. Catherine will forward your request to our list provider who will add you to the list and email you with instructions for posting and unsubscribing.

Growing Columbia Lilies from Seed

by Kathleen Winters, Olympic Peninsula Chapter

Lilium columbianum is not impossible to grow from seed and the species germinates well if given proper conditions. Once the seedlings are established, they are a boon to those of us who approach gardening as a type of benign neglect since it needs no summer water, or much attention at all. This is a great species for well drained, sunny woodland edges, drought tolerant borders, and prairies. Like other members of the Liliaceae family, the bulb can be used as a starchy food source. First people used the bulbs roasted, boiled, mixed with salmon roe or dried into cakes. The lily scales are starchy with a slightly sweet, peppery, lightly bitter taste.



Lily seeds. PHOTO BY KATHLEEN WINTERS

Hardy to USDA zone 5, *L. columbianum* stretches its range south to a few counties in northwest California and as far north as 54th parallel in northern British Columbia. One bit of Tiger lily lore has the lilies growing in shade, but this will depend on whether you are in the eastern dry lands or west of the Cascades. In western Washington, Tiger lilies prefer as much sun as they can get. On the east side, they enjoy being part of the more open and dappled understory that provides a little relief from the heat. They will often persist after an open area begins to become more heavily shaded, eventually petering out. Light shade is tolerated, especially in eastern Washington. West of the Cascades, lilies fare best on well drained soils with full sun in areas that have a more southern exposure. From alpine heights to sea level, Columbia lily grows in forest margins and occasionally forest openings, thickets and meadows.

In the Olympic and adjunct peninsulas near my home, lilies appear like clockwork on the southern sides and flatter uplands of very well drained slopes and not at all on the northern side.

Amongst the larger groupings of lilies world wide, *L. columbianum* falls into the Pseudolirium category, a classification of lilies typified by the erect and open habit of the blossoms containing distinctly narrowed, claw-like bases of the perianth segments. Many North American lilies are in this category and are usually orange or red. *L. columbianum* has nodding blossoms with recurved petals in shades of orange with deep purple spots. Younger bulbs will have only a solitary flower; more established bulbs support large candelabras that loom above the grasses. The flowers have both pistils and stamens and are pollinated by bees. Flower time is dependent on overall locale and elevation but generally blooms are seen during July and August with the seeds ripening August to September.

Hunting for seed pods in late summer is easier if they are spotted earlier, during bloom time, when the colorful orange petals gleam above the whorled-leaved stalks. The mature seed heads are brown, elongated capsules that contain the flat triangular seeds all in rows. Harvesting is best when the plants have browned off and the capsules are just beginning to split. The flat seeds can be confused with other species such as *Fritillaria*, so label carefully. Cleaning the seed from the pod is easy, since ripe pods split open and the seed simply spills out.

Traditional lily lore had lilies often germinating only after a 2 year cycle of cold/warm/ cold/warm. It is best if the seed is sown fresh shortly after collecting then left to grow in a flat outside from early fall, through to spring. If you cannot get to it in time, germination requires 2 months each of a warm/cold/warm (70 40 70)cycle. The reason that lilies are often thought to take 2 years to germinate is due to missing that first warm cycle that occurs after the seed is ripe leaving nothing at all happening during the first winter.

For a germination medium, a peaty but gravelly well drained soil works well, composed of a mix of 50% humusy organic material (fine decomposed bark, peat or compost) with 50% sand or fine gravel like chicken grit. Water the tray to moisten before sowing. Place the seeds on the medium, a generous half inch apart. After sowing the seeds, cover with another layer of grit or sand and tamp lightly to prevent washouts.

Germination is hypogeal, meaning that the root grows first, usually in the fall and winter after sowing. The seedling straps emerge in the spring after temperatures

rise. The seed leaf is broadly lanceolate with the parallel veining of all monocots. Seedlings usually are content to remain in the seed tray for the first two years as they grow in strength. After that they should be pricked out and spaced according to size.

Label as best as you can to make sure you keep track of the details. I like to put the date sown, origin and species onto a label for future reference. Over time, it has become apparent that there is no marker or pencil that will last more than a year on a white plastic label. If you can, use a soft piece of copper or aluminum for an indented label and keep a log.

Other propagation techniques include, growing bulbils which are the adventitious bulbs that form on the stems or via removal of the scales that are attached to the bulbs placed in an array in a flat of the germinating mix described above. The effect of scale and bulbil cloning is to continue a special variation and to gain the equivalent of a one or two year old seedling.

After planting out, Columbia lilies like a light, sandy, loamy soil that is well drained, either acid or neutral. During the growing season, moisture is important but as summer progresses the growth cycle completes before the rains stop. Once the rain ends, the lily prefers not to receive much by way of supplemental irrigation. Too much water will cause the bulbs to rot. Seedlings will require little or no fertilizer, but I like to start with a little organic bulb food or bone meal mixed in to help promote bulb development and hence less time to blooming age. Avoid high nitrogen fertilizers that will cause soft weak growth. Lilies need food that strengthens the bulb that supports the rest of the plant. An organic bulb food that uses bone meal provides the best overall support



*Lilium
columbianum.*

PHOTO BY
FRED WEINMANN

WEBSITES of interest

http://www.ibiblio.org/pfaf/cgi-bin/arr_html?Lilium+columbianum

http://depts.washington.edu/propplnt/Plants/Lilium_columbianum.htm

<http://nativeplants.for.uidaho.edu/network/search.asp>

Slugs love to eat the newly emerging shoots and the seedlings will need protection. However, if the slugs succeed, most often the little bulbs will endure through the following season to reemerge right where they left off, the following spring.

Diseases are not common and most disease problems are related to the watering regime. Over watering supports the growth of Basal rot, Blue molds and Rusts. Likewise the presence of Botrytis indicates a too damp soil that does not drain freely enough coupled with poor air circulation. Powdery mildew usually occurs where it is overly dry. Beds planted under house eaves are a classic location for powdery mildew to occur.

Viruses are not usually a problem, but do not harvest from a plant that appears stunted, or discolored in any way, especially those that show streaking, twisting or a mottled discolored leaf. Even though lily viruses rarely seem to pass through to the seed, it is best to leave it alone. Two common viruses that can affect lilies are Cucumber mosaic virus and Tulip breaking virus.

When transplanting, mark the lily bulb locations carefully, since they will die back as the summer progresses into fall. Ongoing culture mostly means not digging into a bulb by mistake and not over watering. With a little patience you can be prepared to reap many years of satisfaction as the lilies continue to thrive and grow, whether it be set along the roadside, amongst a flower border or in a prairie bald restoration.

Kathleen Winters is a horticulturist, landscape designer, and owner of reSource Design. She is also a Native Plant Steward, and lives on the Kitsap Peninsula with her husband and son.



Stonerose Interpretive Center Eocene Fossil Site

by Kathy Murray

This is the first of a continuing series about botanical sites of general interest. I welcome suggestions for future columns, such as native plant gardens where plants have identification markers and short, accessible walks with unique flora.

Stonerose is unique and possibly the only place in the Pacific Northwest that allows public fossil collecting. Unfortunately, for many *Douglasia* readers, it is not an easy destination. The Stonerose Interpretive Center is located one block off the main street in Republic, the county seat of Ferry County in north central Washington, some 289 miles from Seattle and 123 from Spokane.



Splitting shale in the Republic sun. PHOTO BY KATHY MURRAY

Two years ago on a hot June day, about a dozen WNPS members visited the site as a Study Weekend fieldtrip. After an introduction at the Visitor Center, which has nice fossil exhibits, we paid a fee for a permit and rented tools (you can bring your own) and headed up the hill with our hammers and chisels. Our goal was to split pieces of shale into layers and hopefully to uncover fossils or imprints of plants and insects that flourished nearly 50 million years ago.

Location: Stonerose Interpretive Center is in Republic, Ferry County

Web site: <http://www.stonerosefossil.org/index.html>

Dates open: May 1–October 31; daily from June 1 through Labor Day, Wednesday–Sunday after Labor Day and before Memorial Day

Hours: 8–5; closed for lunch from noon to 1

Fee: \$3–5 for site use; \$4 for tool rental

A shelter provides some relief from the sun; however, experienced fossil seekers bring umbrellas. When you're done—or too hot to continue—you return to the Visitor Center where a staff member looks over your finds and identifies them for you. The Stonerose web site says you can remove three fossils; however, my husband and I were allowed to take a few more, including a nearly perfect leaf from a plant in the witch hazel family and a Dawn redwood impression. The center reserves the right to keep unique fossils for its collection.

Specimens from the Stonerose site are also on display in the Burke Museum on the University of Washington campus. Significant finds include some of the earliest Rosaceae and Aceraceae fossils.

Kathy Murray is the WNPS Editorial Board Chair. Submit suggestions for future columns to kandmmurray@verizon.net.

B&D

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 500 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.

B&D

Favorite Wildflower Destinations – Table Mountain, Kittitas County

by David Giblin, University of Washington Herbarium

For the last several years I have led a WNPS field trip to Table Mountain (located just north of Ellensburg in Kittitas County) because it is one of the best places I've found in Washington to see a tremendous diversity of native plants over a relatively short distance with considerable ease. This is possible because there is a road that runs from the base of Reecer Canyon (elevation 1600 feet) to the top of Table Mt., officially known as Lion Rock (elevation 6358 feet). The road is paved almost the entire way, with the last 3-4 miles being high quality gravel road and only the final 0.25 miles being best suited for high clearance vehicles (though I did drive up there in my 2-wheel drive pickup that wasn't high clearance!). You can park and walk the last bit very easily.

Traversing a 5,000 foot elevation gradient that starts in shrub-steppe and ends in alpine means that you are going to see a lot of different habitats and that you can visit this area from mid-May through August. As you head up into Reecer Canyon, you quickly climb to wonderful lithosol meadows, which in May and June are covered with buckwheats (*Eriogonum* spp.), bitterroot (*Lewisia rediviva*), hookers balsamroot (*Balsamorhiza hookeri*), Thompson's paintbrush (*Castilleja thompsonii*), and several annual species that include narrow-leaf collomia (*Collomia linearis*), small-flowered blue-eyed Mary (*Collinsia parviflora*), and pink microsteris (*Microsteris gracilis*). The WNPS plant list for Table Mt. shows no less than eight species of desert parsley (*Lomatium* spp.), and many of them can be seen at the lower elevations. The views from the first lithosol

embankment are south and west, providing striking vistas of the Kittitas Valley and Stuart Range.

Traveling further up the road you climb into Ponderosa pine forest broken by swaths of both moist and dry meadows. In June and July you will see the brilliant scarlet gilia (*Ipomopsis aggregata*), the dazzling blues of upland larkspur (*Delphinium nuttallianum*) and big-leaf lupine (*Lupinus polyphyllus*), and the wonderfully fragrant mountain monardella (*Monardella odoratissima*). If you look closely in some of these meadows, you are likely to see several diminutive annuals and perennials, including naked broom-rape (*Orobanche uniflora*), brewer's monkey-flower (*Mimulus breweri*), and three-leaf Lewisia (*Lewisia triphylla*).

The higher elevations are covered with large expanses of little sagebrush (*Artemisia arbuscula*) and silky lupine, interspersed with tons of big-headed clover (*Trifolium macrocephalum*), the lattermost being one of my favorite members of this remarkably diverse genus. At Lion Rock, best visited in July and August for the alpine flora,

you'll again see breathtaking views of the Stuart Range, as well as Tronson Ridge and the Blewett Pass area. Some of the alpine species found in the basalt outcroppings include arctic sandwort (*Minuartia obtusiloba*), alpine Collomia (*Collomia debilis*), lava alumroot (*Heuchera cylindrica*), showy Jacob's ladder (*Polemonium pulcherrimum*), spotted saxifrage (*Saxifraga bronchialis*), and alpine timothy (*Phleum alpinum*).

There are plenty more species beyond what I've listed here (the WNPS list shows 330 species) – no doubt you won't be able to see everything that's blooming if you go in June through August. This is one of the reasons I go back every year because we all always see something new, plus we get some of the most spectacular views of this area to be found!



Looking west from Lion Rock to the Stuart Range.
PHOTO BY DAVID GIBLIN

80

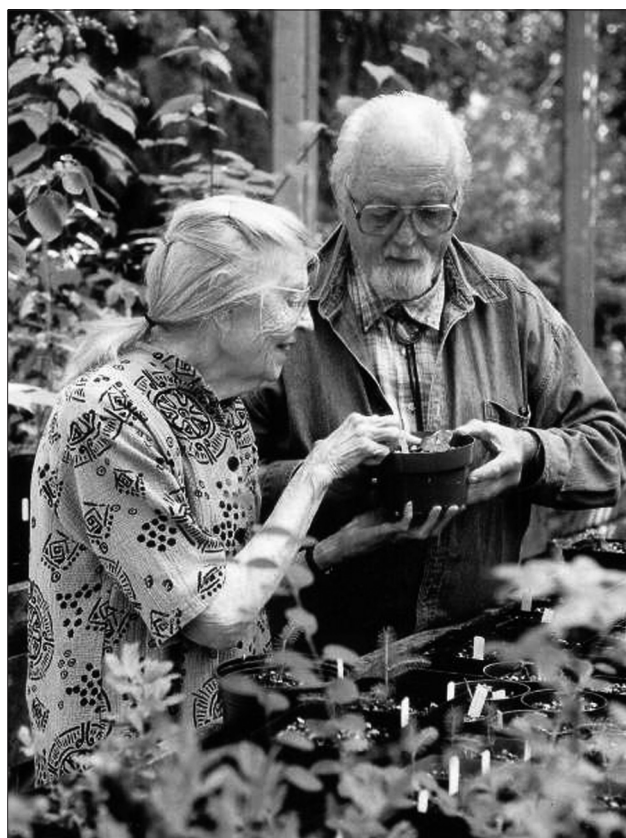
Kruckeberg Botanic Garden: A Legacy Shared with the Washington Native Plant Society

by Sarah Baker and Richard Olmstead

The 1970s were a historic time for botany in Washington State. In 1976, a small group of individuals met in Seattle and founded the Washington Native Plant Society. Dr. Arthur Kruckeberg, a professor of botany at the University of Washington, was among them. As a co-founder of the WNPS, its first president, and author of the influential book *Gardening with Native Plants of the Pacific Northwest*, Art Kruckeberg's name is truly synonymous with native plant gardening in the Pacific Northwest.

At the time of the WNPS founding, Art and his wife, Mareen, had spent almost twenty years developing their own garden north of Seattle. They had purchased the property in 1958 entirely on its potential as a garden, surprising everyone when Mareen declined to view the house on the property before deciding to purchase it. Married in 1953, Art and Mareen acquired the land as their family grew and more gardening and living space was needed. Originally one acre in size, the additional purchase of an adjacent property increased it to almost four acres. As a former strawberry farm, the land was meadow-like and the sunny landscape was punctuated by Douglas-fir. Art and Mareen knew it was a place where they could realize their shared, passionate ambition to create a garden in which the native landscape would be preserved and complemented with unusual plants from around the world. And thus was born the Kruckeberg Botanic Garden.

For anyone who can't envision growing a garden from seed, the Kruckeberg Botanic Garden is a lesson in the value of patience. Of the over 2,000 plants now in the garden, most were propagated on site from seeds or cuttings acquired from other gardens and seed exchanges. Over the past 50 years, these tiny seeds and cuttings have grown into towering trees and expansive shrubs. The open, sunny landscape of the strawberry farm has been transformed into a lush landscape of shaded woodland with sunny openings for meadow and rock garden plants. With patience and insight, the Kruckebergs created a remarkable mixture of native and exotic plants in a uniquely Northwest-style garden. Never underestimate the power of tiny seeds and the determination of two resourceful botanists.



Mareen and Art Kruckeberg. PHOTO BY NORM PLATE

*Penstemon
fruticosus* var.
fruticosus.

PHOTO BY
VICKI DEMETRE



Though strong supporters of native plant gardening, the Kruckebergs were by no means purists. They filled their garden with a unique blend of Pacific Northwest natives and exotic plants from other countries, including China, Japan, Chile, South Africa, and New Zealand. Art's interest in the geology and flora of the Siskiyou Mountains of Southern Oregon and Northern California is also represented by the numerous plants he brought back from collecting trips there.

Despite this diversity, as soon as a visitor enters the front gate, features typical of the native Puget Lowland forests are evident. The Kruckebergs took a naturalistic and informal approach to their garden, creating a multilevel canopy and understory of plants that thrive in the shade

of conifers and rhododendrons. Native ground covers like false lily of the valley (*Maianthemum dilatatum*) and wild ginger (*Asarum caudatum*) blend harmoniously with exotics like evergreen maidenhair fern (*Adiantum venustum*) and hardy cyclamen (*Cyclamen hederifolium*). Native ferns are found next to non-native ferns; native trilliums are found with non-native trilliums. Native shrubs like Oregon grape (*Berberis aquifolium*) and sword fern (*Polystichum munitum*) abound. The result is a woodland garden with a uniquely Pacific Northwest feel.

Not ones to discriminate, the Kruckeborgs loved diminutive rock gardens and tall trees with an equal passion. The eastern three acres of the garden are devoted to a mini-arboretum of oaks, larches, evergreen conifers, ashes, and other trees from around the world. The oak collection, with over 50 species represented, is one of the best in North America. Visitors will also find a diverse selection of native trees, including ponderosa pine (*Pinus ponderosa*), native Ceanothus, madrone (*Arbutus menziesii*) and a dwarf form of the only oak native to western Washington, Oregon white oak (*Quercus garryana* var. *brewerii*). Native species of *Lewisia*, *Penstemon*, and *Sedum* abound in the rock gardens found in sunny areas of the garden. There is also a serpentine soil rockery inspired by Art's long association with the study of serpentine plants.

A pride and joy of the garden is the evergreen tanbark oak (*Lithocarpus densiflorus*) and its mutant form, *Lithocarpus densiflorus* forma *attenuato-dentatus*. Taken from cuttings in Northern California, this rare oak has narrow, serrated leaves. Both are State Champion trees in Washington by virtue of their height and girth, and they share the honor with two other trees in the garden, the striped bark maple (*Acer davidii*) and choke cherry (*Prunus virginiana*).

The multi-leveled canopy throughout the property, characteristic of our native forests, provides food and shelter for a variety of birds and insects. Wildlife is encouraged to thrive. When a diseased or dead tree is removed, a towering snag is left to provide habitat for woodpeckers. The diversity of plant life encourages a diversity of wildlife and birds that usually retreat from urban areas to find a refuge at the garden. Twenty-five species of birds have been identified to date.

Located in the garden is the MsK Rare Plant Nursery, where visitors are able to purchase the plants they admire in the garden. Started by Mareen Kruckeberg in 1970, the nursery specializes in propagating the unique plants found in the garden. About a third of the nursery's offerings are native plants, and the rest are hardy exotics that work well

in a Northwest garden. The nursery carries a variety of underutilized Pacific Northwest natives like miterwort (*Mitella* sp.), fawn lilies (*Erythronium* sp.), and inside-out flower (*Vancouveria hexandra* and *V. planipetala*), as well as a well-rounded selection of native trees, shrubs, and groundcovers.

Mareen Kruckeberg passed away in 2003 after 45 years of dedication to her garden and nursery. Though Art continues to reside on the property, changes are now occurring. Concerned by the development of neighboring properties, in 2003 Art signed a Grant Deed of Conservation Easement that protects the Kruckeberg Botanic Garden in perpetuity from development. In January 2008, he sold the property to the City of Shoreline. The City is dedicated to maintaining the property as a botanical garden and has contracted with the non-profit Kruckeberg Botanic Garden Foundation to operate and maintain the garden. The Foundation also offers guided tours, educational programs, and operates the MsK Rare Plant Nursery in partnership with the City. Funds for these activities and garden maintenance will come from Foundation memberships, donations, and earned income from the nursery. All proceeds from nursery sales support operation of the garden. The City of Shoreline and a generous donation from Dr. Kruckeberg will also provide limited funding for a 3-year period to help the Foundation with the transition.

As a public garden, the Kruckeberg Botanic Garden is now open for visitors to enjoy. Preserved forever, this botanical and horticultural treasure will continue to evolve and grow, providing inspiration to gardeners for years to come.

For more information about the Kruckeberg Botanic Garden and Foundation, visit www.kruckeberg.org or call 206-546-1281.

The garden and nursery are open on Friday, Saturday, and Sunday from 10am-5pm in the spring and summer, and 10am-3pm in fall and winter. Admission is free.

Sarah Baker is Garden Director of the Kruckeberg Botanic Garden

Richard Olmstead is President of the Board of Directors of the Kruckeberg Botanic Garden Foundation



STUDY WEEKEND

REPORTS



Photographer and leader Mark Turner and members of the photography class. PHOTO BY GINGER JENSEN



Wyethia, mule's-ears, one of many plants found on the trip to Scatter Creek, led by David Hays. PHOTO BY MELISSA DUFFY



Kevin Head and class on their trip to Mima Mounds Natural Area Preserve and West Rocky Prairie. PHOTO BY MARY TOBIA



Mounds at the Mima Mounds Natural Area Preserve. PHOTO BY MARY TOBIA

Glacial Heritage

(led by Dan Montague)

by Louise Kulzer, Central Puget Sound Chapter

In the chilly morning rain of May 2nd, a small group of prairie enthusiasts accompanied Dan Montague through the Glacial Heritage prairie. Dan showed us highlights of the prairie, both from a botanical perspective, as well as from a management perspective. He was able to do this

because he and his wife, Pat, volunteer at Glacial Heritage regularly. Botanically speaking, I was impressed not so much by the native prairie plants as by the invasives. One cannot see the Puget prairies without witnessing the ferocious battle that is going on there—an unrelenting

attack by waves of invasives. It reminded me of the Huns invading Europe, with no less impact. Some of the key invaders are Douglas-fir (*Pseudotsuga menziesii*), Scot's broom (*Cytisus scoparius*), cat's ear (*Hypochaeris* sp.), and tall oat grass (*Danthonia* sp.). Ox eye daisy (*Leucanthemum vulgare*) is on my invaders list too. Even Garry oak (*Quercus garryana*) and shore pine (*Pinus contorta*) threaten the prairie ecosystem, which, it seems, requires annual burning or other disturbance (grazing, mowing, herbicides, etc.) to maintain its grass and herb flora and fight off competitors. A fascinating array of treatments were scattered here and there over the landscape, but careful follow-up of the outcomes of the treatments was sometimes lacking. Now here's a niche for a really organized person with superior database skills!

I was impressed with how fragile the Puget Prairies are as they were known historically. It's almost as if the prairie was like a person who requires frequent medical intervention to stay alive. As long as health care benefits hold out (in this case, conservation group ownership coupled with a small army of volunteers), it is fairly healthy. But, the condition is unstable and requires constant attention.

On the bright side, spring brings lovely wildflowers into bloom amid the native grasses (*Danthonia spicata*, and *Festuca idahoensis romeri*) and wood rushes (*Luzula* sp.); the yellows of western buttercup (*Ranunculus occidentalis*), Nuttall's violet (*Viola nuttalli* var. *praemorsa*), and prairie desert parsley (*Lomatium utriculatum*); the blues of camas lily (*Camassia quamash*) and prairie lupine (*Lupinus lepidus* var. *lepidus*); the violets of Henderson's shooting star (*Dodecatheon hendersonii*) and early blue violet (*Viola adunca*); and not at all least, the delicate mission bells of chocolate lily (*Fritillaria affinis*). And, as Dan showed us the special habitat of pussy toes (*Antennaria* sp.), the sun came out and the patient smiled, a fitting summary of hope for this Glacial Heritage site.

Kennedy Creek and Skookum Inlet Field Trip

(led by Michelle Zuckerberg))

by Steven Clark, *Suksdorfia* Chapter

Eleven souls embarked for a trip to Kennedy Creek Natural Area Preserve (NAP), an estuarine wetland. The short upland walk through a Douglas-fir (*Pseudotsuga*

menziesii) forest had a pleasing array of plants including the delicate maidenhair fern (*Adiantum pedatum*), a reticent pacific crabapple (*Malus fusca*), and a not-yet-flowering inside-out flower (*Vancouveria hexandra*) (might that make it an inside-in flower for a few weeks?).

For the berry eating fauna these woods would offer a delectable array in a few weeks time. Indian plum (*Oemleria cerasiformis*) and salmonberry (*Rubus spectabilis*) were already showing early fruit. Salal (*Gaultheria shallon*), kinnikinnick (*Arctostaphylos uva-ursi*), trailing blackberry (*Rubus ursinus*), and Oregon grape (*Berberis* sp.) were all silently preparing their summer bounty. Thimbleberry (*Rubus parviflorus*) and huckleberry (*Vaccinium parvifolium*) were trailside as was highbush cranberry (*Viburnum edule*). Only a few inches high but portending future bird happiness was a little mountain ash (*Sorbus* sp.), several native hawthorns (*Crataegus* sp.), serviceberry (*Amelanchier alnifolia*) and what may have been an old apple orchard at the edge of the woods. Not technically part of the ken of native plants but germane in a way were the several critters that caught our attention. Since we are in the realm of the Evergreen College, we respectfully note the appearance of one small, newly hatched, daintily spotted banana slug (mascot for the local collegians). E.O. Wilson occasionally remarks about the grizzly bear effect where a striking animal inspires people with renewed reverence for other less striking fauna. The humble banana slug, marvelously wrought to chew organic debris from the forest floor served that purpose for us. He/she (hermaphroditic!!) cautiously regarded us with ebony light spots on his/her eyestalk before we bade the banana farewell upon a twig of a perplexing gooseberry that this writer believes may have been a *Ribes divaricatum*.

On to the salt marsh! We left the cover of the woods and walked on the uneven ground of the salt marsh. Chocolate lilies (*Fritillaria affinis*) graced us just as we were on the edge of the salt marsh. The ground was uneven largely by dint of the ubiquitous *Deschampsia caespitosa*. The common name is common hairgrass and indeed it made innumerable clumps that ranged from the size of an orange to a cantaloupe (*Cucumis melo*). The clumped grass made great habitat for Townsend's vole (*Microtis townsendii*). There were ample signs of the vole and its terrestrial predator, the coyote. We saw plenty of *Carex lyngbyei* with its droopy spikes. We also saw *Luzula* spp. that weren't far enough along to discriminate into species. When a breeze picked up we would see the sheening of *Potentilla pacifica* in patches of 50-100 plants. Peppered along the low salt marsh were a few small hummocks that gave rise to salal (*Gaultheria shallon*), Indian plum (*Oemleria*

cerasiformis), service berry (*Amelanchier alnifolia*), and a few other upland plants. They were smallish and we surmised some water and salt stress might be the cause. This whole system benefits from an impressive nutrient deposit when the winter chum come upstream and spawn. Chum don't penetrate far up freshwater streams so their carcasses add nutrients to the upper ends of some estuarine systems. In recent years, the Kennedy Creek runs have seen 50 to 90 thousand chum in a season!

We lunched at an artfully designed area of the NAP where visitors could sit among native plants and view the inlet at the terminus of Oyster Bay from the Old Olympic Highway. We discussed possible ground covers in this picnic/interpretive area. Strawberry (*Fragaria* sp.), stonecrop (*Sedum* sp.) and dull Oregon grape (*Berberis nervosa*) were intriguing. A great attractant of pollinators was vetted but just as quickly skewered; apparently the WNPS folk weren't overly fond of butterfly bush.

The next inlet to the north was Skookum Inlet. There, we visited a beautiful stream restoration site. The lower stream was in a deciduous tree seral stage and the stream itself had created its own meander pattern. A nice array of woodland flowers including coltsfoot (*Petasites palmatus*) and a large patch of Pacific waterleaf (*Hydrophyllum tenuipes*) greeted us on the trail. We were disturbed to see the stump of *Acer macrophyllum* that had been cut by tree thieves. The dbh (diameter at breast height) was perhaps 3 feet. The tree assemblage included Sitka spruce (*Picea sitchensis*) as it hugged the margin of the inland sea. Interestingly, we saw one spruce that resisted identification. The bark, size, shape looked exactly like a Sitka. The needles, however, weren't prickly sharp! The pollen cones were also about 1.5 cm in diameter and differed from those of a Sitka. It might have been a Norway but its great age augured slightly against a planted ornamental. We brought a sample back to the Black Lake Bible Camp but there too it elicited speculation without proof positive. If any are interested in sleuthing this out, you might contact the NAP manager, Michelle Zuckerberg (DNR Natural Areas Program) and go have a look. It's the tree that you pass under just as you leave the woods and walk onto the beach. Once at the beach, we saw *Carex obnupta* and pickleweed (*Salicornia virginica*) as the tide started coming in and the sun came out.

We headed back to the Camp in the afternoon. Though the cool spring had hidden a few plants from us, the distinct flora of the marshes revealed to us a beautiful part of Washington's richness.

Botanical Photography Workshop

(led by Mark Turner)

by Ginger Jensen, Central Puget Sound Chapter

Thirteen budding plant photographers accompanied Mark Turner to Wolf Haven where he gave a fine demonstration of some of the elements of flower photography. We learned how to set the scene for a perfect shot: pick the specimen; clear/clean the area (carefully); set up the camera regarding depth of field, exposure, white balance, angle and distance from flower, and more. He discussed some things to keep in mind: divide the scene by thirds (instead of getting the "bull's eye" shot), decide on ISO setting (how much "noise" can you tolerate—lower ISO has less noise). He showed us how to read histograms to better understand digital exposure and then how to use exposure compensation. We learned how to use aids for light diffusion (to get a softer light) and light reflection (using either the silver or gold reflector.) We were then turned loose to make our own perfect photograph. Mark was available to give each of us individual help. This was an excellent session.

Mima Mounds Natural Area Preserve and West Rocky Preserve

(led by Kevin Head)

by Pat Parks, Central Puget Sound Chapter, and Anna Thurston, South Sound Chapter

Saturday morning 12 of us set out from Black Lake for the Mima Mounds with our leader, Kevin Head. It rained early that morning but cleared up shortly after we arrived. The most difficult part of the day for most people seemed to be answering a question asked by Kevin during a few moments of "community building," before we reached the preserve—remembering the ages of our children. The process worked! We had a fabulous group and leader. Kevin was knowledgeable about not only the plants we saw, but also the birds we saw and heard.

The Mima Mounds are comprised of 637 acres of unusually lumpy prairie owned by the State of

Washington. The effect of the mounds stretching as far as the eye can see is a bit eerie. There is long-standing debate regarding the origin of these dense clusters of 30-50' circular mounds that reach 8' to 10' in height. According to some advocates, it might be the result of either pocket gopher dwellings, or the remains of agricultural activity from Native Americans (although evidence of either is lacking). If we were able to follow the depth of technical material provided by Tim Walsh, one of our Friday Study Weekend speakers, we could apply some interesting geological insights to the formation of the Mima Mounds. Regional Native American stories interpreted by Linda Storm, our second Friday evening speaker, cast light in a similar direction. If the mythic character named "Dirty Face" managed to secure a hide to a frame broad enough to cover several counties, imagine the metaphoric drum-beat and vibration it might offer if a significant geologic event were to rumble through the region. If the area was saturated, as it was following the glacial period some 10,000 years ago, the conditions might be perfect for the formation of such unusual terrain.

The Mima Mounds were leased for grazing until the late 1960s. Now they are managed with fire, as they were by Native Americans, in an effort to maintain them as prairies and to keep the forest at bay. Walking along a trail that meandered through them we immediately saw lots of spring gold (*Lomatium utriculatum*) and western buttercup (*Ranunculus occidentalis*) blooming next to Idaho fescue (*Festuca idahoense* var. *romeri*). Common Camas (*Camassia quamash*) was everywhere, and was just beginning to bloom. The hot pink color and fragrance of shooting star (*Dodecatheon hendersonii*) seemed to follow us very reliably along the path, as did delicious clusters of chocolate lily (*Fritillaria affinis*). Perhaps the most interesting plant we saw was golden paintbrush (*Castilleja levisecta*), which has been proposed as threatened with extinction by the U.S. Fish and Wildlife Service. The paintbrush seemed to be thriving in the designated area where it had been planted.

Other plants we saw in bloom included western meadowrue (*Thalictrum occidentale*), columbine (*Aquilegia formosa*), Menzie's larkspur (*Delphinium menziesii*), star flower (*Trientalis latifolia*), woodland strawberry (*Fragaria vesca*), blue violet (*Viola adunca*), big-leaved sandwort (*Moebringia macrophylla*), trillium (*Trillium ovatum*), and shrubby serviceberry (*Amelanchier alnifolia*).

The afternoon was hot and sunny as we drove to West Rocky Prairie, an 806-acre area recently purchased by the Washington Department of Fish and Wildlife, which is not generally open to the public. This property contained

the same kind of round and lumpy terrain as seen at Mima Mounds. Here, it was interesting to walk through and over the "mounds," and not be restricted to paths, as we were at Mima Mounds. In addition to most of the same plants we saw at Mima Mounds, we also saw prairie violet (*Viola nuttallii praemorsa*), field chickweed (*Cerastium arvense*) and a grand trillium (*T. chloropetalum*) in full bloom in the shade of an old stand of Garry oaks (*Quercus garryana*). Walking through the oaks in the company of garter snakes and seeing the trillium was a great way to end a gloriously warm and sunny spring day.

Scatter Creek

(led by David Hays)

by Melissa Duff, Salal Chapter

David Hays from the Washington Department of Natural Resources (DNR) expertly led a group of about ten Native Plant Society members on a hike around the Scatter Creek Natural Area Preserve. The two Scatter Creek sites we viewed were unusual in that these land parcels included sections of both wet and dry prairie habitat. David explained that each section is managed differently. Wet prairies are seasonally flooded and alternate routes are used to access the site during these times. Invasive plants are managed at both prairie sites. The eradication plan for Scot's broom, for example, is to apply herbicide to all of the stems and leaves of the plant.

One unique management feature of the north Scatter Creek site is the method used to preserve the Garry Oak habitat from Douglas-fir encroachment. The top half of the fir trees, including trunk and branches, are cut and the lower half remains untouched in order to provide wildlife habitat. This eliminates, for the most part, the shade that these fast growing evergreens otherwise create.

As we viewed the differences between wet and dry prairie habitat, we also noted an interesting geological occurrence. In one large area of the prairie, the landscape showed many wavelike undulations. Animated discussion ensued regarding whether earthquakes or glacial deposits had shaped the land in this area.

We viewed the following plants of note at the Scatter Creek north site: Hall's aster (*Aster hallii*), a threatened species, narrow-leaf wyethia (*Wyethia angustifolia*), which is listed as a sensitive species and blue toadflax (*Linaria canadensis* var. *texana*), which is found in only three sites in Washington.

Both of the prairie sites we visited are host to several endangered butterfly species including the Orange Checkerspot which made a brief, fluttering appearance during our hike. Shortly after this, an azure blue butterfly repeatedly landed on one member's leather boot, apparently drawn to a salty surface! Native plants at Scatter Creek that provide nectar sources for rare butterflies include small flowered blue-eyed Mary (*Collinsia parviflora*), fragrant popcorn flower (*Plagiobothrys figuratus*), and rosy plectritis (*Plectritis congesta*). Both prairie sites also held a plethora of bird life, including a chipping sparrow and red breasted woodpecker whose songs were heard during our creek-side lunch.

On our south site walk one of the highlights we encountered was the lovely small flowered trillium (*Trillium parviflorum*), which is listed as a sensitive species. This beautiful plant was found tucked beneath shrubs or trees in partly shaded areas. Additional plants found on this site include: rough paintbrush (*Castilleja hispida*), small blue flowered lupine (*Lupinus polycarpus*), big leaf lupine (*Lupinus polyphyllus*), barestem lomatium (*Lomatium nudicaule*), straight-beak buttercup (*Ranunculus orthorhynchus*), yellow prairie violet (*Viola nuttallii*), and early blue violet (*Viola adunca*).

Deschutes Falls County Park

(led by Kevin Head)

by Eve Dixon, Olympic Peninsula Chapter

On Sunday, May 4th, 10 people joined trip leader Kevin Head for a trip to Deschutes Falls County Park. Despite being a County Park, Deschutes Falls is not open to the public because fatalities have occurred in the past when people have jumped off cliffs into pools in the river.

We car-pooled to the park, stopping on the way to introduce ourselves. Kevin encouraged each person in the group to talk a little bit about themselves, where they live, and what is special about that place.

At the park we roamed around the wet meadows above the river. One of the first plants we saw was Western buttercup (*Ranunculus occidentalis*). Kevin told us that the family name Ranunculaceae means "little frog feet" and showed us how the lower leaves are indeed like frog feet. He also told us how to distinguish Ranunculaceae from Rosaceae; the basal leaves of most all plants in Ranunculaceae are different from the upper leaves, whereas

leaves on plants in Rosaceae are the same all the way up the plant. Ranunculaceae includes all the buttercups, delphiniums, columbines, anemones and others.

Some interesting plants we found in the wet meadow include spring queen (*Synthyris reniformis*), bitter-cress (*Cardamine pulcherrima*), vanilla leaf (*Achlys triphylla*), inside-out flower (*Vancouveria hexandra*), rattlesnake plantain (*Goodyera oblongifolia*), Pacific sanicle (*Sanicula crassicaulis*) and Pacific waterleaf (*Hydrophyllum tenuipes*). Only the first two mentioned were in flower.

We came across a most beautiful grove of lichen-covered Garry oaks (*Quercus garryana*), and down closer to the river we found Oregon saxifrage (*Saxifraga oregana*), and sessile trillium (*Trillium chloropetalum*), both of which are comparatively rare in this area, the northernmost extent of their range. *Trillium chloropetalum* is a particularly attractive plant with large flowers and mottled leaves, and is much sturdier than the more common *Trillium ovatum*.

We hiked through a forest where many calypso orchids (*Calypso bulbosa*) were blooming and came to an opening by the river. There was a basalt outcropping that had small-flowered blue eyed Mary (*Collinsia parviflora*) and chickweed monkey flower (*Mimulus alsinoides*) blooming.

After visiting Deschutes Falls County Park we had plenty of time left so we headed for the Bald Hill balds and spent several hours there in the sunshine (the morning had been gray and damp). Some highlights of our botanizing on the balds included chocolate lily (*Fritillaria affinis*), Oregon fawn lily (*Erythronium oregonum*), yerba buena (*Satureja douglasii*), two *Mimulus* species (*M. guttatus* and *M. alsinoides*) and goldenback fern (*Pityrogramma triangularis*). We spent some time trying to identify a small plant with pinkish flowers that we thought might be related to Galium. It turned out to be *Sherardia arvensis*, a non-native.

A fun time was had by all as we circled up and we talked about the best parts of the weekend and the hike. We then drove back to camp and said our goodbyes.

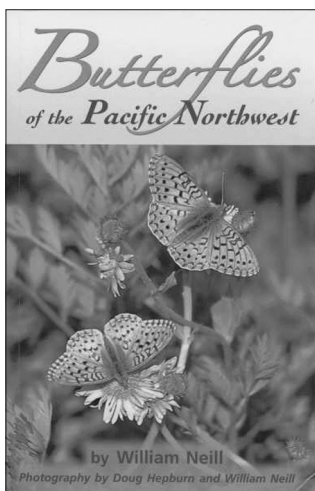


Butterflies of the Pacific Northwest

By William Neill, Photography by Doug Hepburn
Mountain Press Publishing, Missoula, Montana
2007

Reviewed by Stewart Wechsler, Central Puget Sound Chapter

William Neill's new book *Butterflies of the Pacific Northwest* (actually a major overhaul of an older book) is a welcome addition to the butterfly books for the Pacific Northwest. Not only are there good photos of the adults, but there are also more photos of the rest of the life cycle, from egg to caterpillar to pupa, than any other local butterfly book yet. (Another book by David Nunnallee and David James is in the works and will have a comprehensive treatment of all of the eggs and caterpillars of Washington State through their whole development as well as the pupae, but I don't know when it will be done and published.) Though Neill's book is not comprehensive and leaves out a number of the less common species, it makes up for that in part by its small size. In addition to its lighter weight, Neill's book has the added benefit that it is better than Pyle on photos of pre-winged butterfly stages and a number of the adult photos are a bit larger. Though it is no replacement for Bob Pyle's comprehensive *Butterflies of Cascadia*, to lighten my load I now often carry Neill's smaller book in my pack instead of Pyle's when I want to have the butterfly adult and immature photos to show people. As more of a scientist, I am a bit frustrated that it is not the kind of guide that will allow you to quickly find the features that distinguish one species from another, though most of these features can be found somewhere in the text. The text contains a fair amount of anecdotes about Neill's personal observations of the butterflies and sometimes includes information that might be better as a photo caption (the photos have no captions, and the plants in the photos are not usually identified.) Though



some of us might want more scientific information and fewer stories about butterfly observations, in some ways this less formal style may make the book more accessible to an audience that more science oriented books could miss. As a native plant enthusiast and purist, I disagree with his butterfly gardening section that advocates using non-natives. While these plants may attract butterflies, they leave less space and habitat for both our native plants and all of the other non-butterfly organisms that depend on them. His treatment of the host plants is also less specific than I'd like.

After weighing out the advantages and limitations I would recommend that most local butterfly and native plant enthusiasts who want to have more butterfly photos and learn more about the most striking group of insects that use our native plants, add this one to their collection.

Restoring the Pacific Northwest, The Art and Science of Ecological Restoration in Cascadia

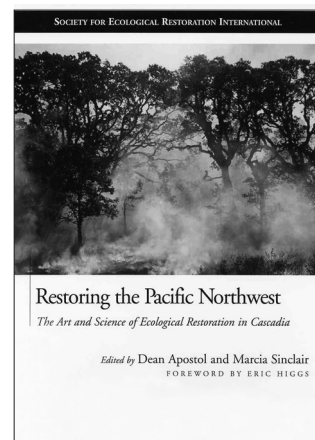
By Dean Apostol and Marcia Sinclair, editors
Island Press, Washington, D.C. 2006

Reviewed by Jurgen A. Hess, Suksdorfia Chapter

As some 6 billion of us continue to stress the earth, it's easy to lose hope for nature—turn pessimistic, go for the rapture. Countering our population explosion is an expanding green movement. Today green is becoming mainstream. Still, with all the rhetoric, how do we know we are doing ecological restoration correctly, not green washing like some corporations?

As a landscape architect focusing on conservation and restoration, I started this book thinking I knew something about the subject. Wading into the pages, my ego grew smaller and smaller—a humbling experience. I began thinking, do I really know anything and will my work stand the test of time?

Restoring the Northwest is not a how-to handbook, but rather an encyclopedic overview of Pacific Northwest ecological restoration. The geographic area it covers has



been termed Cascadia—northern California to southeast Alaska. While the focus is Northwest ecosystems, the processes and principles are applicable to any restoration project.

Editors Dean Apostol and Marsha Sinclair combine years of ecological restoration experience which comes through in their selection of 57 contributors and in the book's organization. This is a reference manual where you'll find state of the art practices and thinking by leading specialists. The book was created for practitioners, volunteers, students, scientists, agency staff and policy makers.

The book is organized by nine Northwest ecosystems, such as oak woodlands and savannas, old-growth conifer forests, riparian woodlands and shrub steppe. It includes sections on cross-cutting subjects as urban natural areas, stream systems and invasive vegetation. Over 60 case studies present some of the best examples of restoring wetlands, forests, riparian areas and meadows. Many examples use sketches, charts and photos to illustrate the point.

I participate on restoration teams which often

include ecologists, soils scientists, fish/wildlife biologists, hydrologists, engineers, landscape architects, foresters, other environmental scientists and citizen volunteers. Since the book is written by people in these professions, it offers practical advice for us all. Often we debate just what completed restoration means; using an oak woodland example the book gives the attributes of a successful restoration. It explains fire's role in ecology, and how this tool is used to restore plant communities and provide habitat.

With all the positive attributes of the book, there are several things that would make it even more effective. Generally the black and white photos need better resolution and contrast. Color photos are all in a middle section; they would have been more effective if disbursed throughout the book with the applicable article. The prescribed fire cover photo should have included flames—the smoke shown could be mistaken for fog. A content point—restoration will never get to where it needs to be without more citizen involvement. While the book will be very useful to volunteers, I would have liked to have seen even more on community based, volunteer restoration which crosses all ecological boundaries. But maybe that's another book.

But don't be put off by these criticisms. Wade in and devour the book. The quality of the book is deeper than the first, thumbing-through impression.

After reading the book cover to cover and doing much thinking, I'm feeling better about my work. I have tuning-up to do. But, and it's a big but, I now have a definitive resource manual that will never be far from my desk. It will get muddy and worn. I'm referring to it in my current wetlands project; thinking about what will happen to the water table when we move soil around creating those ponds.

No matter what your role in conservation and restoration, *Restoring the Pacific Northwest* will help you. While I agree with the authors' hope that the book "will advance the field of restoration" my hope is that the book will become your go-to source for whatever native plant project you are working on.

Reviewer: Jurgen A. Hess, RLA, is a landscape architect in Hood River, Oregon. His practice focuses on conservation, ecological restoration, native plants and hands-on projects in Washington and Oregon. He is a member of the Society for Ecological Restoration and is an environmental activist with a passion for protecting and restoring the earth.



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ELECTION 2008

WNPS BOARD

There are three candidates for three positions. A space for a write-in vote is included on the ballot. Candidates with the most votes will each serve three-year terms on the WNPS Board beginning in the fall of 2008. Two voters per ballot are allowed for those with family memberships and family voting privileges. Please fold where indicated on the back side of this ballot, tape edges, apply postage, and return the ballot by October 1, 2008 or sooner.

☐ **Candidate Priya Shahani** is a conservation biologist with an interest in both research and the practical application of ecological information to improving protection for sensitive plant species and communities. Priya earned a doctorate in Ecology & Evolutionary Biology at UC Santa Cruz, where her research explored the effects of forest management on pollination and population biology of a serpentine-specialist plant in the Siskiyou Mountains of southwestern Oregon. Priya has served as a lecturer in Plant Systematics at UC Santa Cruz, as well as a botany curriculum advisor to the Siskiyou Field Institute. In her current position as an ecologist with the Washington State Department of Natural Resources' Natural Areas Program, Priya conducts research and monitoring work to address a range of questions and issues confronting sensitive plant species and communities in the protected preserves of eastern Washington. If elected to the WNPS board, Priya hopes to lend her background in plant ecology to furthering conservation efforts in Washington State.

☐ **Candidate Scott Moore** has served on the state board since 1999, and he sits on the Conservation and Finance committees. He works for Snohomish County Public Works where he manages a habitat restoration program and native plant nursery. He also serves as Chair for the King County Noxious Weed Control Program.

The following are important focus areas in his next term:

- 2003-2010 strategic plan as guidance and check list.
- Begin looking at a strategic plan update.
- Reach endowment goal to fund more research, conservation, and education projects and scholarships.
- Retain current members and enlist new members.
- Encourage Pacific Northwesterners to appreciate the everyday native vegetation in their communities, parks, and open spaces.

☐ **Candidate Katrina Strathmann** is a restoration biologist for the Wildlife Management Program of the Confederated Tribes and Bands of the Yakama Nation in Yakima and Klickitat counties. Katrina works on floodplain terrace and shrub-steppe restoration, monitoring restoration projects to evaluate success, invasive plant management, habitat inventories and assessments, and botanical surveys. Currently she is working on an assessment of condition and threats to hydrologic and habitat features of the Reservation's mountain meadows, as well as developing the first invasive plant management plan for the Reservation. Before moving to Washington in 2005, Katrina worked as a natural resources specialist for the National Park Service in California since 1997. Her experience there includes management of restoration projects, rare plant populations, and experimental revegetation projects as well as managing a native plant nursery. She completed her M.S. in Biology at San Francisco State University, studying the relationship of mountain meadow butterfly communities with meadow plants as well as the landscape environment. Katrina is active in the Central WA chapter of WNPS, helping to organize winter lectures, and was formerly active in the Yerba Buena chapter of the California Native Plant Society, where she led plant identification sessions for members. Katrina is also a member of the boards of the Northwest Chapter of the Society for Ecological Restoration and the Cowiche Canyon Conservancy, a local land conservancy in Yakima County. In WNPS, her primary interest is encouraging the appreciation of and protections for native plants and habitats east of the Cascades.

☐ **Write-in Candidate**

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Information for Contributors

Members and others are invited to submit material for publication in *Douglasia*. 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 professional botanist to the interested enthusiast. For more information about how to contribute, see http://www.wnps.org/douglasia/douglasia_contributors.html.

Email submissions to: csurgeon@msn.com

Deadlines for submission

Deadline	Issue	Members receive approximately
January 1	Spring	March 1
March 1	Summer	May 1
June 1	Fall	August 1
September 1	Winter	November 1

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Douglasia, the quarterly publication of the Washington Native Plant Society, reaches 1,800 members of the Washington Native Plant Society (WNPS). Content is geared to botanists, gardeners, and others interested in native plants. We welcome advertising for products, information, and services relevant to these audiences, of benefit to WNPS members, and to the advancement of native plants in Washington State. If you already know that advertising interests you, please visit our web site at www.wnps.org for detailed and printable ad rates and specification sheets which include information regarding printing specs and editorial deadlines.

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Welcome New Members

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- Field trips to see wildflowers and unusual plant communities
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WNPS State Board of Directors: Meetings 2008

October 18, 2008

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

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