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Sage Notes

Newsletter of the Idaho Native Plant Society • Promoting Interest in Idaho's Native Flora

An Ecological Assessment of Water Howellia and its Habitat

By Cat Wiechmann, Ecologist, Watershed Consulting LLC, Missoula, Montana

Water howellia *(Howellia aquatilis)* is living proof that size doesn't always matter. Okay, lighten up, it's just botany people! Water howellia may not be big, but it has proved to be a mystery for Pacific Northwest scientists. Specifically, how can there be a robust population of water howellia in one pond, but an absence of the species in an apparently identical-looking pond a quarter-mile away?

As a graduate student at the University of Idaho, I took on this question through an ecological study comparing pond systems with and without water howellia populations to inform conservation management strategies and goals. The study also aimed to narrow the knowledge gap regarding basic ecological and biological information for water howellia by assessing the environmental variables that positively correlate with this rare, endemic Pacific Northwest wetland plant species. A single growing season of funding was available, requiring the study to be intentional and concise in its strategy.

Water howellia is a winter-annual emergent aquatic herb in the Campanulaceae family endemic to the Pacific Northwest region of the United States. It roots in the pond substrate with extensively branched stems that are either submerged or floating. Water howellia produces two types of flowers: cleistogamous (non-showy, self-pollinating) flowers beneath the surface, and chasmogamous (showy, large) white flowers born on the emergent stems (Figures 1 and 2). The fruit is a small capsule with around 5 brown seeds. In 1994, water howellia was federally listed as threatened under the Endangered Species Act. At that time it was known from 107 occurrences in Oregon, Washington, California, Montana, and Idaho. By 2005, there were 214 known occurrences. Since then, five more populations were discovered in temporary floodplain ponds in Latah and Benewah counties, Idaho. These were the populations my study focused on.

Features of water howellia's life cycle strongly influence its rarity and ability to grow in various habitats. Earlier monitoring and other studies revealed that successful reproduction for the species is dependent on the wetting and drying cycles of the seasonally ephemeral ponds that it inhabits. Specifically, germination occurs in the fall under dry conditions when seeds are exposed to an aerobic environment and resume growth in an anaerobic environment when the ponds fill with water in the spring. Plants mature and produce seed mid-summer. In addition to specific life cycle requirements, water howellia is challenged by human impacts in and around its habitat. Specific human-related impacts thought to negatively impact water howellia include livestock grazing, agriculture, timber harvest, and manipulation of waterways. Erosion, compaction of soil and ger-

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Letter from the President

As part of my job on the faculty at the University of Idaho, I collect native plants, grow out acquired seeds, and evaluate landscape potential of many species in field plots. These duties can be physically demanding. Each year, as the growing season wanes and fall arrives, I am ready to take up my pencil and move into a more sedate winter season. In the brittle cold of winter, I sit in my office, drink hot chocolate, and write up the results of the previous summer's work. Slowly, as time passes, the edge wears off of my feelings about the past summer's labors. As the days begin to lengthen and a first inkling of a spring glows in the distance, I begin to get restless. An intense desire emerges to pound the ground in search of new plant accessions, to see the green of fresh foliage, to photograph dazzling blooms, to observe the winter response of newly acquired species, and even to grab the business end of a hoe and go to battle with the weeds. I am guessing I am not the only INPS member who traverses this annual emotional path. I am guessing there are many of you who are right now in the midst of planning your next summer wildflower excursion. I'll repeat to you what I tell myself every late-winter day—the season of wildflowers will come.

Lithospermum ruderale, commonly known as puccoon or stoneseed, Boise Foothills. Illustration by Karie Pappani.

As you plan your outings for this coming summer, don't forget to include in your schedule time for a few days with your fellow native plant connoisseurs at our annual meeting. This year the meeting will be held up north at the Bumblebee Campground near Coeur d'Alene. The Calypso Chapter, led by Derek Antonelli, has put together an outstanding program. Included in the program is an evening of plant identification. So, bring your botany manuals and specimen containers to carry during the tours so you can collect some "unknowns." This will be a wonderful opportunity to rub shoulders with like-minded people. Hope to see you there!

Stephen Love, INPS President

ERIG needs YOU!

Want to help INPS support great projects? The Education, Research, and Inventory Grant (ERIG) program relies on funding from various sources such as memberships, workshops, and private donations. If you, your business, or your employer would like to make a donation to INPS to help keep the ERIG program successful, send your tax deductible donation to: ERIG Program, INPS P.O. Box 9451, Boise Idaho 83707. Checks should be made out to INPS. Please be sure to specify that your donation is to be used for ERIG projects. Or, you can make a secure online payment using PayPal on the INPS website. Thank you for your help!

Interested in applying for an ERIG in 2018? More information on how and when to apply is available at https://idahonativeplants.org/erig-news/.

College of Idaho Field Botany Class

The College of Idaho is offering a course in Field Botany for the May 2018 term. BIO 322 Field Botany will be taught by Dr. Don Mansfield. The course will run May 21-June 14, including several one-day field trips and a 4-day field trip. This is an intense, 4-week, 4-credit course that meets at the College of Idaho Herbarium Monday-Thursday (with one exception). Roughly every other day we will go into the field to view different ecosystems and collect plants while contributing to botanists' collective understanding of the flora of Idaho. In the lab on alternate days, we learn about major groups (mainly families) of plants and identify the plants that we collected in the field. One four-day field trip (May 31-June 3) is included as part of the Idaho Botanical Foray.

People who are not currently enrolled as students at The College of Idaho can take the class. The prerequisite for College of Idaho students is the introductory biology course. For a non-enrolled student, there would be an expectation of some prior introduction (even if long ago) to biology, which includes some basic plant biology OR a strong interest in pursuing background information as needed (e.g. orientation to basic plant anatomy, such as flower parts, etc.).

Contact the College of Idaho's Registrar's office (208) 459-5400 or registrar@collegeofidaho.edu to receive a Non-Degree Seeking Student Application and a Registration form for BIO 322.1 Field Botany. The tuition and fees for this course is $1255. •

Idaho State Univ. Botany Field Camp

Idaho State University/Idaho Museum of Natural History is offering a 2-week, 3-credit field botany class for summer, 2018. The first week will be based from the ISU campus in Pocatello; the second week from the Lost River Field Station north of Mackay, Idaho. Both weeks will be a mix of field trips and classroom time. The course focus will be acquiring field plant identification skills and the collection and preparation of botanical specimens. The course will be valuable for individuals interested in botany, ecology, conservation, education, or related careers.

Week 1: June 18-22 – Idaho State University

Week 2: July 1-8 – Lost River Field Station

Course instructors are Janet Bala and Michael Mancuso. The course is open to degree seeking students from ISU and elsewhere and to non-degree seeking students or professionals. Enrollment limited. Preference will be given to students who register by April 30, 2018. Join us for exploring and learning the Idaho flora!

To register, visit: https://www.isu.edu/registrar/calendars/academic-calendar/. More information about the course will be posted soon to:

https://www.isu.edu/imnh/

https://www.facebook.com/IMNH208/

Also, take a look at the Lost River Field Station Facebook page at https://www.facebook.com/pages/Lost-River-Field-Station. •

Please visit http://webpages.uidaho.edu/dtank/AFB/ for more information, including the course description and the online application form.

2018 Idaho Native Plant Society Annual Meeting

The 2018 INPS annual meeting will be held June 29-July 2, 2018. It will be hosted by the Calypso Chapter, Coeur d'Alene, Idaho. The meeting will be held at the USFS Bumblebee Campground Group Site, Coeur d'Alene National Forest. The focus of the event will be the Swedish American pioneering botanical collector, forester, and bryologist, John Leiberg. Leiberg was responsible for documenting flora throughout the Pacific Northwest, but particularly North Idaho. Many of the oldest herbaria specimens for species in our area were collected by Leiberg. He collected several species new to science.

Directions

Take the Kingston exit 43 from Interstate 90 and proceed north on the Coeur d'Alene River Road for 5.4 miles. Turn left across the Coeur d'Alene River onto the Little North Fork Road and proceed for 3.0 miles. The Bumblebee Campground is on the right.

Schedule of Events

Friday, June 29 (Event times subject to change.)

2:00 pm to 6:00 pm – Camp Check In

As you check in you will receive your camp site assignments. We will collect any fees that have not already been paid. You will get the details on the hikes and various activities you will be participating in.

2:00 pm to 6:00 pm – Informal Activities

From time to time during this period we will lead short walks around the campground area. You can participate in the "scavenger hunt" to see who can find the most species on the campground plant checklist. For those involved in the INPS Board, the meeting will be in Pinehurst Library at 107 Main Street starting at 3:00 pm.

5:00 pm to 7:00 pm – Informal Dinner

We will be cooking up hamburgers, sausages, and bean burgers. Please bring something to share with the group (salad, dessert, or chips). Seating may be limited so please bring a camp chair if you have one available.

7:00 pm to 10:00 pm – Campfire

Following the informal dinner there will be the traditional gathering of friends around the campfire.

Saturday, June 30

8:00 am to 11:00 am – Settler's Grove of Ancient Cedars Walk

We will caravan to the site of this old cedar grove where giant cedar trees date back to when Columbus landed. This will be a relatively easy walk through the grove. A forest fire swept through the grove in 2015. We will be able to observe the resilience of this ecosystem.

8:30 am to 4:00 pm – Twin Crags/Mount Wiessner Hike

This hike will be to one of the original sites that John Leiberg encountered during his expeditions through the region. Naturalist Jack Nisbet, our evening's guest speaker, will provide interpretation on the hike. The views and flowers will be spectacular and the story will be fascinating. The road into the area is challenging and may be blocked by snow. Only rugged vehicles should attempt this trip. We will try to augment with additional vehicles, but the number of participants will be limited in any case. Those earliest to register will be given priority. If road conditions preclude access to the area, a suitable alternative will be selected.

12:00 noon to 4:00 pm – Coal Creek Hike

The trail up Coal Creek provides a pretty little hike in a riparian zone. The path is well shaded and passes a series of waterfalls—perfect for a hot afternoon. There are carpets of mosses and ferns. Our vascular plant list from previous trips is approaching 100 species. It provides a good representation of North Idaho mesic forests. The trail is up and back so you only need to go as far as you choose. Participants in the Settler's Grove walk will be able to take part in this hike as well.

6:00 pm to 7:00 pm – Dinner meal

We will have our dinner meal catered by the Snake Pit Restaurant at the Bumblebee Campground Group Site. The Snake Pit has been in operation since the gold/silver rush days in 1880 and is famous in the area. The meal will consist of BBQ brisket, pulled pork, beans, salad, and lemonade. You are welcome to bring other beverages of your choice. A vegetarian meal of vegetable rice pilaf will be available on request. The cost of the meal is $16 per person. Purchase of the meal is optional. Your reservation needs to be received by June 15. Seating is limited so bring your camp chair for use during the meal.

7:15 pm to 8:30 pm – Annual Meeting

The Idaho Native Plant Society Annual Meeting will be held at the Bumblebee Campground Group Site. We will be in the open so bring your camp chair or blankets for seating. The meeting will start by addressing the business of the Idaho Native Plant Society. Following the formal business portion of the meeting, Jack Nisbet (teacher, author, and naturalist) will give a presentation on John Leiberg. Jack has written several well-received books of great interest. His topics have included David Thompson

(British fur trader, explorer, and map maker) and David Douglas (plant collector and botanist for whom the Douglas-fir and many other Northwest plants are named). Jack is currently researching another book on the exploits of John Leiberg. John Leiberg was born in Sweden. After coming to the United States, he settled near Lake Pend Oreille. He collected plant specimens for the New York Botanical Gardens and various US government agencies. His work was responsible for documenting the flora of North Idaho. Much of his work was centered on the site of this year's INPS annual meeting. Jack will draw upon his research findings for his presentation at the annual meeting.

Sunday, July 1

8:00 am to 4:00 pm – Revett Lake Hike

The trailhead for Revett Lake is 38 miles from Bumblebee Campground and is very near Thompson Pass on the Idaho-Montana border. The hike into Revett Lake is very scenic with a climb of less than 700 feet and is less than two miles long one-way. Our plant list from previous hikes has well over 100 species and provides a good representation of local subalpine forest flora.

9:00 am to 2:00 pm – Deception Creek Experimental Forest

The Deception Creek Experimental Forest is 19 miles from Bumblebee Campground. The forest was established in 1933 when large, old western white pines were important for producing lumber products. Research at the experimental forest focused on the ecology and silviculture of western white pine. The 291-acre Montford Creek Research Natural Area is located within the forest. Many species of plants are to be found including the rare deer fern *(Blechnum spicant)*.

5:00 pm to 8:00 pm – Informal Plant Identification Session

For the plant geeks among you, we will set up an area within the Bumblebee Group Camp for people to bring their plant materials and share in the efforts to identify these. You are welcome to wander in and out during the session.

6:00 pm to 10:00 pm – Campfire

We will start up the campfire for another traditional gathering of friends. Be sure to bring your best big plant that got away story.

Monday, July 2

8:00 am to 11:00 am – Ad hoc Activities

Let us know if there is anything special you want to see or do. Perhaps we can set something up.

11:00 am – Campground Check Out

Contact Information

Registration form can be found below or on the INPS website. The registration fee is $30 per adult with no charge for children. Calypso Chapter President, Derek Antonelli, can be contacted at ds.ca.antonelli@gmail.com or (208) 682-6139. Alternate contacts are Karen Williams, (208) 667-8790, and Janet Benoit, (208) 683-2407. Please complete and submit registration forms as soon as possible. Make checks payable to INPS Calypso Chapter. Mail to: INPS Calypso Chapter, c/o Derek Antonelli, 6723 W Eden Ct, Rathdrum, ID 83858. •

2018 INPS ANNUAL MEETING REGISTRATION FORM

Name(s) _____

Address _____

Phone _____ Email _____

Registration Fee: $30 per adult participant _____

Meal Requests: Number of meals at $16 per person _____ Vegetarian meals _____

Camping Requirements: Recreational Vehicle/Trailer _____ Size _____ Tent _____

Please Indicate Activity Preferences:

Saturday:

Twin Crags/Mount Wiessner Hike _____ Settler's Grove Walk _____ Coal Creek Hike _____

Sunday:

Revett Lake Hike _____ Deception Creek Experimental Forest Hike _____

Please mail this registration form with payment to:

INPS Calypso Chapter, c/o Derek Antonelli, 6723 W Eden Ct, Rathdrum, ID 83858

John Leiberg (Courtesy of New York Botanical Garden)

***Water Howellia**.....Continued from Page 1*

mination substrate, alteration of pond hydrology, and the transport/introduction of weed seeds, especially reed canarygrass *(Phalaris arundinacea)*, are some of the ways water howellia habitat may be impacted by these disturbances.

Although water howellia grows in freshwater ponds that fill and dry annually, the hydrology and landscape type vary greatly across its range. In California, populations grow in freshwater marshes and swamps. Water howellia was thought to be extirpated from Oregon, but in 2002 was found in vernal pools and oxbow sloughs at the William Finley National Wildlife Refuge. In Washington, populations are found in depressional scabland wetlands that depend on precipitation for their sole source of water. In Montana's Swan River Valley, over 140 populations occur in glacially carved depressions that fill with rainwater and groundwater annually. The six known Idaho occurrences inhabit seasonal floodplain ponds in the Palouse River and Spokane River floodplains. Idaho populations are unique because occupied ponds are entirely dependent on fluvial (river) hydrology through bank overflow and fluvial groundwater.

Figure 1. Water howellia flowers. Photo by Kristen Dubois.

Coming up with a research question that addresses the problem you are interested in is not always straightforward. In order to narrow the objectives of our work for this study, we considered water howellia's unique ecology, as well as previously successful rare plant investigations. The variation of water howellia habitat in different regions demands assessment in each hydrologic regime. We also must understand the ecological dynamics of the wetlands that water howellia occupies to advise management decisions. Wetland plant community structure can be influenced by a variety of factors such as hydrology, surrounding land use, seed sources, and dispersal dynamics. Factors to take into account include abiotic, biotic, resource competition, hydroperiod, and overall habitat assessment. My work focused on the floodplain populations and wetland habitat attributes in Latah and Benewah counties, with an emphasis on the maturation and germination stages. The research questions I asked were:

Figure 2: Water howellia with emergent stems and flowers. Photo by USFS.

- *What are the environmental abiotic/biotic factors that drive water howellia presence over a floodplain?*
- *What are the environmental abiotic/biotic factors that drive water howellia presence within a pond?*
- *What is the optimum temperature and moisture regime for water howellia germination?*

The study was conducted in floodplain wetlands of the Palouse River and the Spokane River where water howellia populations had been located and monitored by the Idaho Natural Heritage Program (INHP). Juanita Lichthardt, an INHP botanist, had also identified ponds that represented potential habitat due to their proximity to ponds with known water howellia populations and their ecological similarity to these occupied ponds. Ponds with water howellia are unique floodplain wetland resources that fill and drain annually from overbank flow and fluvial groundwater. Many of these wetlands are actually channel scars representing relic depressions from where the rivers used to flow, but remain connected to the hydrology of the river.

Most water howellia ponds are surrounded by riparian shrubs and trees such as black hawthorn *(Crataegus douglasii)*, thin-leaf alder *(Alnus incana)*, Pacific ninebark *(Physocarpus capitatus)*, Bebb's willow *(Salix bebbiana)*, and Drummond's willow *(Salix drummondiana)*, with some conifers around the edge. A number of ponds are lacking this surrounding riparian vegetation buffer due to land-uses and vegetation removal. Typical vegetation in these ponds includes common spikerush *(Eleocharis palustris)*, reed canarygrass, simple stem bur-reed *(Sparganium emersum)*, short-awn foxtail *(Alopecurus aequalis),* water plantain *(Alisma plantago-aquatica)*, northern mannagrass *(Glyceria occidentalis)*, water buttercup *(Ranunculus aquatilis)*, water parsnip *(Sium suave)*, inflated sedge *(Carex vesicaria)*, duckweed *(Lemna minor)*, liverwort *(Ricciocarpos natans)*, and common rush *(Juncus effusus)*. Watching these floodplain wetlands and their plant communities evolve as the seasons change is fascinating (Figure 3). In doing work like this, you get to know your sites like old friends, with quirks that you come to expect, like excessively

buggy or thick riparian buffers, or steep edges to be walked cautiously.

Based on our sampling method, we found water howellia frequency averaged 51% during the growing season in the 14 water howellia ponds sampled. A couple of ponds had only a trace amount of water howellia, but other populations were more robust and had consistent growth throughout the pond. Reed canarygrass had invaded all but one of the ponds with a mean cover of 30%. Mean total vegetation cover in the sample quadrats was 50%. Pond size and distance to the river varied greatly, but elevation difference to the river encompassed a smaller range. During water howellia maturation, pond depth varied from 3 cm to 79 cm, with a mean of 27 cm. Depths of 150 cm were recorded in the spring season. Most ponds had some mineral soils ranging from loam to clay, with the majority of ponds containing silty clay or silty clay loam.

There were a number of important and intriguing differences regarding ponds with water howellia and those without water howellia. Ponds that had water howellia populations: (1) were 1-2 meters higher in elevation from the river compared to ponds with no water howellia; (2) had shorter hydroperiods (number of days the ponds are wetted per year) by an average of 30 days compared to ponds with no water howellia; (3) had pond substrate with lower soil bulk density (a measure of compaction and pore space in soil sample) compared to ponds with no water howellia; and (4) were more shaded (by 20-40%) compared to ponds with no water howellia.

Figure 3. C. Wiechmann and R. Hutchinson installing water depth gauges in ice-covered ponds in the spring.

Our results highlighted the unique habitat of water howellia, especially the requirement for complete inundation to grow and mature, as well as periods with no standing water during the germination season. Study results also showed that the majority of howellia-containing wetlands dry by the end of July. Those wetted longer than this do not supply suitable hydrologic regimes. We also found there may be an elevation distance to the water source that provides this specific hydrologic timing. However, other factors may also be at play as we did not assess any sub-surface water sources.

Soil factors and how they impact moisture play an important role in water howellia habitat. For example, the higher the average soil bulk density (less pore space), likely due to a combination of compaction from cattle and motor vehicles as well as soil type, the lower the frequency of water howellia. Soil water content (moisture percentage of soil) was strongly related to soil bulk density, in that soils with higher bulk densities had less moisture. Germination trials, although not statistically significant for moisture, backed up this point, that higher moisture content yielded higher germination rates. Water howellia seed is clearly susceptible to desiccation in the fall if there is not sufficient moisture. Overall, it is clear that the life cycle of water howellia depends on a hydrology regime that is "just right"—where ponds dry, but not too soon; and retain some soil moisture, but do not have standing water or soil saturation—talk about goldilocks!

Our results showed there were specific micro-habitats within water howellia ponds best suited for the species. We found the presence or absence of reed canarygrass (RCG) and water depth interacted to drive howellia presence. The frequency of water howellia consistently decreased as RCG density and cover increased, results consistent with past research in Montana. Water howellia is able to coexist and compete with RCG until a certain density threshold. Once this threshold is crossed, RCG outcompetes water howellia (Figure 4). We observed that while water howellia can grow in a range of depths ranging from very saturated soil with no standing water to 45 cm, it was most robust and has less competition with RCG at depths of 16-45 cm. Therefore, water depth is not as limiting to water howellia as competition for space, light, and nutrient resources.

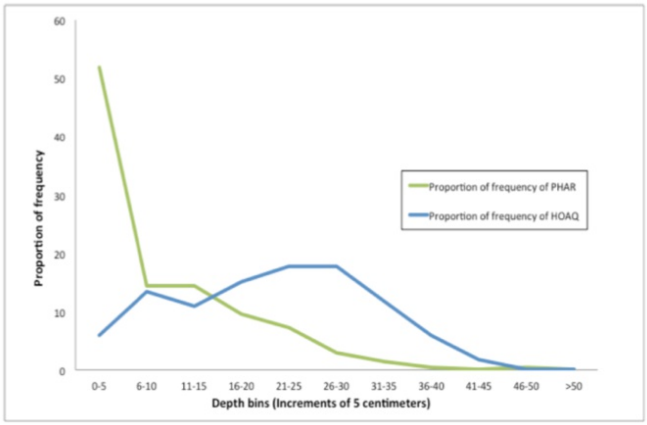

Figure 4. Graph showing relationship between reed canarygrass cover and water howellia frequency as water depth increases.

So, what do we do with all this information? Managing for a specific species is not an easy task, so it is imperative to gather the right information before management decisions are made. For water howellia,

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***Water howellia**.....Continued from Page 7*

managing for RCG is a necessity. RCG invades and dominates habitat resources, and can dramatically alter site hydrology. Annual layers of the roots and stems of dense RCG stands that build up over time may decrease pond depth and change the pond's hydrologic regime. RCG's impact is not limited to water howellia, as it has been shown to take over native wetland vegetation globally. The most successful removal strategies for RCG are manual excavation or weed mats.

A proactive approach to land management in regards to wetland health is essential for water howellia's long-term viability. Keeping cattle and motorized vehicles out of occupied wetlands is important to avoid further soil compaction and hydrology alterations. Maintaining riparian buffers and replacing them where lost is important to provide shade and maintain soil moisture, stability, and wetland community structure. There are still many questions regarding the long-tern conservation of water howellia. It is easy to create excitement about grizzly bears, but not as convincing when it comes to a tiny plant most people have never seen. The presence of water howellia seems to indicate a relatively healthy, less invaded wetland system. Rare plants such as water howellia may serve as indicator species for wetland ecosystem health. We may not have all the answers yet, but with a partnership of scientists, resource managers, attentive land owners, and informed concerned citizens, the conservation of this tiny, rare aquatic plant species stands a fighter's chance. •

This study was funded by U.S. Fish and Wildlife and the National Science Foundation. Dr. Alex K. Fremeir, Associate professor at Washington State University, was my advisor. Please email cat@watershedconsulting.com with any questions!

Native Seed Interns Collect Native Idaho Forbs for Restoration

By Lia Leibman and Jill Pavlik, Chicago Botanic Garden Conservation Land Management Program

Conservation efforts across western states have historically used non-native seed, with millions of acres planted over many decades. Non-native species have long been favored in rangeland restoration due to their established history of agricultural use. Weed invasions and wildfires continue to disrupt natural ecosystems at an ever increasing scale while planted non-natives are unable to perform important roles in the landscape. Sage-grouse have diminished greatly from their native range and pollinator species such as bees, butterflies and other insects, are all on the decline. Researchers and land managers have long identified a need to include more native forbs in restoration seedings for these and other wildlife species.

In the summer of 2017, two aspiring botanists roamed through the Boise, Payette, Salmon-Challis, and Sawtooth National Forests in search of native seed. Jill Pavlik and Lia Leibman served as Forest Service interns in partnership with the Chicago Botanic Gardens and the Conservation Land Management Program (CLM). We were stationed at the Forest Service's Rocky Mountain Research Station in Boise. Similar pairs of CLM interns were coordinated across Forest Service Region 4 and across BLM districts in Nevada.

We collected seeds from five native forb species: Douglas' dustymaiden *(Chaenactis douglasii)*, nettleleaf giant hyssop *(Agastache urticifolia)*, silverleaf phacelia *(Phacelia hastata)*, showy fleabane *(Erigeron speciosus)*, and hoary tansyaster *(Machaeranthera canescens)*. These species were chosen for their benefit to sage-grouse chicks and to pollinators. In addition, these species have wide distributions throughout the Intermountain Region, growing in a variety of habitats from low elevation desert scrub to subalpine meadows.

Douglas' dustymaiden is covered in fine woolly hairs, has fern-like leaves, and heads of tiny white disk flowers. We found this plant clinging to steep, dry hillsides on the Salmon-Challis and Boise National Forests. The seeds are narrow black achenes topped with tufts of thin, dry scales.

Nettleleaf giant hyssop is a tall, fragrant plant found in large populations along creek beds and woodland meadows throughout all four forests. This handsome plant has dark green lance-shaped leaves with clusters of white to pink flowers arranged in a spike. The seeds are tiny black nutlets that resemble poppy seeds. When collecting, we would cut off the flower clusters from the stems and the tiny seeds would pour out in abundance into our bags.

Silverleaf phacelia is a low growing plant often found with Douglas' dustymaiden. Sharp bristly hairs in the inflorescence made seed collecting a challenge. Leaves for silverleaf phacelia have distinct parallel veins and are coated in beautiful silvery hairs. The purple flowers are arranged in tight coils that resemble fiddleheads. Each flower houses one tiny seed with a unique surface texture.

Showy fleabane has heads with light purple ray flowers surrounding bright yellow disk flowers. It attracts many pollinators from the diverse habitats where it resides in all four forests. It reproduces both sexually through seed, and asexually through underground rhizomes creating dense clusters of plants. The linear to lanceolate leaves often have a slight twist and usually have short hairs on their margins. Seeds are topped by numerous long, slightly barbed hairs.

Lastly, we collected seed from hoary tansyaster, found in small clusters in sagebrush habitats on the Boise, Salmon-Challis, and Sawtooth National Forests. This forb has sticky little hairs covering the stems and leaves. Flower heads have bright purple ray flowers surrounding yellow disk flowers, adding bright pops of color to the sagebrush-steppe. Seeds are similar to showy fleabane, with numerous white hairs surrounding the seed.

As we enter 2018, plans are in the works for a new crop of interns to scout and collect seeds for additional species. In time, these seeds will help us better incorporate native forbs into major restoration projects. •

Palouse Prairie Remnant Restoration

By Sarah Metcalf, White Pine Chapter

Between 2008 and 2012, the Idaho Natural Heritage Program partnered with the U.S. Fish and Wildlife Service (USFWS) to identify and survey for Palouse Prairie remnants in northern Idaho. An altered Palouse Prairie remnant at my place was one of the areas investigated as part of this project. My property is located in Idaho on the south face of Lonejack Butte, about a mile from the Washington border, approximately equidistant from the towns of Potlatch, Idaho, Garfield, Washington, and Palouse, Washington.

In the spring of 2017, a restoration project was initiated for the Palouse remnant on my property with the help of a USFWS grant and the Latah Soil and Water Conservation District. The official project consisted of 11 acres. My personal extended project included an additional 49 acres of mixed open woods and open areas.

It is super fun to go out on the hill and see what's happening in the world of plants. The discovery of a plant that is new to me is especially interesting. Sometimes it is an undesirable species such as field bindweed, red sorrel, or rush skeletonweed. Other times it is an astonishing surprise such as the beautiful greenbanded mariposa lily *(Calochortus macrocarpus)* or rare Palouse goldenweed *(Pyrrocoma liatriformis)*. Every week during the growing season is a different "plant show."

The prairie remnant on my property has never been cultivated, but has been influenced historically by logging, grazing, and trail building activities. It is too rocky and steep to be accessible to equipment which means weed control is done by hand pulling or backpack sprayer; seeding is done with a frontpack broadcaster.

In contrast to a "field conversion" project, we started out with a highly variable mixture of natives, non-natives, annuals, perennials, grasses and forbs. While both field conversions and remnant restorations are creative research endeavors, remnant restoration in particular is not amenable to a pre-formulated course of action. There is a great deal of standing around, puzzling over what to do, what to do first, waiting for inspiration, becoming overwhelmed, going away, and resuming the next day.

2017 work done in 4 select areas, about 2 acres:

1. Rake, pile, and burn all the old vegetation from the previous year so that we could see what was under it and identify plants.

2. Hand weed, rake; repeat; repeat. When the going-to-seed process started getting ahead of us, we used a weedeater, trying to avoid patches of native plants.

3. Mark and spot-spray invasive perennials with the herbicide Opensight.

4. This process resulted in a healthy, but incomplete stand of natives, with bare ground between them.

5. After fall rains arrived, we inspected again to see what non-native plant seeds might have germinated. Surprisingly, there were very few fall-germinating annual grasses. The modest number of weedy annual forbs present were spot-sprayed with Glyphosate in late fall when it was hoped that desirable native perennials would be dormant and less likely to be harmed.

6. A mixture of native grass and forb seed was broadcast, hoping to fill in between those native plant species already present.

This may sound like a lot of work, depending on your definitions of work and play. Also how much time you have, and want, to spend on it...and if you are lucky enough to have a few excellent employees.

Notes from the first season:

1. This is not a one-year project, or a 3-year project, but a 10-year project. The first year is for figuring out how to do it—an ongoing process.

2. This past spring I entirely missed the opportunity to control bulbous bluegrass *(Poa bulbosa)*. It was up, dropping bulblets, and dormant almost immediately. Late this fall we marked a test area where the bulbous bluegrass was greening up and spot sprayed it with Glyphosate, trying to avoid the bluebunch wheatgrass, which hopefully was dormant anyway. It took about 10 days, but the bulbous bluegrass finally turned yellow. It will be interesting to see if it is truly dead this next spring.

3. In some places what I had assumed to be ventenata *(Ventenata dubia)* was actually bulbous bluegrass. Worse, in my opinion, but good to know because different control methods are needed. Fall-germinating annual grasses can be nicely controlled by pulling them up before they go to seed. They are easy to pull, whereas bulbous bluegrass is not. If it can be killed with Glyphosate in the late fall when all else is dormant, then that is going to be my choice.

4. The prairie remnant has billions of small-flowered cranesbill *(Geranium pusillum)* plants, a tiny non-native annual. It was initially very confusing to identify because the seedlings look a lot like prairie star *(Lithophragma* sp.*)*. In many areas, it forms a solid ground cover between individual native plants and is hard to pull up because of its tiny size. I set up two experiments. One

compared a patch of small-flowered cranesbill sprayed with Glyphosate in late fall, a similar patch dug up with a weeding tool (which was easy after fall rain), and a control patch. I am really curious to see how well this fall-germinating annual survives the winter, and if the late fall Glyphosate application kills it. The second experiment compared a patch of small-flowered cranesbill over-seeded with native grasses, a patch over-seeded with vigorous native forb species (yarrow, blanketflower, Oregon sunshine), and a control patch. I am wondering if the perennials might be able to overwhelm and replace the small-flowered cranesbill.

It would be fun if those of us who have been entrusted with a Palouse Prairie remnant could get together to compare notes and go for plant walks. And maybe trade seeds too. I would be happy to lead some walks out here at Lonejack Butte. Feel free to contact me at smetcalf@moscow.com. •

Plant species list for the restoration project area

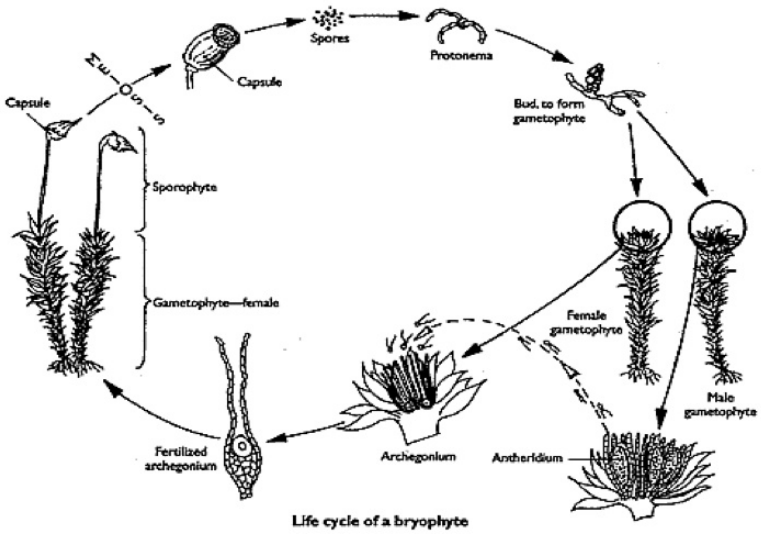
Scientific name	Common name	Scientific name	Common name
Native grasses		*Ranunculus* sp.	buttercup
Danthonia californica	California oatgrass	*Senecio integerrimus*	western groundsel
Elymus glaucus	blue wild rye	*Senecio serra*	tall butterweed
Festuca idahoensis	Idaho fescue	*Solidago missouriensis*	Missouri goldenrod
Psedoroegneria spicata	bluebunch wheatgrass	*Symphyotrichum spathulatum*	western aster
Koeleria macrantha	prairie junegrass	*Thalictrum occidentale*	western meadowrue
Native perennial forbs		*Triteleia grandiflora*	large flowered triteleia
Achillea millefolium	western yarrow	*Veratrum californicum*	false hellebore
Agoseris grandiflora	mountain dandelion	*Viola adunca*	hookspur violet
Allium sp.	wild onions	*Zigadenus venenosus*	death camas
Antennaria luzuloides	woodrush pussytoes	**Native annual forbs**	
Antennaria rosea	rosy pussytoes	*Gallium aparine*	sticky bedstraw
Apocynum androsaemifolium	spreading dogbane	*Madia gracilis*	mountain tarweed
Balsamorhiza sagittata	arrowleaf balsamroot	*Epilobium brachycarpum*	tall annual willowherb
Besseya rubra	red besseya	*Collinsia parviflora*	blue-eyed mary
Calochortus macrocarpus	greenbanded mariposa lily	*Collomia grandiflora*	grand collomia
Chamerion angustifolium	fireweed	**Non-native perennial grasses**	
Clarkia pulchella	pink fairies	*Poa bulbosa*	bulbous bluegrass
Claytonia lanceolata	spring beauty	*Poa pretensis*	Kentucky bluegrass
Clematis hirsutissima	sugar bowls	*Arrhenatherum elatius*	tall oatgrass
Claytonia perfoliata	miner's lettuce	*Bromus inermis*	smooth brome
Delphinium nuttallianum	Nuttall's larkspur	*Dactylis glomerata*	orchardgrass
Erythronium grandiflorum	glacier lily	**Non-native annual grasses**	
Frasera albicaulis	shiny frasera	*Ventanata dubia*	ventanata
Fritillaria pudica	yellow bells	*Bromus brizaeformis*	rattlesnake brome
Galium boreale	sticky purple geranium	*Bromus tectorum*	cheatgrass
Geranium viscosissimum	northern bedstraw	*Bromus japonicus*	Japanese brome
Geum triflorum	prairie smoke	**Non-native perennial forbs**	
Helianthella uniflora	little sunflower	*Chondrilla juncea*	rush skeletonweed
Hydrophyllum capitatum	ballhead waterleaf	*Convolvulus arvensis*	field bindweed
Hieracium scouleri var. *albertinum*	western hawkweed	*Hypericum perforatum*	St. Johnswort
Iris missouriensis	western iris	*Linaria vulgaris*	yellow toad flax
Lithophragma glabrum	bulbous woodland star	*Plantago lanceolata*	English plantain
Lithophragma parviflorum	woodland star	*Potentilla recta*	sulfur cinquefoil
Lithosperum ruderale	western stoneseed	*Rumex acetosella*	red sorrel
Lomatium dissectum	fernleaf biscuitroot	**Non-native annual/biennial forbs**	
Lomatium gormanii	Gorman's biscuitroot	*Centaurea cyanus*	bachelor buttons
Lomatium triternatum	nineleaf biscuitroot	*Valerianella locustra*	cornsalad
Lupinus sp.	lupine	*Vicia villosa*	hairy vetch
Mertensia longiflora	longflower bluebells	*Geranium pusillum*	small-flower cranesbill
Olsynium douglasii	grass widow	*Galium divaricatum*	wall bedstraw
Penstemon sp.	penstemon	*Lactuca serriola*	prickly lettuce
Perideridia gairdneri	Gairdner's yampah	*Sanguisorba annua*	prairie burnet
Potentilla glandulosa	sticky cinquefoil	*Sisymbrium altissimum*	tumblemustard
Potentilla arguta	tall cinquefoil	*Tragopogon dubius*	salsify
Potentilla gracilis	slender cinquefoil		
Pyrrocoma carthamoides	Columbia goldenweed		
Pyrrocoma liatriformis	Palouse goldenweed		

Spring Brings Bryophytes

By Alma Hanson, White Pine Chapter

Spring with its frequent rain showers provides an opportunity to seek out the diminutive world of bryophytes. Bryophytes collectively include the mosses, liverworts and hornworts. They really put on a show in early spring when the leaves and stems of these nonvascular plants expand in the abundant moisture.

The *Flora of North America North of Mexico* lists about 1900 bryophyte species. With 1402 species, mosses far outnumber the liverworts and hornworts. A search of The Consortium of Pacific Northwest Herbaria shows 611 moss species and subspecies in Idaho. I have a moss checklist of about 500 species that I think have a high probability of occurring in Idaho. While putting names on the bryophytes you encounter this spring can certainly be challenging, taking time to identify the dominant species will be rewarding and opens up a whole new world. To keep the challenge fun and doable, start with trying to identify some of the large dominant mosses.



Drawing of the moss life cycle (https://www.fs.fed.us/database/feis/-plants/bryophyte/poljun/all.html)

One of my favorite mosses is *Polytrichum junipernum* or the hair cap moss. It was a specimen given to me by Dr. Doyle Andregg, a lichenologist and head of Biological Sciences at the University of Idaho back in the 1970s. I had just asked him to be my major professor on a project exploring the relationship of Daubenmire forest habitat types and moss communities. By giving me a real specimen to identify, I think he was quietly testing my tenacity. It took me days to key that moss and was the first of many hours of keying as I worked to complete a MS under his direction.

You can find hair cap moss in drier sites from sea level to high alpine. Besides being the first moss I identified, the hair cap moss became my poster moss for teaching rudimentary terminology. The gametophyte (haploid) part of the plant contains the green leaves and stems; the sporophyte (diploid) part of the moss contains the capsule, spores and hairy calyptra that gives the moss its common name. The parts of this moss are big enough to observe under a hand lens and beautiful enough to compete with any flowering plant. Hair cap moss regenerates sexually from spores and asexually by fragmentation of plant parts or by small buds. Several other species in the genus *Polytrichum* occur in the Pacific Northwest region. Some such as *P. strictum* are rare, occurring mostly in boreal forests. Specimens of *P. strictum* have been collected from sphagnum bogs in Washington and Oregon, but it has not been reported from Idaho.

The life cycle of bryophytes differs from flowering plants. In flowering plants, the dominant organism is diploid with two sets of chromosomes. But in bryophytes the haploid state is dominant and capable of living independently. This haploid stage contains only one set of chromosomes. Lacking a sophisticated vascular system for transporting water and nutrients, mosses rely on capillary spaces to move water and operate much like a sponge.

If you decide to start collecting and identifying mosses, there are a few things beside your hand lens that you'll find helpful. First, buy some plain brown bags, the kind used for a sack lunch. Use these bags for your collections. Moss collections need no special pressing or care in the field. Just be sure the mosses dry out in the paper bags so they don't rot. When you get back home and want to identify your bryophyte, take a dry specimen and add some water to revive the plants. Secondly, buy a common field guide to bryophytes like, *Mosses, Lichens and Ferns of Northwest North America*, 1988, by D.H. Vitt, J.E. Marsh, and R.B. Bovey. If you want a newer book that gently introduces you to mosses through pictures and keys try *Common Mosses of the Northeast and Appalachians*, 2013, by K.B. McKnight, J.R. Rohrer, W.J. Perdrizet, and K. McKnight Ward. Even though this book addresses eastern mosses, many of the same genera occur in the Pacific Northwest and the pictures and keying tips are worth the investment. As it states at the end "this book is an invitation to slow down, to look closely and to...come to love some of nature's smallest plants." Then for the hard core

bryologists, there are volumes 27, 28 and 29 of the F*lora of North America* that cover nearly 1900 species of North American bryophytes. Lawton's, 1971, *Moss Flora of the Pacific Northwest* and Flowers' *Mosses: Utah and the West*, 1973, also provide good drawings and distribution information useful for identification.

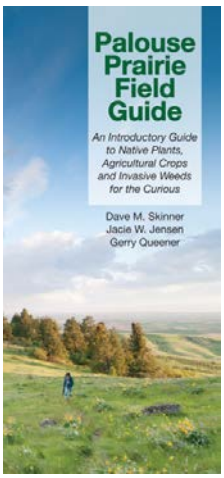
Before you start collecting in earnest be sure and check the Idaho Native Plant Society Rare Plant List tracked by the State Heritage Program of the Idaho Fish and Game https://idahonativeplants.org/rare-plants-list/. Bryophytes in the list have conservation concerns and permission may be required before collecting them on National Forests and Grasslands. If you don't get around to collecting bryophytes this spring, don't worry. Most of the bryophytes in Idaho are perennials so you can collect them anytime they are not buried in snow! •

Hair cap moss

Book Review

Palouse Prairie Field Guide. An introductory guide to native plants, agricultural crops and invasive weeds for the curious. By Dave M. Skinner, Jacie W. Jensen and Gerry Queener. Published by Thorn Creek Native Seed Farm, 2016.

The Palouse Prairie is a very rare grassland habitat that has several species rarely included in other plant guides. Palouse Prairie remnants and shrubby "eyebrows" have a wide mix of forbs, grasses, and shrubs that have long needed their own plant guide. The *Palouse Prairie Field Guide* fills this need excellently. It provides wonderful photographs, habitat descriptions, native range, bloom period, and even a guide for similar species. Plant descriptions are easy to understand and well-written. I would recommend this guide to anyone interested in Palouse Prairie vegetation. The format is based on flower color, which is handy for blooming plants. Fortunately, the second printing now includes both common name and scientific name indices. — *Judy Ferguson, plant ecologist, Moscow, Idaho*



The *Palouse Prairie Field Guide* is an excellent and accessible guide for users of all botanical knowledge levels. The guide is arranged by flower color making field identification quick and easy during the plant's flowering periods. I appreciate having a guide that is specific to our region to recommend to landowners and plant enthusiasts on the Palouse. This field guide is sized for convenient field use, but its beautiful color photos and detailed plant descriptions are enjoyable to peruse at any time, indoors or out. — *Brenda Erhardt, Latah Soil and Water Conservation District, Moscow, Idaho*

I have used the *Palouse Prairie Field Guide* constantly and would be lost without it as I slowly learn to identify the plants. It helped immensely when I was able to procure an index which folded neatly into the shape of the guide and can be carried inside it. Grouping the plants by color rather than taxonomy is a huge help, and the other notes lend much-appreciated background information for each species. — *James Sayre, Palouse Prairie landowner with a restoration project*

This *Palouse Prairie Field Guide* is dedicated to our wonderful friend, David M. Skinner, with whom we had the pleasure to work until his death on January 28, 2016.

He was a botanist and farmer in heart and practice. Dave provided most of the native plant information and many of the photos for this guide. His extensive knowledge of Palouse Prairie plants, agricultural crops and plants in general made a daunting task much easier. We will remember him for generously sharing his knowledge with all who expressed an interest in plants, especially native plants.

Dave was always approachable and encouraging to others when they had questions about growing and using native plants. He strongly promoted the use of natives in our private home and public building landscapes, as well as maintaining and restoring native Palouse Prairie. Plants were Dave's life, and our world is a richer, more diverse place because of him and his life's work. Each time we use this guide, we will fondly remember him. We hope you will, too. — *Jacie Jensen and Gary Queener* •

INPS Chapter News

CALYPSO CHAPTER

When: Meetings are the first Wednesdays of March, April, May and October at 7:00 pm. Field trips take place during the spring, summer, and early fall months.
Where: Meeting are held in the conference room of Idaho Department of Fish and Game, 2885 W. Kathleen Ave., Coeur d'Alene
Contact: Derek Antonelli, ds.ca.antonelli@gmail.com

LOASA CHAPTER

When: Meetings are held the third Thursday of each month at 7:00 pm.
Where: Taylor Building, Room 248, College of Southern Idaho, Twin Falls.
Contact: Bill Bridges, bridgesbill34@yahoo.com

PAHOVE CHAPTER

When: Meetings are held on the second Tuesday of each month from September-April at 7:00 pm. Dates, times, or topics are occasionally subject to change. Upcoming meeting information is sent to members via postcard and/or email. Events are also posted on the Pahove Chapter page of the INPS website: http://idahonativeplants.org/local-chapters/pahove/
Where: The MK Nature Center Auditorium, 600 S. Walnut Street, Boise.
Contact: For more information about Pahove Chapter activities please visit the Pahove Chapter page on the INPS website, or email Karie Pappani at pahove.chapter.president@gmail.com
Board Position Opening: Pahove chapter is seeking a new board president. Current president, Karie Pappani, has served the chapter exceptionally for 6+ years, and the time has come to select her successor. Interested individuals are encouraged to contact the board at pahove.chapter.president@gmail.com
Upcoming events:
March 13: Roger Rosentreter discussed plant palatability and wildlife, with an emphasis on sage grouse.
April 10: Leon Powers presents "Phantom of the Opterans: Idaho's tiniest and least-known owl."
April 27-28: Pahove Native Plant Sale
Our annual plant sale will be held at the MK Nature Center, 600 S. Walnut St., Boise, on Friday, April 27, 5-7 pm (Members Only) or Saturday, April 28, 10 am-1 pm (Public Sale). Pahove's annual plant sale encourages people across the Treasure Valley to enhance their yards and gardens by making hundreds of native plants available for sale. Pahove also uses this event to help educate the public on the value of native plants and the habitat they provide for bees, birds, and other wildlife. Proceeds benefit the Pahove Chapter and MK Nature Center.
May 12: Wildflower Show
Pahove Chapter will host a Wildflower Show at the Foothills Learning Center, 3188 Sunset Peak Rd., Boise. Participants will learn about our local flora, including how to identify the wildflowers of the Boise Foothills and the weeds that accompany them.
May 22: Field Trip to Orton Botanical Garden
Pahove members are invited to enjoy a guided tour of Orton Botanical Garden in Twin Falls. The one-day bus trip for $25 will feature presentations by members Ann DeBolt, Roger Rosentreter, and others. Cacti, succulents, and native plants will be available for purchase. See the Pahove Chapter page on the INPS website for registration details. Also, Orton Botanical Garden has a new, interactive web site. Check it out: www.ortonbotanicalgarden.com. Among other things, the new website allows you to purchase plants online, instead of having to download an order form and mail it in.
Pahove Donates To Four Idaho Herbaria
In October 2017, the Pahove Chapter used Plant Sale profits for gifting $1000 to each of the four Idaho herbaria participating in the annual Idaho botanical foray: Boise State University's Snake River Plains Herbarium, the College of Idaho's Harold M. Tucker Herbarium, Idaho State University's Ray J. Davis Herbarium and University of Idaho's Stillinger Herbarium.
The very appreciative herbaria directors indicated quite differing plans for spending these discretionary funds, such as for student conference travel expenses, for materials to mount specimens, and other varied and necessary operational expenses. They'll itemize expenditures in future reports to Pahove. The chapter is grateful to have continuing member support at our annual native plant sale. Because of this, Pahove was able to financially assist our state's herbaria, aiding them to preserve the knowledge contained in their botanical specimens.

SAWABI CHAPTER

When: The Sawabi Chapter invites all to its fall/winter programs held on the first Monday of the month at 7 pm. Before each main speaker, Dr. Karl Holte will do a brief presentation about "The Plant Family of the Month." Refreshments are available after the meeting.
Where: The North Fork Room (3rd floor) in the Earl Pond Student Union Building on the Idaho State University in Pocatello. Meeting starts at 7 pm.

Contact: Karl Holte at plantprof@live.com; (208) 241-8358.

Upcoming events:

April 2: Sawabi Chapter Annual Meeting

UPPER SNAKE CHAPTER

The Upper Snake Chapter is currently inactive.

Contact: Rose Lehman, jojorose@cableone.net

If anyone is interested in reviving the chapter, they are welcome to contact Rose.

WHITE PINE CHAPTER

When: Meetings are held once a month except during the summer. Field trips can occur most any month. Please check the chapter website at www.whitepineinps.org for events which may be scheduled or finalized after *Sage Notes* is printed; or email the chapter officers at whitepine.chapter@gmail.com

Where: Great Room of the 1912 Building, 412 East Third St. in Moscow (between Adams and Van Buren) at 7 pm.

Contact: INPS, White Pine Chapter, PO Box 8481, Moscow, ID 83843 or whitepine.chapter@gmail.com

Upcoming events:

Find additional events on our website calendar.

April 14: Nisqually John Canyon Field Trip

The White Pine Chapter is planning an early spring field trip in April led by Steve Bunting to the Nisqually John Canyon Wildlife Habitat Management Unit which is an area managed by the US Army Corps of Engineers adjacent to Lower Granite Reservoir. The low elevation grassland area is over 3500 acres in size and dominated by bluebunch wheatgrass. The canyon setting provides for variety of habitats. Because of the low elevation, it is one of the earliest areas in our region where spring appears. Arrowleaf balsamroot, biscuitroots, sego lilies, and a variety of spring annuals are common early spring plants. Nisqually John Canyon WHMU is located along Washington State Highway 193 (Wawawai Road) about 15 miles west of Lewiston. Camping is available nearby at Blyton Landing and Nisqually John Landing. Additional details: http://www.whitepineinps.org/WPschedule.html

April 19: Two Idaho Rare Plants, Idaho Phlox (*Phlox idahonis)* and Water Howellia *(Howellia aquatilis)*. Juanita Lichthardt will discuss two of our favorite rare plant species, Idaho phlox and water howellia. She will provide updates on survey results and the status of populations.

May 19: White Pine Chapter Native Plant Sale

Come join us for the White Pine Chapter Native Plant Sale on Saturday, May 19, at 9:00 am, at the 1912 Center, Arts Room, 412 East Third St. There will be some annuals, many perennials, and some trees and shrubs. Whether you have a garden bed needing a few plants to tuck in here or there or a larger area you are replanting with Palouse Prairie natives, you'll find an assortment of native plant species to fit your needs. Have questions about which natives to plant? Come and talk to our Palouse Prairie native experts.

May 12 & June 9: Steptoe Butte Botany Blitz

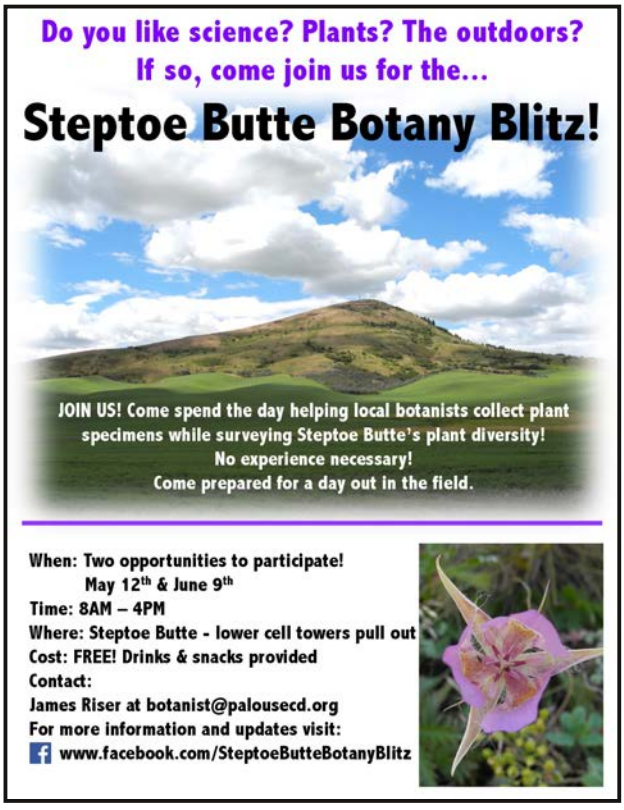
Do you like science, plants, the outdoors? Mark your calendar for the Steptoe Butte Botany Blitz on May 12 or June 9, 8 am-4 pm. James Riser, Botanist for Palouse Conservation District, invites you to help local botanists collect plant specimens while surveying Steptoe Butte's plant diversity. Drinks and snacks will be provided. Carpool locations and further details will be listed at a later date. Sponsored in part by the White Pine Chapter. Updates will appear on www.facebook.com/SteptoeButteBotanyBlitz

WOOD RIVER CHAPTER

When: Meetings are held various weekday evenings beginning at 7:00 pm.

Where: Meetings are held at the Sawtooth Botanical Garden, located three miles south of Ketchum, on Highway 75 and Gimlet Road.

Contact: Cynthia Langlois at cplangloisACRP@msn.com for information about field trips and presentations. Also, check the Sawtooth Botanical Garden website: sbgarden.org for updates on presentations. •



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Memberships run calendar year. New memberships enrolled after June 1 include the following year. ***Renew or join online:*** *https://idahonativeplants.org/membership/*

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Submissions: Members and non-members may submit material for publication. Relevant articles, essays, poetry, news, announcements, photographs and artwork are welcome. Authors, artists and photographers retain copyright to their work and are credited in *Sage Notes.* Send all submissions electronically to the editor at the link below. Please provide a phone number and/or email address with your submission. Submission deadlines are January 8, April 1, August 1 and November 1.

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