Vol. 37 No. 3 September 2015

Sage Notes

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

Journey of a Native Seed Producer

By Jacie Jensen, Partner at Thorn Creek Native Seed Farm, Genesee, Idaho

Finding the sweet spot between the natural world and the human world is something users and producers of native seed struggle with all the time. Whether seeding a national forest or crop field, we invite disasters when the industrial factory model is forced on the land. For any project, native seed users want a seed product of specific quantity, consistent quality, and of genetic specificity. On-demand efficiency is required to have seed from field to market-ready in a short turnaround time. However, the natural world works on a different timeline and with variables controlled by Mother Nature. She teaches us to have patience and to focus on the "system" - not the single species. She wants variability and diversity, not homogeneity, for surviving in the ever-changing natural world. Her efficiency is based on energy – not time. As native seed farmers, we have learned that what worked last year may not work this year. Variability of wind, snow, rain, heat, cold, soil biology, and many unknowns affect pollination, germination, weed and predator density, weed species, crop rotation, and seed maturation and shedding.

Our attempt to bring together the natural and the human worlds started on a fourth generation Palouse farm with no-till Palouse crops: wheat, barley, peas, lentils, garbanzos, and canola. In 2004 we were looking for ways to diversify our farm for economic purposes as well as to improve soil health. While searching for native grass and wildflower (forb) seed for our own land restoration projects, we noticed a missing link to restoring and re-establishing the Palouse Prairie. That link was the availability of native seed. The abundance and diversity of native plants growing on our Palouse Prairie remnant on Paradise Ridge, southeast of Moscow, had us thinking, "If we grow these plants without trying, could we grow them if we tried?" In answering that question, we diversified our farm to include perennial seed crops, and Thorn Creek Native Seed Farm was born.

Thorn Creek Native Seed Farm's perennial native grass and wildflower crops are crops to be propagated by the buyer. To remove and confirm many of Mother Nature's variabilities for the buyer, our native seed fields are certified by the Idaho Crop Improvement Association (ICIA), a quasi-state agency. The ICIA provides to the public traceability of the species' genetics, field inspections for noxious weeds and off-type plants, confirmation of seed quality with germination and purity tests

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In this issue:

Letter from the President

I am writing my first letter as fledgling president of the Idaho Native Plant Society. I think it appropriate to present a short introduction for those of you who may not know me. I live in the small community of Aberdeen in the southeastern region of the state. I work as a professor of horticulture at the University of Idaho's Aberdeen R & E Center, and have been a member of INPS and the Sawabi Chapter since 2005. It could be said that I entered the world of native plants through the back door. Native plants are integrated into my profession, that of horticulturist. I have created a plant domestication research project, the goal of which is to develop a palette of native plants that can be used in home and commercial landscapes. With a background in horticulture, I have no formal training in botany or taxonomy - disciplines important to my work, but for which I am self-taught. I have always had an interest in our beautiful and amazing wildflowers. My hobbies include hiking in the backcountry, native plant gardening, and wildflower photography.

I tackle this new position of president with a bit of trepidation and a fair amount of excitement. Apprehension results from concerns about doing justice to the work of INPS over the next two years. On the other hand, I am eager to work closely with the wonderful people who make up this organization and with whom I share a common devotion - the appreciation and conservation of our amazing native flora.

Our recent annual meeting in the Tetons affirmed my opinion about the caliber of people within our Society. I met with the INPS Board, staffed by people who are dedicated to the Society and its mission. I sat around the campfire and shared life stories and native plant trivia with new and old friends. I eagerly participated in presentations and field trips, thereby benefiting from the knowledge of true professionals, accumulated through a lifetime of service. I shared incredible natural beauty with those whose awe matches my own. The result - my personal commitment to the INPS mission was strengthened, I found increased willingness to commit personal time to the organization, and I became more comfortable with my INPS associates. It was a great annual meeting. Amy Taylor of the Wyoming Native Plant Society, and Bob McCoy (plus all of the assisting volunteers) of the Sawabi Chapter deserve our appreciation for organizing this wonderful opportunity.

I thank all of you for what you do to keep this organization strong. I look forward to meeting more of you as my period of service progresses. I wish you all the best in your personal and societal endeavors. Lastly, may you find that ultimately rare and elusive wildflower.

Yours truly,
Stephen Love, President

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Refugia to Ridgetop - 2016 INPS Annual Meeting

INPS White Pine chapter is hosting the 2016 INPS Annual Meeting near Grangeville, Idaho. Please mark your calendar and plan to join us. The proposed dates are Friday, June 10 through Sunday, June 12, 2016. There will be an optional event on Monday, June 13 for those who wish to stay to see more of this historic and flora-diverse area. The proposed camping location is the Fish Creek Group Camp and the Fish Creek Pavilion approximately 8 miles from Grangeville. At this time we anticipate two primary field trips, each will be offered twice. The first to areas near the confluence of the Lochsa, Selway, and Clearwater Rivers will concentrate on coastal disjuncts of the maritime-like river refugia, the Grand Fir Mosaic with its associated unique flora, and historic sites. The second will examine the flora of the fescue-dominated grasslands of Mud Springs Ridge on the Clearwater-Nez Perce National Forest and provide views of both the Snake and Salmon River drainages. Further details of these and several other shorter field trips will be announced later via email, *Sage Notes* and the INPS website. The annual membership dinner and meeting will be held Saturday evening, June 11, 2016. Contact: whitepine.chapter [at] gmail.com

Pacific dogwood (Cornus nuttallii), one of many coastal disjuncts in the Clearwater refugia. Photo by Mike Hays.

Mud Springs Ridge. Photo by Judy Ferguson.

Idaho Rare Plant Conference - February 2016

The next Idaho Rare Plant Conference has been scheduled for February 9 -11, 2016. This biannual event will be held at the Washington Group Plaza building, in Boise (the same location as in 2014). More information about the conference will be included in the December issue of Sage Notes. Volunteers helping with the conference can contact Holly Beck. She will notify conference volunteers when the planning stage approaches. Holly can be contacted at hbeck [at] blm.gov.

Aquatic Plants Workshop - October 2015

The Pahove Chapter and the College of Idaho are co-sponsoring an Aquatic Plants Identification Workshop scheduled for October 22 - 23, 2015 at the College of Idaho in Caldwell. The workshop will be limited to the first 24 registrants. Registration forms will be available on the INPS webpage in the near future. The workshop fee has not yet been determined, but will be approximately $50.00 to cover transportation and other costs. The first day of the workshop will be in a classroom setting. The second day will be in the field. Dr. Barbara Ertter will be the lead instructor both days.

By October the field season is largely long past, at least on dry land. However, in, on, and around lakes, streams, and other wetlands, delightfully diverse aquatic plants are still going strong. For those willing to get their feet muddy, a whole new world of botanizing opens up, representing families both familiar and otherwise, from Alismataceae to Zosteraceae. Because of the broad spectrum of plants that will be covered, the workshop will focus more on gaining familiarity with families and genera, relying on fresh material and illustrations rather than keys to species. Please join us if you can.

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done in a state-approved seed testing lab, and checks that the test results meet federal, regional and/or state standards. If one noxious weed seed, such as dog fennel (noxious in Utah) or cheatgrass, is found in a seed test sample, certification is denied. Certification is a complex process offering a manipulated track (scientific breeding) or the natural track (source-identified and selected), and four seed classes, four seed sources and multiple generation identifications for each track. Here are a few examples: our wildflower seed is on the natural track with no selection (yellow-tag Source-identified certified). Our grass seed is on both tracks with 'Anatone' bluebunch wheatgrass on the natural track with selection (green-tag Selected certified), 'Sodar' thickspike wheatgrass on the manipulated track with breeding (blue-tag Variety certified).

With the knowledge of Palouse Prairie Foundation (PPF) members (a special thanks to Dave Skinner and Trish Heekin), we began with 10 perennial wildflowers in our seed-increase plot. The original source of our first wildflower seeding was wild-collected seed from Palouse Prairie remnants. These seeds were then planted into a one acre seed-increase plot with each species planted in multiple rows. Seed harvested from the rows was either sold or seeded into a field. Mark Mustoe, Clearwater Seed, assisted us with establishing our first Certified Cultivar Class native grass fields. Today we have 590 certified acres of 12 native grass varieties within six grass species, and 38 certified acres of seven native wildflowers species including little sunflower (*Helianthella uniflora*), Lewis flax (*Linum lewisii*), silky lupine (*Lupinus sericeus*), Oregon sunshine (*Eriophyllum lanatum*), taperleaf penstemon (*Penstemon attenuatus*), blanketflower

Field of Oregon sunshine. Photo by Jacie Jensen.

(*Gaillardia aristata*) and western yarrow (*Achillea millefolium*); and 15 other native species in the seed-increase plot. All are rain-fed, and established and maintained with no-till conservation practices.

Our income potential is also based on the seed lab test results. Seed is sold in Pure Live Seed (PLS) pounds. For an example, a blanketflower lab test reported 95% purity and 68% germination rate, calculating to a 62.56% Pure Live Seed. Germination can be

Wayne Jensen in field of blanketflower. Photo by Jacie Jensen.

in the 60-80% range when seed maturity variability is purposely maintained. Out of a 100 lb. bag of blanketflower seed, 62.56 lbs. will germinate. If a buyer pays for 100 PLS pounds of blanketflower, she will receive 159.85 pounds of seed.

With dry land farming, it takes 2-3 years before we harvest the first seed. Planting native seed takes patience: first year plants sleep, the second year they creep, and the third year they leap. A perennial field will remain in production for 4-7 years, with an increase in plant density often a determining factor on the decision to rotate a field out of perennial native seed production. When we take a field out of grass production, we wait 4 years before we plant it back into native grass. We learned this lesson when we planted blue wild rye (*Elymus glaucus*) into a field that had mountain brome (*Bromus marginatus*) three years earlier. The blue wild rye field could not get certified because of the unacceptable percentage of mountain brome. After a year of trying to remove the brome by hand, we decided to take the field out of grass production for the time being. Four years later we still have mountain brome appearing! At this time we choose not to burn our grass or wildflower fields due to our close proximity to Moscow, our desire to maintain organic matter to feed microbes, and research findings that fire was historically not a regular occurrence on the Palouse. Decisions like this one are difficult.

Controlling weeds and off-type plants in seed production fields is a challenge. Lessons are learned from trial and error - mostly error. Once plants are established in a field (6-12 months), we apply pre-emergent herbicides (inhibiting seed germination) to help control many annual grasses and weeds. During the growing season we walk 3-7 abreast on every grass and wildflower acre multiple times roguing (removing) unwanted plants by hand pulling, hand pulling and bagging, hoeing, or spot-spraying herbicide with a

backpack sprayer. The rolling Palouse hills make this an aerobic workout. At times we will mow part or a whole field rather than fail to meet certification standards due to weeds such as cheatgrass. Mechanical tillage between rows of wildflowers can be a tool used for weed control, but we do not consider this an option on our farm. Our concern for soil health and erosion on our Palouse hills outweighs the benefit of tillage.

Up to this point we have been able to depend on native bees from our natural lands to pollinate our wildflower fields. As we move our native wildflower production fields farther from our natural lands and into larger fields, we forsee the day when honey bees will have to be called in to assist. Currently, we have honeybees brought in for only our clover seed crops.

Another challenge on the farm includes balancing our dependence on beneficial insects and protecting the seeds and plants from insect damage. Integrated pest management (IPM) is a tool we use on our farm; for example, we scout for beneficial insects as well as insect pests before we decide on any required action. Finding this balance is particularly difficult with crops that depend on pollinators. A lesson we learned in 2007 was to not plant a pea field, or any other crop known to have aphid problems, next to wildflower fields. We decided not to spray the aphids, and we lost the field of peas which was a large economic loss. The silver lining of that decision is that we still have many native bees. Every year we have an unidentified larva species in the silky lupine pods damaging the seeds. Thankfully, we often have a beneficial predatory larvae in the same pods chewing on the larvae causing the damage. Our new challenge is preventing an unidentified moth caterpillar (*Heliothis* spp.) from chewing into the seed pods of Spalding catchfly (*Silene spaldingii*). Two years ago we contracted with a public agency to produce seed of this rare and threatened plant species. With bumble bees as the primary pollinator, our concern of neonicotinoids prompted us to use Bt (*Bacillus thuringiensis*) and insecticidal soap. Bt is not an effective control on Heliothis family, so for now we are picking off the caterpillars. University of Idaho extension professor, Dr. Ed Bechinski, published research from Oregon's Zumwalt prairie, and PPF members provide information to help identify this persistent moth. We frequently work with university and USDA plant material center professionals, native seed growers, and native plant enthusiasts to find solutions to our many challenges.

Swather cutting western yarrow into windrows. Photo by Jacie Jensen.

Method and timing of seed harvest depend on the species. The harvest process begins in May and goes until the end of August, with asters and goldenrods harvested from September into October. Fields greater than ¼ acre are mechanically harvested. A swather cuts and windrows the plants. The plants lay in windrows long enough to dry, but before the plant sheds its seed. We have found silky lupine releases seed in one day, blue wild rye is within a week, and California brome (*Bromus carinatus*) can be two weeks. A combine with a special header picks up a windrow, thrashes seed from the plant, and returns some of the unwanted plant material to the field. Modifications are made to our combines to handle very small, light seeds, such as for western yarrow. With each species of grass and wildflower we harvest, we will spend an hour or more setting the combines so seeds are not thrown out with the other plant material.

In our one-acre seed-increase plot we use mechanical and human labor, depending on the species. Rows of prairie smoke (*Geum triflorum*) are harvested with a Shop Vac. Other plot species are cut with a swather. Then plants are transported to various thrashers to separate the seed from the plant. After collecting seed in the field, another operation begins - cleaning the seed by separating it from the chaff. Our native grass crop and a few of our wildflower crops are delivered to Clearwater Seed in Culdesac, Idaho, to be cleaned. Before the seed leaves the cleaning plant, a seed sample is sent to a state-approved seed testing lab. The time it takes to harvest, clean, test, and package for delivery is 2 to 4 months. Most of our wildflower seed is cleaned at Thorn Creek Native Seed Farm, a licensed seed conditioner with the State of Idaho.

Native seed production complements our philosophy in farming with a focus on stewardship of the land as we strive to find that sweet spot between the

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natural world and the human world. We see our daily farm challenges as opportunities. We like producing native seed and look forward to offering quality native seed to our natural lands. "Seeds transcend that imaginary boundary we erect between the natural world and the human world…" (The Triumph of Seeds, Thor Hansen, author and University of Idaho graduate). It is this boundary that Thorn Creek Native Seed Farm, and many users and growers of native seed attempt to find.

Thorn Creek Native Seed Farm provides tours of our operation and of Palouse prairie remnants on the property. Both provide great opportunities to educate the public about native plants and pollinators! If I am not available for a tour, people are welcome to walk the prairie or visit our native plant field plots on their own. For contact and other information please visit our website: www.nativeseedfarm.com.

Seed cleaning equipment. Photo by Jacie Jensen.

Idaho Mystery Plant

This photo was taken by Nancy Miller (INPS, White Pine Chapter) on Coolwater Ridge above the Selway River in Idaho County, Idaho. What is your guess? The answer will be revealed in the next edition of Sage Notes.

The Idaho Mystery Plant in the June 2015 issue was Old Man of the Mountain, also sometimes referred to as graylocks four-nerved daisy (*Hymenoxys grandiflora*; synonym = *Tetraneuris grandiflora*) in the aster family. It occurs in upper supalpine and alpine meadows. Its distribution includes mountain ranges in east-central Idaho, Montana, Wyoming, Utah, and Colorado. Have an Idaho Mystery Plant to share? Send it in to the editor: sage-editor [at] idahonativeplants.org.

– M. Mancuso

Botany Puzzle Plant Anatomy Word Jumble

Unscramble these jumbles to name 5 plant parts. Arrange the underlined letters to answer this plant anatomy puzzle: You will not see me without digging around.

L S I P I T

D R E T N L I

S E M T T O A

I Z H O E R M

O Y D C E N T O L

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Palouse Prairie—Remnants From The Past

By Brenda Erhardt, White Pine Chapter

The Palouse Prairie is a unique ecosystem that supports a rich variety of wildlife and plants and one of its best features is the quantity and diversity of wildflowers. From early spring to late fall, there is always something blooming on the Palouse. Unfortunately, non-native invasive species have infested large portions of the existing Palouse Prairie remnants and some of these weeds threaten to displace many of the native plants that set this place apart. Fortunately, landowners and land managers are working together to protect, maintain, and improve the condition of these prairie remnants and the surrounding areas.

The Palouse Prairie is a bunchgrass grassland located in northern Idaho and southeastern Washington. Less than 1% of the Palouse Prairie plant community remains, making it one of the most endangered ecosystems on the planet. Although the majority of the Palouse Prairie has been converted to agriculture, there are pockets that showcase the plants that historically blanketed this rolling landscape. These prairie remnants are located primarily on private land in areas that were too steep or too rocky to farm. The dominant native grasses on the Palouse are bluebunch wheatgrass (*Pseudoroegneria spicata*) and Idaho fescue (*Festuca idahoensis*)

Palouse Prairie remnant on Paradise Ridge south of Moscow, Idaho. Photo by Brenda Erhardt.

with Sandberg bluegrass (*Poa secunda*), prairie junegrass (*Koeleria macrantha*), and blue wildrye (*Elymus glaucus*) mixed in. The bunchgrass structure is partially responsible for the high percentage of wildflowers in the Palouse Prairie, as bunchgrasses leave interspaces for wildflowers and low-growing shrubs to fill in. In fact, the proportion of

Brenda Erhardt, Palouse prairie remnant on Paradise Ridge south of Moscow, Idaho. Photo by Mike Mancuso.

forbs to grasses is much higher than grasses to forbs. This high density of wildflowers makes for a stunning landscape when the prairie is in bloom and sets the Palouse Prairie apart from other prairie systems in North America where grasses are the more dominant lifeform.

This incredible forb diversity can be witnessed throughout the growing season. As early as February the sagebrush buttercup (*Ranunculus glaberrimus*) and Great Basin Indian potato (*Orogenia linearifolia*) peek out in the sunny rock outcrops. Yellow bells (*Fritillaria pudica*), grass widows (*Sisyrinchium inflatum*), and glacier lilies (*Erythronium grandiflorum*) follow soon after. May and June are real showstoppers on the Palouse with arrowleaf balsamroot (*Balsamorhiza sagittata*), little sunflower (*Helianthella uniflora*), western larkspur (*Delphinium nuttallianum*), prairie smoke (*Geum triflorum*). paintbrush species (*Castilleja* spp.), Nootka rose (*Rosa nutkana*), and dozens more garnishing the slopes with bright colors. As the days become warmer and drier Wyeth buckwheat (*Eriogonum heracleoides*), blanketflower (*Gaillardia aristata*), and lupine species (*Lupinus sericeus*, *L. laxiflorus*, and *L. leucophyllus*) continue to bloom and provide food for pollinators. Finally, as summer turns to fall, western aster (*Symphyotrichum spathulatum*), nettleleaf horsemint (*Agastache urticifolia*), Missouri goldenrod (*Solidago missouriensis*), and prairie gentian (*Gentiana affinis*) provide splashes of color and are a late nectar source for pollinators as dormancy sets in for the rest of the plant community.

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Palouse Prairie remnants are diverse, but they are also small, highly fragmented and mostly located on private land. Given the large number of landowners who own and manage the remnants, it is difficult to coordinate and prioritize restoration efforts. To help solve these issues, Idaho Natural Heritage Program botanists took on a multi-year effort to map and survey Palouse Prairie remnants in Latah County. The Palouse Grassland survey was designed to identify Palouse Prairie remnants, assess the condition and quantify the size of these remnants, compile plant lists, and note the presence of rare plants. This effort was funded by the U.S. Fish and Wildlife Service and the end product has been used to identify and prioritize properties for future restoration projects.

Working with landowners to restore and protect these natural areas is an ongoing effort which aims to promote the native plant community and its associated wildlife. Weed control in existing remnants and the surrounding areas, conversion of non-native grass stands to natives, and inter-seeding native wildflowers into non-native grass stands to promote pollinator pathways are just a few of the ways that landowners are protecting their prairie remnants and thereby supporting the wildlife and pollinators that rely on them.

Given the presence of invasive species on the Palouse, weed control is at the forefront of most restoration efforts. In particular, the spread of vententata (*Ventenata dubia*) throughout the prairie remnants and surrounding fields has been well documented on the Palouse for over a decade. Ventenata is a non-native and invasive annual grass that has infested prairie remnants and effectively displaces the native grass component of the Palouse Prairie. Couple this with the presence of rush skeletonweed (*Chondrilla juncea*), yellow starthistle (*Centaurea solstitialis*), and tall oatgrass (*Arrhenatherum elatius*), and the threats seem too daunting to overcome. One of the best ways to combat these weed invasions is to scout for invaders and control them before they are present in large numbers.

Early Detection and Rapid Response (EDRR) is an approach to weed control that aims to eliminate weed invasions before they are past the point of eradication. Containment is sometimes a more realistic strategy for larger invasions of species that are already prevalent across the landscape. In these cases, landowners focus on preventing the spread of invasive plants while attempting to shrink borders and keep them contained in their current location. This is a systematic and time-consuming approach, but the effort is worthwhile if widespread invasions are reduced. We are fortunate to have weed researchers at both the University of Idaho and

Little sunflower. Photo by Trish Heekin.

Nootka rose. Photo by Brenda Erhardt.

Prairie smoke. Photo by Brenda Erhardt.

Washington State University working on weed control methods for a variety of old and new plant invaders. This knowledge helps landowners and land mangers adapt to the ever growing challenges weed invasions pose.

Removal of invasive weeds is an important step in restoration, but these efforts often leave a void on the landscape. Revegetation is a critical component to restoration efforts as the removal of one invasive plant species can leave space for reinvasion by another. Seeding or planting native plants can help fill these open niches with desirable native species. Choosing locally-sourced native plants to revegetate following weed control efforts is an important part of prairie restoration efforts, and we are fortunate to have locally-sourced grass and wildflower seeds available on the Palouse. Using native and locally-sourced stock is important as these plants are adapted to our local soils and climate. Being able to purchase these seeds from reliable sources enhances our native restoration efforts and helps to ensure their success in the future.

The Palouse is special and the prairie remnants found within provide critical wildlife and pollinator habitat. The variety of large and small mammals, birds, bees, butterflies, and other beneficial insects who utilize the prairie to find food and shelter provide richness and a number of ecosystem services to the greater community. The native flora and fauna are also important cultural resources as their presence provides a snapshot of the past. Few Palouse Prairie remnants are left, which makes their conservation, preservation and restoration all the more important.

The next two articles were submitted to meet one of the requirements to receive an **Education, Research, Inventory Grant (ERIG)** award from INPS. Namely, to submit an article for *Sage Notes* that summarizes the project for which the award was received.

Native Plants at the Panhandle Animal Shelter

By Mandy Evans, Panhandle Animal Shelter

The Panhandle Animal Shelter (PAS), located in Ponderay, near Sandpoint in northern Idaho, is considered a high-traffic area facility. Because of this excellent exposure within the community it provides an ideal site to highlight native plants and to educate the public about their benefits in public landscapes.

The PAS moved into a new 27,000 square foot building (donated) at the end of 2008. After the move, PAS faced an enormous challenge when the grounds became overgrown with weeds, even receiving comments and complaints about how the unsightly front yard ruined the look of the beautiful new building. Unfortunately, there was no budget to help tackle this problem and no easy solution. Options originally presented were either expensive or would require a massive amount of work from staff or volunteers. Hours spent working on this problem would directly take away from time caring for the over 1200 dogs and cats staying at the animal shelter during the year.

Planting day at Panhandle Animal Shelter. Photo by Many Evans

The shelter was blessed to have a volunteer come forward. Gail Bolin, a member of the Calypso Chapter of the Idaho Native Plant Society, stepped up to work on a solution - developing a plan, researching planting options, and helping to secure grant money and volunteers. The plan was to create a native plant landscape that would be more inviting and offer the public an opportunity to learn about our local native plants. As part of the fundraising effort, PAS applied for, and was awarded funds from INPS through their ERIG program in 2012. During 2012 and 2013, PAS had 200 people pulling weeds, rototilling, moving plants, planting new native plants, and much more. In ad-

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dition, PAS partnered with a Sandpoint High School class to help place plants in the ground at the shelter.

Though the project still has a long way to go, we are pleased with the progress and look forward to seeing the beautiful plants each spring. Gail helped us gain new volunteers with an interest in native plants and encouraged us to pursue the long term benefits of planting native. Our shelter can now be a location to educate people on the importance and beauty of native plants. We greatly appreciated funds received from INPS that allowed us to purchase native plants used for this project. On behalf of the PAS, Sandpoint High School, and all the volunteers who helped, we thank INPS for providing the seed money to help us get this project off the ground.

Wild About Idaho's Native Plants: Pocatello Zoo

By Cory Coffman, Education Curator at the Pocatello Zoo

In the spring of 2013, the Pocatello Zoo was awarded a $985 grant from the Idaho Native Plant Society to put together a Wild About Idaho's Native Plants exhibit. The Pocatello Zoo specializes in exhibiting animals native to the Intermountain West and acts as a sanctuary by taking in animals that cannot survive on their own in the wild. The animals living at the Pocatello Zoo are ambassadors for their wild counterparts and allow people an up-close look at the creatures that their daily lives impact. As we educate people about the animals in our backyard, we cannot forget the native plants and habitats that they rely upon to survive. The Wild About Idaho's Native Plants exhibit allows people to experience an improved sense of place by learning to identify native plants that they see when they go on walks or hikes throughout Idaho.

The education department worked with our summer camp groups to participate in service learning, and prepared the area for our native plant exhibit. The area had to be tilled, weeded and cleared of debris. The children also helped with the planning and planting process of the exhibit. In the fall, a group of Pocatello Community Charter School students helped with maintenance at the exhibit as a service learning project associated with their expeditionary learning. The students also spent a day transplanting sagebrush from other areas in the zoo into the exhibit. The second part of the grant allowed for educational signage to be made about the native plants that we planted. A sign was designed to teach people about plant identification tips, their uses by animals, and some other fun facts. The project was not without challenges, including one which came in the furry form of the yellow-bellied marmot. We discovered that marmots enjoy the variety of leafy, flowering native plants. Challenges aside, the hope is that visitors to the zoo will gain a deeper understanding and inspire curiosity for Idaho's native plants.

Memories Of Two Early Pahove Chapter Field Trips

By Lynda Smithman, Pahove Chapter

1980s - A Fall Season Trip on the Boise River

Botanizing by canoe was clearly one of Pahove's more unusual early field trips. First of all, Roger Rosentreter, accompanied by Jay and Lynda Smithman, and Gordon and Barbara Pierce, set out to determine if this was even feasible. Roger had to teach his companions how to get around some of the check dams as well as how to navigate upstream from time-to-time. All went reasonably well.

A week or so later there was an official Pahove excursion on the Boise River, travelling from Linder Road to the town of Star. Roger traveled solo; the Pierces had their own canoe; Joe Duft shared a canoe with his son Steve; Carol Prentice and Jay were partners in one canoe with Lynda and Carolyn Sherman in another. Lynda and Carolyn, both of whom are dyslexic under stress, tried to stay out of sight from the rest of the group as they spent some time traveling in circles. Joe and his son hit a curve in the river at a wrong angle and sunk up to their necks before our eyes. Carolyn did not understand sweeper trees and let one pull her out of Lynda's canoe (usually the canoe capsizes when this happens but Lynda was able to stay upright). Otherwise everyone survived and had a good time.

We were looking for water-hyssop (*Bacopa rotundifolia*) and other fall riparian species. Initially, nothing unusual was found. We tried to collect the introduced wild carrot (*Daucus carota*) but had trouble avoiding the also introduced poison hemlock (*Conium maculatum*), so our specimens were useless. Finally the long-sought-after water-hyssop was collected on a ditch bank in the Star-Middleton area by Pat Herbal, a nurse and friend of Pat Packard, who always looked forward to reporting on this species at the Idaho rare plant conferences.

June 1985 - Rebecca Sand Hill RNA

Roger Rosentreter led the field trip to Rebecca Sand Hill Research Natural Area (RNA), located on Bureau of Land Management (BLM) property near Weiser, Idaho. The RNA was established for the conservation of Mulford's milkvetch (*Astragalus mulfordiae*), a species on the INPS rare plant list and a BLM Special Status plant species for both Idaho and Oregon. One of Pahove and INPS goals was (and still is) to bring together individuals from all walks of life who share an interest in natural resources and plant conservation. The list of individuals who participated in that field trip clearly exemplified the synergy our founders anticipated.

Chuck Wellner with Mulford's milkvetch. Photo by Roger Rosentreter.

Our out-of-area guests included two folks from northern Idaho - Chuck Wellner, a leading force getting RNAs established throughout Idaho, and Dick Bingham, well-known for his forestry research (see tributes to Chuck Wellner in *Sage Notes*, Summer 1998 and to Dick Bingham, May 2011). Pahove member and Weiser resident Betty Derig also joined us. She had authored various publications which include Weiser the Way it Was, Roadside History of Idaho, and with Margaret Fuller, Wild Berries of the West.

INPS Charter members present included Jay and Lynda Smithman, Jerry Cross and Joe Duft (see a tribute to Jerry and Joe in *Sage Notes*, Sept.- Dec. 2014) and local apple grower, Jon Trail. With his past experience as President of the Idaho Horticultural Society and his long-standing association with the University of Idaho's agricultural research programs, Jon has served as the INPS liaison with Idaho Weed Coordination Council.

All of us toured the Rebecca Sand Hill RNA and discussed threats, including those encountered elsewhere such as along the Boise Front. Meanwhile Roger's student assistant Blaine Moore dug up a specimen of Mulford's milkvetch to determine the plant's root depth. Everyone was impressed by the extremely long roots.

At the conclusion of the tour, Jon Trail invited the group to visit his sand hill just inside the Payette County line as he believed Mulford's milkvetch grew there, too. This was confirmed and the Trail family's

(Continued on page 12)

(Continued from page 11)
private land is now protected by a conservation easement with the Treasure Valley Land Trust. Joe Duft was pleased to find one of his favorites, brittle cactus (*Opuntia fragilis*) there. Several years later Cronquists hackelia (*Hackelia cronquistii*), another rare plant species, was found on the Trail property. But that is a story for another day.

INPS Chapter News

CALYPSO CHAPTER

Upcoming Events:
October 7: Chapter meeting will be held at 7:00 pm at the Idaho Fish and Game Office at 2885 W. Kathleen Avenue, Coeur d' Alene. Emily Nightingale will give a presentation on her research on the Hayden Lake Floating Treatment Project to improve water quality. Contact: Derek Antonelli, antonelli8 [at] frontier.com

LOASA CHAPTER

All members and the public are welcome to attend chapter events.
When: Meetings are held the third Thursday of each month.
Where: Taylor Building, Room 258, College of Southern Idaho, Twin Falls
Contact: Kelvin Jones, (208) 886-7051

PAHOVE CHAPTER

The 2015/2016 season begins in September. Your continued support and involvement throughout this upcoming season is greatly appreciated.
When: Meeting are held each month September through April. Exact meeting dates to be announced shortly.
Where: Meetings are usually held at the MK Nature Center (600 S. Walnut St., Boise).
Contact: For more information about Pahove Chapter activities please visit the INPS website or contact chapter president, Karie Pappani at pahove.chapter.president [at] gmail.com.
Upcoming Events: Dates and topics provided here are tentative. Updated information will be sent to Pahove members via postcard and email. Events are also posted under the Pahove Chapter page of the INPS website.
September: Kick-off Pizza Party
Our season kick-off party will be held at the Idaho Botanical Garden. Join us for food, drink, socializing, and to elect officers.
September 18: Plant walk in the Boise Foothills with the Idaho Botanical Garden; 6 pm.
October 13: Sheldon Bluestein will tantalize us with "Idaho's High Desert Plants."
November: "Journey to Australia" presented by Ann DeBolt.
December: Annual Holiday Party - Location TBA

SAWABI CHAPER

Sawabi Chapter offers at least one evening and one Saturday trip each month From May to September. The public is always invited.
Contact: Ardys/Karl Holte, ardysholte [at] cableone.net (208) 232-6563, or Grant Thomas at thomasgm60 [at] outlook.com, (208) 237-5317
Upcoming Events:
September 19: Sawabi will celebrate an end-of-the-field-trip season in Goodenough Canyon. Ruth Moorhead will lead the hike among fall colors and flora, followed by a chili potluck.

UPPER SNAKE CHAPTER

The Upper Snake Chapter is currently inactive.
Contact: Rose Lehman, jojorose [at] 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 during the spring and fall. Field trips 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 [at] gmail.com.
Where: 1912 Center, 412 East Third St., Moscow (between Adams and Van Buren)
Contact: INPS, White Pine Chapter, PO Box 8481, Moscow, ID 83843 or whitepine.chapter [at] gmail.com.

WOOD RIVER CHAPTER

Contact: Carol Blackburn, blackburncrl [at] yahoo.com for information on activities.

Botany puzzle answers (from page 6)
Pistil, Tendril, Stomate, Rhizome, Cotyledon, Taproot

Alternative Turf Tour, Boise

On August 15, the Pahove Chapter led a free, 3 1/2 hour Alternative Turf Tour, looking at seven Boise-area properties landscaped WITHOUT traditional green lawns. It only took a few hours to fill the 50 registration tour slots because the Idaho Statesman newspaper gave the event front-page coverage. The public was very interested in seeing these attractive water-saving solutions to typical turf lawns and we couldn't have been happier to have such a great response. Ann DeBolt located most sites, which included the 22 turf-sample display at the Idaho Botanical Garden; the BLM's Firewise Garden adjacent to the Botanical Garden; three yards in very different locations combining grasses, and native forbs and shrubs; a very steep hillside yard against the foothills which has been restored with native plants over 24 years; and a wonderful thyme lawn. At each stop, comments by Ann and usually the homeowner provided useful insights for the inquisitive tour-goers. Some of the topics included water management, different types of irrigation systems, maintenance, and personal stories about how these yards came to be established. This was true community outreach, attracting few folks previously acquainted with INPS. We distributed membership flyers to everyone!

As a related resource, we developed and posted on the Pahove section of the INPS website (idahonativeplants.org) a list of Boise-area landscapers who specialize in native and xeric planting, and other such plant suppliers. A second list includes Intermountain Region native and xeric plant nurseries and seed companies.

Photos by Caroline Morris.

The Pahove Chapter hopes to hold a similar tour in the future.

– Caroline Morris

Idaho Floras, Field Guides, and Plant Identification References

By Lynn Kinter, Pahove Chapter

Technical keys that cover all vascular plants - a partial list

Barnes, B. 2015 (updated continually). Flora ID Northwest: Interactive Plant Keys and Color Photos for Idaho: All Native and Naturalized Vascular Plants. Flora ID Northwest, Pendleton. [A user-friendly DVD, also available as an app; available for the whole Northwest, or only Idaho.]

Cronquist, A., A.H. Holmgren, N.H. Holmgren, J.R. Reveal, P.K. Holmgren et al., 1972-2012. Intermountain Flora. Columbia University Press, New York. [Great for s Idaho; 6 volumes in an 8-book set, so too big to carry in a pack.]

Davis, R.J. 1952. Flora of Idaho. William C. Brown Co., Dubuque. [The only flora written specifically for Idaho. The names are out-dated, but still useful.]

Hitchcock, C.L., & A. Cronquist. 1973. Flora of the Pacific Northwest. University of Washington Press, Seattle. [A classic; its somewhat out-of-date, but still much used.]

Hitchcock, C.L., A. Cronquist, M. Ownbey, & J.W. Thompson. 1955-1969. Vascular Plants of the Pacific Northwest. University of Washington Press, Seattle. [The expanded version of Hitchcock & Cronquist 1973; 5 vol.]

St. John, H. 1963. Flora of Southeastern Washington and of adjacent Idaho. Outdoor Pictures, Escondido.

Keys and field guides that cover certain groups or areas

Anderton, L.K. & M.E. Barkworth. 2009. Grasses of the Intermountain Region. Utah State University Press, Logan.

Cooper, D.J. 1989. A Handbook of Wetland Plants of the Rocky Mountain Region. Environmental Protection Agency, Region VIII, Denver.

Hermann, F.J. 1970. Manual of the Carices of the Rocky Mountains and Colorado Basin. Agriculture Handbook 374. USDA Forest Service, Washington, D.C.

Hermann, F.J. 1975. Manual of the Rushes (Juncus spp.) of the Rocky Mountains and Colorado Basin. General Technical Report RM-18. USDA Forest Service, Ft. Collins.

Hoag, C. et al. 2008. Field Guide for the Identification and Use of Common Riparian Woody Plants of the Intermountain West and Pacific Northwest Regions. USDA Natural Resources Conservation Service, Aberdeen.

Glennon, J.M., K.E. Holte, & B.P. Ronald. 2014. A Nomenclatural Revision of Ray J. Davis' Flora of Idaho Poaceae (Gramineae) Including New Additions and Revised Keys. Idaho Museum of Natural History, ISU, Pocatello.

Hurd, M., et al. 1997. Field Guide to Intermountain Rushes. General Technical Report INT-306. USDA Forest Service, Ogden.

Hurd, M., et al. 1998. Field Guide to Intermountain Sedges. General Technical Report RMRS-GTR-10. USDA Forest Service, Ogden.

Patterson, P.A., et al. 1985. Field Guide to Forest Plants of Northern Idaho. General Technical Report INT-180. USDA Forest Service, Intermountain Research Station, Ogden.

Skinner, Q.D. 2014. Field Guide to Wyoming Grasses. University of Wyoming Extension, Laramie.

University of Idaho Rangeland Center & Idaho Rangeland Resource Comm. 2013. Backpack Guide to Idaho Range Plants. 7th ed. UI Rangeland Center & ID Rangeland Resource Comm.

Vizgirdas, R. 2007. A Guide to Plants of Yellowstone and Grand Teton National Parks. Univ. of Utah Press, SLC.

Wilson, B.L., et al. 2008. Field Guide to the Sedges of the Pacific Northwest. Oregon State Univ. Press, Corvallis.

Non-technical guides to idaho wildflowers - Many habitats

Central Rocky Mountain Wildflowers, by H. Wayne Phillips, 1999 - This covers nw OR, central ID, nw WY, and sw MT. It includes 269 species, with representatives of the main families and genera. Often a genus with many species has only one species shown. Also, it only covers species with showy flowers, no grasses, conifers, mosses, etc. It is arranged by color, with lots of photos.

Plants of the Rocky Mountains, by Linda J. Kershaw, Jim Pojar, & Andy MacKinnon, 1998 - This covers much of the Rockies. It includes 1362 species, with representatives of nearly all families, and sometimes several species within a genus. In addition to showy flowers, it covers grasses, many trees, mosses, liverworts, and lichens. Arranged by family, with a key to direct the reader, and lots of photos.

Idaho Wildflowers App. 2015 - Available from High Country Apps. Developed by several herbaria.

Non-technical guides to idaho wildflowers - Mountains

Idaho Mountain Wildflowers, by A. Scott Earle with Jane Lundin, 2008 - This is a lovely book suitable for the coffee table. Its arranged by families, so might be difficult without basic knowledge of the families (simple field guides tend to be arranged by color and/or shape).

Mountain Wildflowers of Idaho, by Marjorie D. Boren, 1989 A nice little book covering ~ 100 common species, with a photo of each.

Alpine Wildflowers of the Rocky Mountains, by Joseph F. Duft and Robert K. Moseley, 1989 - Covers 300 species from the Rocky Mountains. Arranged by family, it focuses on common showy wildflowers, plus a few trees and ferns, and gives a solid description and photo of each species.

Non-technical guides to idaho wildflowers - Plains

A Field Guide to Plant of the Boise Foothills, by Jamie Utz, Michael Pellant, and Jessica Gardetto, 2013 - A pocket guide of 73 species. It covers the common shrubs, forbs, and grasses with a photo and brief information, and is arranged alphabetically within lifeform.

Common Wildflowers of Southern Idaho, by Bureau of Land Management, 2012 - A pocket guide to 90 species of BLM lands. It covers showy forbs and a few shrubs with a photo and brief information, and is arranged by color.

Wildflowers of the Boise Foothills, by Karen Weinberg, 2011 - A pocket guide of 73 species. It covers the showy forbs and a few shrubs with a photo and brief information, and is arranged by flowering date.

Sagebrush Country: A Wildflower Sanctuary, by Ronald J. Taylor, 1992. This covers s ID, w WY, e OR, UT, NV, and beyondthe sagebrush steppe. It highlights over 200 common shrubs and forbs, and a few grasses, and is arranged by family with a photo and description of each species.

Guides to non-native plants of Idaho

1200 Weeds of the 48 State and Adjacent Canada, by Rich Old, 2015 (frequent updates) - This DVD covers essentially all noxious and obnoxious weeds that we might encounter in Idaho and across the U.S. It is an easy-to-use interactive key with a county-level distribution map and photos of each species, and an illustrated glossary. The key can be narrowed quickly by geographic area to consider only species of that area; ~1200 species covered, of which ~660 occur in Idaho. xidservices.com/

Weeds of the West, by Tom D. Whitson et al., 2006 (9th edition) - This book covers many weeds in considerable detail, each with 2-3 photographs. It includes some native species, such as big sagebrush and lupine, which are not desirable livestock forage. It includes a key to family only. ~300 species covered; 628 pp.

Northwest Weeds, by Ronald J. Taylor, 1990 - This book covers most common weeds in some detail, each with a photograph. Includes some native species, such as annual sunflower and doveweed, that are pioneer (ruderal) species. Does not include key; ~175 species covered; 177 pp.

Common Weeds of the United States, by USDA Agricultural Research Service, 1971 - This book covers many common weeds in considerable detail, each with very detailed line drawings and a range map. It includes some native species that are pioneer species. It does not include a key; ~220 species covered; 463 pp.

Herbarium databases

Consortium of Pacific Northwest Herbaria
http://www.pnwherbaria.org/data/search.php

Intermountain Region Herbarium Network
http://intermountainbiota.org/portal/index.php

New York Botanical Garden
http://sciweb.nybg.org/science2/vii2.asp.html

Range maps of native and non-native plants of the U.S.

North American Plant Atlas, by the Biota of North America Program (BONAP) - Includes county-level maps, and other types of synthesis map. www.bonap.org

PLANTS Database, by USDA Natural Resources Conservation Service - Provides information, including distribution maps, for plants of the US and its territories.
plants.usda.gov

Flora of North America North of Mexico, by Flora of North America Editorial Committee - Includes keys, distribution maps, and detailed descriptions of North American plants, though not all families have been completed yet.
floranorthamerica.org

General plant identification

Botany in a Day: The Patterns Method of Plant Identification, by Thomas J. Elpel, 2013 - A great foundation that emphasizes learning the families first, based on key traits.

Botany for Gardeners, by Brian Capon, 2010 - I havent read this, but online reviews by lay botanists are excellent, and the author is a long-time university botanist.

How to Identify Plants, by H.D. Harrington, 1957 - Classic.

How to Identify Grasses and Grass-like Plants, by H.D. Harrington, 1977 - Another classic.

Plant Identification Terminology: An Illustrated Glossary, by James G. Harris and Melinda W. Harris, 2001 - A very helpful tool.

Authoritative websites for current plant names

The Plant List, by the Royal Botanic Gardens, Kew, and Missouri Botanical Garden - Includes >1,000,000 species names from around the world. theplantlist.org

Integrated Taxonomic Information System, by several US government agencies - Covers the US and Canadian flora. ITIS.gov

Also, Flora of North America North of Mexico, listed above.

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