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Sage Notes

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

Lessons from Idaho National Laboratory Sagebrush Steppe

By Matt Lavin, Plant Sciences and Plant Pathology, Montana State University Bozeman

The sagebrush steppe of the Idaho National Laboratory (INL) is where I had the pleasure of spending the summers of 2009-2011. I collaborated with colleagues at Montana State University conducting invasive and rare plant surveys. The INL resides in the upper Snake River plains of southeastern Idaho. The INL area comprises almost entirely sagebrush steppe and is considered an "accidental wilderness," like the Hanford Site in southeastern Washington. Weapons research requires a secure ~30x30-mile vacated tract of land.

I also have had the pleasure of studying plant diversity in the sagebrush steppe elsewhere. But the INL sagebrush steppe taught me some general lessons about sagebrush steppe in Montana, northwestern Nevada, southeastern Idaho, and western Wyoming. In contrast to many other parts of the western North American sagebrush biome, this northeast portion has summers that are plant productive and winters too cold for regular Chinooks.

My focus has been on the "sagebrush sea" characterized by expanses of Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) at lower elevations or mountain big sagebrush (*A. tridentata* ssp. *vaseyana)* at middle montane elevations. Such "sagebrush seas" in the northeast portion of the sagebrush biome harbor under-appreciated levels of plant species diversity.

What I learned:

Broad expanses of undisturbed to moderately disturbed sagebrush steppe dominated by mountain or Wyoming big sagebrush steppe often harbor 50-75 vascular plant species per hectare. This is a level of local diversity ("alpha diversity") comparable to what I find regionally along riparian corridors and in wetlands, in subalpine or alpine zones, or in open understory of ponderosa or lodgepole pine forests. In addition, different sites within the same region (e.g., Beaverhead County, Montana, Tendoy Mountains and Big Hole National Battlefield) can be 30-50% different in terms of plant species composition ("beta diversity"). This agrees with a study of the INL sagebrush steppe conducted by the late Jay Anderson and colleagues from Idaho State University. Anderson suggested that plant succession predicted by classic rangeland models does not occur in the INL sagebrush steppe. During their 1950-1995 study period, between site ("beta") diversity was at its highest level in 1995 even though it began at a high level in 1950.

Undisturbed to moderately disturbed sagebrush steppe is distinguished from heavily or regularly disturbed sagebrush steppe by harboring a diversity of species in the following native plant functional groups: 1) succulents (e.g., Cactaceae, Crassulaceae); 2) hemiparasites (e.g., Orobanchaceae,

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Letter from the President

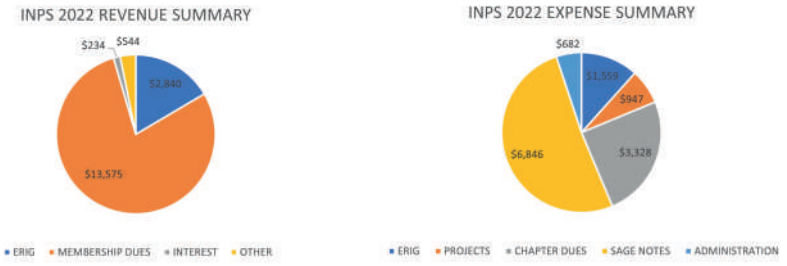
The heart of winter is behind us and the continued northward arc of the sun brings us to the cusp of spring—the season of renewal, new beginnings, and hope. All over the world, people celebrate spring's arrival with traditions and festivities that often involve at least a touch of botany. In Holland, the Flower Parade of the Bollenstreek has elaborate floats made from millions of tulips, daffodils, hyacinths, and other flowers that highlight a parade of over 20 miles between the towns of Noordwijk and Haarlem. Hundreds of thousands of people line the streets to partake in all the colors and fragrances. In Japan, Hanami, which translates to "flower viewing" is the tradition of gathering underneath and enjoying the beauty of cherry blossoms with family and public picnics. In India, Holi, also called the Festival of Colors is a lively celebration with plenty of dancing and singing that marks the end of winter and start of spring. The festivities include throwing colored powder at one another to, among other things, symbolize the blossoms of spring.

Closer to home, the Idaho Rare Plant Conference is held biennially in later winter. This INPS sponsored event is an opportunity for anyone interested to learn about Idaho's rare plant species and participate in discussions about their conservation. One main task for the conference is to review and update the INPS Idaho Rare Plant List. This helps keep the List relevant and credible for land management agencies and others who depend on it for various rare plant conservation objectives. Making the 2023 Idaho Rare Plant Conference a success required a lot of behind the scenes work by a lot of people. Brittni Brown and Kristin Williams deserve special recognition for leading the organizing effort, as do Beth Corbin and Derek Antonelli for their leadership roles in the Southern and Northern Idaho Rare Plant Working Groups, respectively. I thank everyone who participated in this year's conference. Your collective efforts help INPS maintain its strong plant conservation presence in the state.

I also want to wish everyone a Happy Spring, with the thrill of seeing the first wildflowers of the year always one of the highlights.

Mike Mancuso,
INPS President

Financial Report



The Idaho Native Plant Society had steady growth in revenue during the 2022 calendar year. It is in a strong financial position to continue to support its Education Research Inventory Grant (ERIG) program as well as some special projects, conferences and meetings. In addition, a new program offering college scholarships is being developed.

Announcements

2023 INPS Annual Meeting & Campout Accessibility Updates

By Kristin Fletcher and Lisa Horton, Wood River Chapter

The 2023 INPS Annual Meeting Planning Committee has received questions about what are the easier field trips people might enjoy. Sawtooth Country is rugged, almost without exception and we gave a great deal of thought to the variety of hikes, their potential challenges and to clearly stating the level of difficulty so participants could make wise decisions.

It may be that we err on the side of too much caution; however, we've found that people commonly over-estimate their abilities or dismiss the impact of high elevations. We plan to have 2-3 chapter representatives on each hike and will be able to divide a group into more-abled and less-abled, if needed, so all can have an enjoyable time. Hiking poles are highly recommended.

2023 field trips and their possible adaptations

- *Bear Valley and Camas Meadows*—The Bear Valley Wet Hillside is definitely difficult but is immediately adjacent to the road and much can be seen simply by walking along the road. The Big Camas Meadows feature uneven terrain but are adjacent to the road and can be easily seen or a person could walk 50, 100, 200 feet or more in without difficulty.
- *Pole Creek Ranger Station*—Paved path from road, over creek to the Station, but beyond that is clambering over sagebrush.
- *Stanley Lake*—Good hiking trail to wet meadow with a few rocks to dodge; can drive close to endemic site and, with poles or a helping arm, likely walk about 100 feet to the actual site which is small but very cool!
- *Fens* —Close to the road; pretty boggy but you don't have to go far to see the carnivorous species; poles or a helping hand would probably be needed.
- *Redfish Lake*—The boat ride is the best! There are picnic tables and a bathroom on the far side and opportunities for easy botanizing in a gorgeous location.
- *Wildfire*—Some areas will be accessible close to the road but there will also be forays over uneven terrain and downfall for closer looks.
- *Fungi*—The actual site will depend on spring/summer moisture but most, if not all of it, should be pretty easy to access.
- *Botanical Field Sketching*—Easy walking on flat terrain.

Camping

Camping options are slim right before the 4th of July holiday. The Planning Committee has reserved a few campsites at Sunny Gulch Campground and more at three group sites (12-19 miles away), or you can reserve your own. All of our campsites will be shared. This link will take you to a list of other campgrounds, considerable dispersed camping, sites with RV hookups and motels: https://woodriverinps.wixsite.com/wrinps/about-4

Registration

We strongly encourage folks to register as early as possible. We must have registration information, received by mail, no later than May 26, 2023. Please note: taking into account the limited group size accessing the Sawtooth Wilderness Area, respect for fragile and rare species and camping limitations, we have chosen to cap registration at 100 participants this year.

Questions?

Check the link above. More questions? Contact Mary McClanahan at 559-696-9953 or mmcclana@icloud.com. We hope to see you in the Heart of Idaho this June! •

Membership Report

Chapter	Feb. 2020	Sept. 2020	Feb. 2021	May 2021	Apr. 2022	Oct. 2022	Renew 01/23	Expire 12/22
Calypso	36	23	33	42	29	40	18	25
Loasa	21	17	21	21	13	15	4	13
Pahove	119	173	177	194	154	257	82	145
Sawabi	34	35	35	48	53	62	32	31
White Pine	88	108	106	119	93	122	83	56
Wood River	19	41	29	52	77	65	34	33
At Large	12	12	11	11	13	16	13	3
Totals	**338**	**409**	**412**	**487**	**432**	**577**	**266**	**306**

Lessons from INL Sagebrush Steppe ...*Continued from Page 1*

Santalaceae); 3) perennial bunchgrasses (e.g., bluegrasses, needlegrasses, wheatgrasses); 4) nitrogen-fixing New World *Astragalus* (species with high chromosome numbers), *Dalea*, *Psoralidium*, and *Pediomelum*; 5) perennial cespitose forbs (e.g., species of *Arenaria*, *Cymopterus*, *Draba*, *Eriogonum*); 6) shrubs (e.g., Amaranthaceae, Anacardiaceae, Asteraceae, Rosaceae); 7) subshrubs (e.g., species of *Ericameria*, *Eriogonum*, *Leptodactylon*, *Phlox*); and 8) tuberous and rhizomatous species (e.g., species of wheatgrasses, Apiaceae, Asteraceae, Fabaceae, Liliaceae, Santalaceae). An abundance and diversity of native species in these eight groups are not expected in overgrazed rangeland, along regularly maintained roadsides (e.g., compacted by equipment and traffic, graded, mowed, or treated with herbicide), and in any place where human activity is regular or impactful. My working hypothesis is that the plants in these eight groups, because they generally are difficult to domesticate, likely associate with mycorrhizae and other soil microbes in nutrient exchanges. Sites that are physically impacted by humans probably lack intact soil microbial communities, which limits the abundance and diversity of native species belonging to these eight groups. Although some species of these groups can prosper in regularly disturbed settings, they also have the ability to thrive in high-native-cover sagebrush steppe. It is the abundance and diversity of these eight groups that distinguish undisturbed sagebrush steppe, not the presence of just one or two species from these groups.

Undisturbed sagebrush steppe with a recent fire history harbors an abundance and diversity of the aforementioned plant groups (Fig. 1). This suggests that fire disturbance is less impactful on native plant diversity compared to physical disturbances like regular overgrazing. This finding is relevant to post-fire management. Studies by Jay Anderson and colleagues in southeastern Idaho suggest that active rehabilitation of burned sagebrush steppe (e.g., drill seeding) can impede the regeneration of sagebrush steppe from seed bank and underground plant structures. Reducing active management in post-fire sagebrush steppe allows sagebrush steppe in good ecological condition to rebound most rapidly on its own after a burn, despite big sagebrush requiring time to re-establish from seed.

Fig. 1. Thickspike wheatgrass, Fernleaf biscuitroot, and tapertip hawksbeard abundant during 2011 after a 2010 burn in the INL sagebrush steppe. Desert alyssum in the only non-native species in this area. Cheatgrass is rare to absent, which is the case for all INL sagebrush steppe with a burn history ranging 1-25 years. Photo taken on 2 June 2011 near the center of the INL sagebrush steppe. Most fires in the INL area are roadside ignited and thus human caused.

Fig. 2. Cheatgrass (purplish seed heads) is confined to roadsides in Beaverhead County. Southwestern Montana harbors a "sea" of mountain big sagebrush steppe devoid of cheatgrass even though cheatgrass is common along roads. Here, cheatgrass co-occurs with mostly slender wheatgrass and prostrate knotweed. Photo taken 20 July 2011 east of Bannack MT along the Bannack Bench Road.

Cheatgrass is not an issue in the northeastern part of the sagebrush biome. This is because cheatgrass requires hot dry summers and Chinook-prone winters to gain a growing advantage. Cheatgrass throughout much of the northeast portion of the sagebrush biome is confined to roadsides and other heavily impacted sites, such as where herbicide is regularly applied along roads and in and around crop fields (Fig. 2). When fires occur in this area of the sagebrush biome, cheatgrass disappears. Cheatgrass' supposed positive feedback with fire is far from ubiquitous in the sagebrush biome.

An alarmist perspective on fire and cheatgrass is all too common, which is unfortunate because it promotes excessive management of burned sagebrush steppe, which impedes its natural resilience. Western North American sagebrush steppe is most in need of protection from overgrazing and similar physical disturbances, which can be monitored by the abundance and diversity of the above-mentioned eight plant groups. In addition, depending on the climate and location, many areas of sagebrush steppe need protection from excessive management of post-fire conditions, which, to paraphrase Jay Anderson, causes the kind of physical disturbance that impedes the natural resilience of sagebrush steppe. •

Reprinted with permission from "Sagebrush Steppe Lessons from the Idaho National Laboratory" by Matt Lavin, 2021. Friends of the University of Montana (newsletter), Spring 2021.

2022 INPS Native Plant-Related Conservation Projects

By Michael Mancuso, INPS President

About a year ago I challenged each INPS chapter to take an active role in at least one native plant-related conservation project in their part of Idaho. The challenge's intent was to provide each chapter an incentive to make a positive "on-the-ground" difference for native plants in their area and to have fun doing so. Here are some of the conservation-related projects undertaken by INPS chapters in 2022:

Calypso Chapter: The Calypso Chapter has an ongoing effort that began in 2017 to document plant species found in the Antoine Peak Conservation Area. The Conservation Area is in the Spokane/Coeur d'Alene metro area and receives a lot of use. Although on the Washington side of the border, the Calypso Chapter has taken the lead in conducting the surveys with some support from Washington Native Plant Society members. Calypso surveyed new portions of the area in 2022, and has now documented nearly 280 plant species for the Conservation Area. Building on these past efforts, Calypso hopes to participate in the 2023 iNaturalist City Nature Challenge by submitting observations for plants in the Antoine Peak Conservation Area.

Pahove Chapter: The Pahove Chapter adopted a plot as part of a larger collaborative, community restoration project called the Boise River Rewild project. The project's goal is to restore 50+ acres of important habitat along a section of the Boise River in east Boise. The Pahove Chapter adopted one of the 0.5 acre plots within the restoration project area. Pahove held two work days in 2022: one in September to pull and remove numerous bags of noxious and other weed species from the plot, the other in October to plant approximately 450 native grass, forb, and shrub seedlings on the plot. About 20 Pahove members volunteered for one or both days. The project will continue in 2023.

The Pahove Chapter also collaborated with the Boise City Parks and Recreation Department to conduct field surveys for Boise sand-verbena (*Abronia mellifera* var. *pahoveorum*), a species on the Idaho Rare Plant List. Surveys were conducted at nine properties in the Boise area foothills, including six City of Boise open space Reserves. Eight Pahove members assisted with the surveys.

Sawabi Chapter: The Sawabi Chapter helped establish a native plant garden at the Edson Fichter Nature Area in southwestern Pocatello along the Portneuf River in 2022. The Chapter also assisted in the maintenance and replanting and developing signage for the Idaho State University Museum of Natural History's Native Plant Garden, as well as maintenance of the native plant garden at the Idaho Department of Fish and Game office in Pocatello. Sawabi also sponsored twice weekly herbarium plant identification sessions at the Idaho State University Museum of Natural History. Overall these projects added up to several hundred volunteer hours.

White Pine Chapter: The White Pine Chapter initiated two conservation projects in 2022 in response to the challenge. Both are ongoing. The Boot Brush Trailhead Weed Control Conservation Project aims to install boot brush stations and associated signage along heavily used trailheads in the Moscow area to reduce the spread of weeds that compete with native plants. White Pine offered to help trailhead managers design their own signs, focusing on locally problematic weeds, as a cost-cutting option. The White Pine Board approved funding for $250 for each of up to 6 trailhead signs, plus the purchase of posts and brushes. Any remaining costs would be paid by other organizations. This incentive was offered to several Palouse area land manager entities, including the Palouse Clearwater Environmental Institute (PCEI), the Friends of Phillips Farm for the Latah County Park north of Moscow, the Moscow Area Mountain Bike Association (MAMBA) for Headwaters, West Twin, and Moscow Mountain Road Trailheads, and the USFS Palouse Ranger District for Boulder Creek Trailhead. In 2022, a boot brush station was installed at Rose Creek Nature Preserve north of Pullman, Washington, an area that protects a 22 acre Palouse meadow steppe ecosystem remnant owned and managed by PCEI. Based on their feedback, White Pine expects Friends of the Phillips Farm and MAMBA to install stations in 2023.

A second conservation project is for water howellia (*Howellia aquatilis*), a former federally listed Threatened species on the Idaho Rare Plant List. This wetland species has very specific habitat requirements. The aggressive weed reed canarygrass (*Phalaris arundinacea*) has invaded all known water howellia populations in the Palouse area. White Pine Chapter plans to convene a panel of knowledgeable people to try to figure out a way to decrease reed canarygrass and increase water howellia seed production to a point where limited seed collection might be feasible. This seed could then be used to assist with possible future restoration efforts for water howellia. Although this project is still up-in-the-air, White Pine plans to work on it in 2023. •

Cogongrass in Boise? Another Horticultural Plant Gone Bad

By Ann DeBolt, Pahove Chapter (Photos by the author, except where noted)

In early May 2022, Dr. Barbara Ertter informed me of an invasive grass she had observed in the Boise foothills, commonly known as Cogongrass (*Imperata cylindrica*). Barbara had watched this mystery grass for several years, but it hadn't flowered until April 2022, when she asked me to look at it to see if I agreed. I am familiar with Cogongrass because of frequent forays to my home state of Florida, where Cogongrass lines many of the state's roadways and invades farmers' pastures. Often depicted as "one of the worst invasive grass species in the world," Barbara's observation got my attention and I visited the site that day.

Cogongrass inflorescences. This rhizomatous invasive species was creeping into a traditional Kentucky bluegrass lawn in the Boise foothills just above Hulls Gulch Reserve, May 4, 2022.

I collected a voucher for the Boise State University Snake River Plains Herbarium (SRP), summarized my observations of the population in an email to a number of county, state and university weed specialists and scientists, attached a few photos, indicated the email was of "High Importance," and encouraged implementation of "Early Detection, Rapid Response (EDRR)" measures. Because the Cogongrass population was directly above one of Boise's finest and most popular Open Space Reserves (Hulls Gulch), I warned of the potential spread of this fire-adapted rhizomatous grass into the drainages and riparian corridors below, particularly under warming climatic conditions.

Within 5 days, I was pleased to hear back from Jeremey Varley, an Idaho State Department of Agriculture (ISDA) weed specialist in Boise and by day seven we were able to meet at the site, where he collected a specimen and took representative photos of the invasion. Jeremey's specimen was sent to the University of Idaho Weed Diagnostics Lab for confirmation, prior to the state being able to take further action. Also required, upon species confirmation, was a report to the ISDA Director with the intention of adding the species as a 15-month temporary noxious weed under the category of EDRR. If and once approved by the Director, ISDA was to notify Ada County regarding the listing for potential control options as an EDRR species.

Botanist Roger Rosentreter, pointing to Cogongrass invading a homeowner's lawn in the Boise foothills. Uninvaded Kentucky bluegrass lawn is in the far background, where the grass is much greener.

In the meantime, various news outlets caught wind of the story: (https://www.hcn.org/articles/botanists-find-one-of-the-worlds-worst-weeds-spreading-in-the-boise-foothills)(https://www.idahostatesman.com/news/local/environment/article263264088.html)

But before you read more about the process of dealing with a new invader, here is a little background to familiarize you with Cogongrass:

- Cogongrass is an aggressive perennial grass that is distributed throughout the tropical and subtropical regions of the world. Native to SE Asia, it infests nearly 500 million acres of plantation and agricultural land worldwide.
- Cogongrass grows as far north as South Carolina and as far west as Texas (aside from our recent observation). Within the last 50 years, it has become established in the southeastern United States, resulting in infestations of roadways and pastures in Alabama, Mississippi, and Florida.
- In the 1930s and 1940s, Cogongrass was planted in Florida as a potential forage crop and for soil stabilization purposes. However, it was found to be of little economic benefit as forage and a potentially serious pest, and it was subsequently placed on the noxious weed list.
- Cogongrass is a listed Federal Noxious Weed and a federal permit is required to move it interstate. A number of cultivars such as 'Red Baron' and 'Rubra' are still used as garden ornamentals. These are typically referred to as Japanese bloodgrass for the red color of the leaves. Classified as *I.* var. *rubra* or

I. var. *koenigii*, they are short, cold-tolerant forms (known to survive in zone 4b) with smaller rhizomes than the species. The leaves are a bright green when they emerge in spring, then the red color develops on the tips and progresses down the leaf blade, becoming more intensely colored later in the season. This red color may be a response to colder temperatures, as plants can revert to green when grown in a hot location. Reversions to the species have substantially larger rhizomes than the red cultivars, so 'Rubra' varieties have the potential to become invasive. The red cultivated varieties were thought to be sterile, but may not be. Even ornamental types are prohibited in most southern states, but Japanese bloodgrass can still be grown legally in some colder climates where the plants do not spread as rapidly and rarely flower. In northern climates, it is recommended that it should only be planted in containers or in places where it cannot escape into natural areas.

Cogongrass rhizomes at the Boise foothills site. May 11, 2022.

By mid-June, the Idaho State Noxious Weed Advisory Committee (made up of state, federal, county, NGO and other representatives) had recommended the temporary listing of Cogongrass as an Early Detection, Rapid Response (EDRR) Idaho Noxious Weed for a period of 15 months. Once listed, ISDA began reaching out to local vendors and online retailers to inform them that Cogongrass and its varieties can no longer be legally sold in Idaho. (https://invasivespecies.idaho.gov/cogon-grass-factsheet)

Two months to the day after the initial email, Adam Schroeder, Director, Ada County Weed, Pest and Mosquito Abatement, provided an update on their progress with the Cogongrass foothills population. Responsible for working with homeowners and the HOA to control the existing population, Adam reported that a "Land Management Plan" had been developed for the foothills Cogongrass location, the neighborhood HOA had been notified, a glyphosate treatment had been applied, and signs with Cogongrass identification, control actions, and site instructions had been posted. Additional surveys of the surrounding foothills were conducted, with no additional infestations identified. These additional surveys will hopefully be an ongoing process, and might be a good way for Pahove members to get involved. Ada County intends to continue to kill all vegetation (save trees) at the site until they can verify that Cogongrass root structures are destroyed. After this has been confirmed, they will work with the landowner to plant "native competition" and continue to monitor the site moving forward. Ada County also instructed the local HOA site manager to not disturb the site until all remediation actions have been approved.

Jeremey Varley, ISDA weed specialist, collecting a Cogongrass voucher. The specimen was sent to the University of Idaho Weed Diagnostics Lab for confirmation, prior to the state taking further action. May 11, 2022.

Ada County Noxious Weed Control Department posted this sign at the Cogongrass site they treated in the Boise Foothills. Barbara Ertter photo.

In addition to the Cogongrass population in the Boise foothills, ISDA visited a site near Hill Road and Collister Drive, where botanist Roger Rosentreter reported another potential Cogongrass occurrence. This terraced yard did in fact have a lovely garden full of Japanese bloodgrass 'Rubra' which, thanks to the cooperative landowners, has since been treated.

In September 2023, at the conclusion of the 15-month temporary listing of Cogongrass as an EDRR noxious weed, an additional negotiated rulemaking process will need to occur as to whether Cogongrass stays permanently on the noxious weed list and under what category. In the meantime, keep your eyes peeled. According to Virginia Cooperative Extension, "34 to 83 percent of the total number of invasive plant taxa (species, varieties, cultivars) in the U.S. had a horticultural origin". By working together, we really can make a difference. The Pahove Chapter greatly appreciates the opportunity to work with, and the rapid response from, our local agencies charged with managing Idaho's invasive plant species. •

Japanese bloodgrass, Imperata cylindrica var. rubra, growing in a terraced garden in northwest Boise. Ada County Noxious Weed Control Department photo.

Pahove Chapter Co-sponsors Field Survey and Monitoring Project for Boise Sand-Verbena

By Michael Mancuso and Martha Brabec, Pahove Chapter

Boise sand-verbena (*Abronia mellifera* var. *pahoveorum*) is a perennial herb with a showy, head-like arrangement of white to pinkish, funnel-shaped, night-blooming flowers. Its distribution is limited to southwestern Idaho on the north side of the western Snake River Plain where it extends in sporadic fashion along lower foothill sandy slopes and lake bed sediments from Boise to the Horseshoe Bend, Emmett, and New Plymouth areas. Idaho Native Plant Society members were first introduced to Boise sand-verbena by Barbara Ertter in the June 2016 issue of *Sage Notes*. This introduction occurred only a few months after Barbara and her colleague Sonia Nosratinia published their paper describing this new variety. The paper made it clear that Boise sand-verbena warranted conservation attention. It was quickly added to the Idaho Rare Plant List due to its limited distribution, low number of known occurrences, low number of plants at the occurrences, and recognition that much of the species' native shrub-steppe habitat had been severely degraded over time by invasive weeds such as cheatgrass (B*romus tectorum*), cereal rye (*Secale cereale*), and rush skeletonweed (*Chondrilla juncea*). Furthermore, a substantial portion of Boise sand-verbena's habitat overlaps prime real estate for foothills housing development, with some populations undoubtedly already lost due to urban development.

Barbara chose the variety name 'pahoveorum' to honor the many dedicated members of the INPS Pahove Chapter, "many of whom have contributed directly to past and current understanding of the new variety, and whose collective efforts will be instrumental in ensuring the continued existence of this beautiful plant." Recognizing more action on behalf of the species was needed, the Pahove Chapter and City of Boise (COB) Department of Parks and Recreation agreed in 2022 to collaborate on a field survey and monitor project for Boise sand-verbena in the Boise foothills. The surveys would target COB and a few other selected properties in the lower Boise foothills known or suspected to contain potential Boise sand-verbena habitat. The project also aimed to establish monitoring plots at previously documented Boise sand-verbena occurrences located in Camelsback Reserve and Military Reserve (both being COB properties), and where practical, at any new Boise sand-verbena locations discovered during the 2022 survey. We undertook the project to improve our understanding of the conservation status and needs of Boise sand-verbena in the Boise foothills, with emphasis on COB properties, whose land resource managers are tasked with sustaining rare plant populations on lands they administer.

Boise sand-verbena. Photo by Martha Brabec.

We planned the field survey by first reviewing 2019 digital orthophotography maps of Ada County overlaid with COB ownership. The very high resolution of these aerial images allowed us to search for outcrops of habitat potentially suitable for Boise sand-verbena. We prioritized COB-owned properties, but also looked at BLM, Idaho State, and private parcels adjacent to City property or within the Ridge to Rivers trail system. We considered relatively sparsely vegetated sandy openings as potential habitat for purposes of the survey. Based on this assessment, we selected nine properties for field survey in 2022. The selection included six COB properties - Camelsback Reserve, Hulls Gulch Reserve, Military Reserve, Peace Valley Overlook, Pierce Gulch Farm, and Warm Springs/Mesa Reserve. Other properties included Highland Hackberry Subdivision (private land with public access), Peggy's Trail (BLM land), and Table Rock/Mesa Reserve (Idaho State land). One or more areas with potential Boise sand-verbena habitat represented the primary search targets within each property. However, surveyors would also be able to search for the species as they hiked to the main target areas.

A total of 20 Boise sand-verbena survey sites were searched on the nine properties between late April and late May, 2022. Boise sand-verbena was not found at any of the survey sites. This included one of the survey sites in Camelsback Reserve and one of the survey sites in Mil-

itary Reserve where Boise sand-verbena had been documented in the past. Introduced weed species dominated the vegetation at most survey sites. Native herbaceous species and shrubs tended to be substantially less abundant. Most survey sites had sandy substrates that appeared potentially suitable for Boise sand-verbena, at least in places. However, some lacked the proper soil type, contradicting our initial assessment based on aerial imagery. Survey sites had varying levels of ground disturbance, with wildlife tracks and pocket gopher digging being common at some of them. Many sites also had evidence of past wildfire.

The monitoring part of the project consisted of establishing plots at previously documented Boise sand-verbena sites in Camelsback Reserve and Military Reserve, and another in Hulls Gulch along the 8th Street extension road where one Boise sand-verbena plant was found by chance discovery in 2022. Overall, the three plots contained only six Boise sand-verbena plants. In addition to Boise sand-verbena, Pahove Chapter and COB have monitoring plots in place for Aase's onion (*Allium aaseae*) and Mulford's milkvetch (*Astragalus mulfordiae*), two other rare plant species found in the Boise area foothills. Nearly all of these plots are on COB properties. The original concept called for one species being monitored each year on a three-year rotation. In light of the low number of plants found in 2022, it now seems three years may be too long to wait for the next monitoring visit for Boise sand-verbena.

Survey and monitoring results from 2022 highlight the rarity and imperiled conservation status of Boise sand-verbena in the Boise foothills. The species also appears to be at risk rangewide, where it is known from approximately 20 occurrences, many based on old collections made more than 30 years ago. None of the known extant occurrences are large, with all of them having <100 plant, and in some cases <25 individuals based on most recent site visits. As Barbara Ertter warned us in 2016, this is a species whose long-term persistence and conservation appears to be in peril. Pahove Chapter is hoping to conduct more field surveys in 2023 to help clarify the status of Boise sand-verbena in other parts of the species' range.

Searching for Boise sand-verbena in the Boise Foothills. Photo by Ann DeBolt.

Pahove members Barbara Ertter, Ann DeBolt, Kirsten Severud, and Don Essig assisted with the identification of potential Boise sand-verbena habitat areas and conducted the field surveys. Sandy Smith and Jeri Wood assisted on some of the surveys. We also acknowledge all the research and extra pre- and post-field work assistance provided by Barbara Ertter. •

In Memorium

Christopher Davidson 1944-2022

By Barbara Ertter, Pahove Chapter (Photos by the author, except where noted)

The untimely death of Christopher Davidson, Idaho's Garden-Building, Globetrotting Botanist, was a great loss, not only to family and friends, but to the international botanical community in general. This includes his home state of Idaho, where he remained based, even as his focus became increasingly international. Chris epitomizes that under-sung breed of scientist whose manifold contributions seldom make the headlines, in part because he did not seek publicity, but who nevertheless generated an impressively diverse legacy. Botanist, gardener, geologist, bibliophile, world traveler, photographer, benefactor, master of the bon mot, devoted husband and father, doting grandfather, loyal friend: Chris was all of these, and more. This Idaho-centric biography is my tribute to Chris, from one of the friends who mourn the loss of this remarkable person.

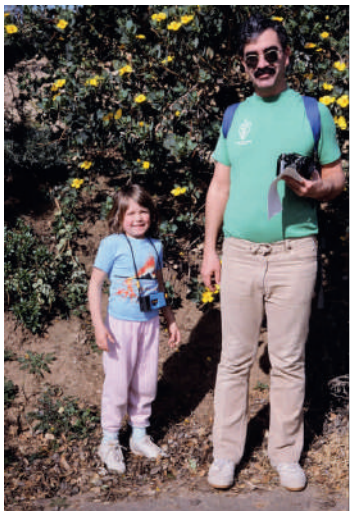
A fourth generation Boisean, Christopher Robert Davidson was born to Robert and Marjorie "Moonie" Moore Davidson on 10 February 1944. Four years later, Moonie divorced Robert and married his cousin Charles "Charlie" M. Davidson, who became Chris's father in all ways that mattered. Chris shared his first name with his mother's grandfather Christopher Wilkinson "C.W." Moore (1835-1916), a prominent founding father of early Boise. Capitalizing on the opportunities presented by the gold rush in southwestern Idaho in the 1860's, C.W. had established the Idaho First National Bank; this became the primary source of the wealth with which he generously supported the geothermal, electric, and transportation development of Boise (MacGregor 2006), a philanthropic tradition continued by several of his descendants. Chris grew up on prestigious Warm Springs Avenue, not far from his great-grandfather's mansion that was the first home in the United States heated with geothermal water. He attended Roosevelt Elementary School, East Junior High (then still near the intersection of Warm Springs and Broadway avenues), and Boise High School.

An early passion for natural history, in particular botany and geology, was nurtured by long summers spent in the forested mountains around McCall, based at the Davidson family domain on the west side of Payette Lake. Chris's stepfather, Charlie, had made his first trip to McCall in 1909, at age 12, accompanying two Episcopal missionaries who hoped to convert the Indians rumored to be living there. The venture was a failure (no Indians), but Charlie remained and found work at the fledgling Sylvan Beach Resort, an Adirondack-style retreat that Chris later referred to as Idaho's first ecotourism venture. Charlie and other family members returned the following summer and each year thereafter, camping in tents until Charlie built a cabin for the family in 1918—the first on Payette Lake. The Davidson presence expanded over subsequent decades, as the original full-service resort transformed into a tight-knit community of privately owned "cabins" that balanced the original rustic appearance with increasing modern comforts, nestled in the conifer forest between granite cliffs and sandy beaches (Rutledge & Elliott 2005).

College took Chris out of Idaho, first to Whitman College in Washington for his undergraduate degree, where the availability of mentors and majors tipped the balance of his career path to botany instead of geology. His subsequent graduate work was at Claremont Graduate University in southern California, after which he became Curator of Botany at the Los Angeles Natural History Museum. For his doctoral degree in botany (Davidson 1973), Chris examined the morphology and anatomy of Datiscaceae, a small family with an unusual global distribution, under the guidance of Robert Thorne and Sherwin Carlquist. This cemented a lifelong interest in plant families and genera with uncertain affinities and noteworthy distributions; *Datisca* itself consists of one species centered in California (Durango root, *D. glomerata*) and another one (or two) in Crete, Turkey, and the Himalayas. During his California years, Chris also became fascinated with the Bolivian flora and the complexities of the huge genus *Piper* (Piperaceae), which remained high among his ongoing interests. He added the editorship of *Madroño*, the journal of the California Botanical Society, to his activities in 1981, serving in this position for the next four years. During this period his professional address changed from California back to Idaho, specifically to the Idaho Botanical Garden.

The purpose and timing of Chris's return to Idaho in 1980 were several-fold. On the personal side, his daughter, Sara, was about to be born, and he claimed that he didn't want her first breath of air to be LA smog. On the professional side, he could read the writing on the wall that indicated declining support for botany within what is now known as The Natural History Museum of Los Angeles County. Within a few short years following Chris's departure, the museum abandoned botany altogether, transferring its seed plant collections to Rancho Santa Ana Botanic Garden (now California Botanic Garden) and

dispersing its remaining plant and fungal collections to other institutions. All in all, it was time for Chris to pursue one of his dreams: creating a botanical garden in Boise.



Sara and Chris Davidson in California, 1988.

It was also during this period that I first became acquainted with Chris, and it was a delight to vicariously enjoy his efforts to realize this dream. Although I had also grown up as a fourth-generation Boisean (with my grandfather working in his great-grandfather's bank at one time), gone to the same high school, and even had a nearby family cabin at Sylvan Beach (albeit in the less prestigious south end), the 9-year difference in age kept two introverts from meeting during our early years. It was only when Chris, during his curatorial years, was visiting New York Botanical Garden, where I was pursuing my own doctoral degree, that we were introduced as fellow Idahoans. We kept in touch ever since, with one on-going tradition when I was in town to spend the holidays with family being a winter dinner gathering with other botanists in the Boise area, jokingly dubbed the "Annual Meeting of the Idaho Botanical Society."

Chris owed much of his love of botanical gardens to his stepfather, who had been trained as a landscape architect at the Harvard School of Design. In 1941, Charlie began transforming the Resort's former vegetable garden into what became known as Charlie's Garden, a centerpiece of Sylvan Beach and popular visitor destination for McCall. The property had most recently been used as the site of a 180-bed dormitory during the filming of the epic movie *Northwest Passage*, which used the Sylvan Beach Resort as base camp in 1938 and 1939. The dormitory was then dismantled and moved to the mining town of Stibnite, and Charlie spent months cleaning up the discarded debris to create a blank slate on which to construct his dream garden. German-trained Hans Borbonus helped with the landscaping, in the process getting his start as one of Boise's leading landscape architects, and Charlie's younger sister, Betty Davidson Gregorie, also became a garden fixture (Rutledge and Elliott 2005).

The constantly evolving result was a wonderland of colorful floral diversity amidst granite outcrops and an abundance of water features, created by diverting part of the flow of Sylvan Creek. Although a private garden, members of the public were always welcome to Charlie's Garden, which became a popular venue for weddings and other events. This was not only a place of beauty where Charlie could unleash his talents, but also a testing ground to try out plants from around the world to see which ones were compatible with the mountain climate, including the startling azure flowers of Himalayan blue poppy (*Meconopsis* sp.) My strongest personal memory of Charlie was of him telling me about the dawn redwood (*Metasequoia*) he was planting, during the period when seeds of this rare tree were widely distributed for experimental cultivation; alas, the tree did not survive, but it left an impression on at least one other budding botanist besides Chris.

With such a deep and multifaceted horticultural influence in his formative years, it is only natural that Chris was drawn to the idea of creating a botanical garden in Boise as the next stage of his career. The location selected for this ambitious undertaking had a background as fascinating as that of Charlie's Garden: the abandoned farm and nursery for the original Idaho State Penitentiary near the end of Warm Springs Avenue, where Native Americans had once overwintered and used the eponymous warm springs for healing and spiritual purposes. After inmates rioted over living conditions, improved correctional facilities were constructed south of Boise in 1973. The core of the old penitentiary, including most of the buildings constructed from local sandstone quarried by the prisoners, became a popular visitors' destination run by the Idaho State Historical Society. The surrounding lands and outbuildings, however, remained dormant until 1984, when Chris negotiated the lease of 42 acres on which to make his garden grow.

In this undertaking, Chris was aided by the board of directors he had recruited, comprised of 17 civic leaders and professionals, as well as substantial financial support from his mother, Moonie. An irrigation system was soon installed, nature trails were constructed, and the Meditation, Rose, and Herb Gardens were developed, incorporating surviving trees and shrubs from the original landscaping. An educational program was also initiated, coordinated with the Boise School District's science program, and work-release opportunities were developed for female residents of the adjacent East Boise Community Reentry Center. Chris's original vision included several gardens that would represent some of the Greater Boise area's significant ethnic groups, including Basque, Chinese, and Japanese. He also envisioned a research function, similar to (but vastly scaled down from) programs at Missouri Botanical Garden or New York Botanical Garden; we sometimes joked about how the penitentiary's

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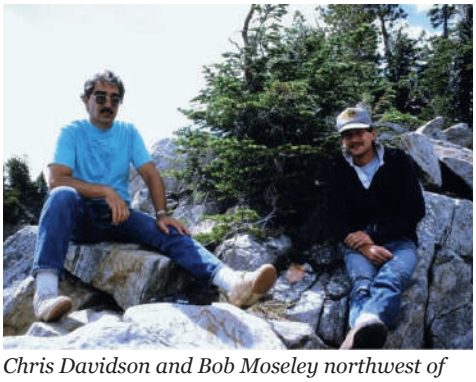
solitary confinement cells would be perfect for researchers' offices!

Alas, much of this dream fell apart when the board of directors went off in a different direction and decided that more "dynamic" leadership was needed. They offered Chris a subsidiary role as an alternative, which came across as a slap in the face and led him to permanently part ways with the Idaho Botanical Garden, along with the not-insignificant funding provided by his mother. Fortunately for the rest of us, the Garden survived this early crisis, with significant credit going to dedicated volunteers and a former work-release participant that Chris had gone to bat for (S. Christoph, pers. comm. 2022). The Garden ultimately thrived to become one of Boise's top destinations and event locations (https://www.idahobotanicalgarden.org/), including Pahove's annual Wildflower+ Show, but we will never know how today's Garden might have differed if Chris had remained at the helm.

For the next stage of his life, Chris continued living in Boise and McCall and raising his daughter, Sara, as a single father, with occasional visits from her mother, Josephine Jones. Chris, Sara, and cat Roosevelt lived initially in a classic home on Jefferson Street until displaced by the expanding medical complex around St. Luke's hospital, after which they moved to Warm Springs Mesa. During this period, Chris happily continued working in Charlie's Garden (Charlie himself having died in 1970), collecting plants, and exploring the mountains around McCall, sometimes with fellow members of the "Idaho Botanical Society," sometimes with visiting botanists from around the country. His major research project for this period was an exhaustive compendium of pollination ecology, pursued in that nearly forgotten era when a comprehensive literature search required repeated visits to major botanical libraries. The never-finished, unpublished result included a detailed synopsis of the pollinators and visitors reported for each angiosperm plant family, arranged in phylogenetic order. The methodical and meticulous approach, the excuse to travel to major botanical institutions throughout the country, and long hours spent surrounded by his beloved books suited Chris just fine!



Chris Davidson and Bob Moseley northwest of McCall, 1989

The death of Chris's mother at the beginning of the new millennium was a tragic blow, but it also opened up new opportunities as Chris came into his full inheritance. In addition, it paved the way for his marriage to Sharon Christoph in Mexico on 30 December 2000, followed by a legal ceremony in the United States on 17 January 2001. The two had originally met when Chris was still involved with the Idaho Botanical Garden. Docent training was one of his activities; Sharon, a recently divorced mother with a background in education, had been encouraged by one of her friends to sign up for the program. However, it was not until well after Chris had left the Garden that the two started spending significant time together, when Sharon became involved with the Garden's education program and turned to Chris for answers to various questions (S. Christoph, pers. comm. 2022). Romance blossomed, eventually resulting in a perfectly complemented partnership, with credit for subsequent accomplishments rightfully including both members of the team.

In addition to significantly expanded financial resources, Chris inherited his mother's houses and associated grounds in both Boise and McCall, including Charlie's Garden. The Boise home, just off of Warm Springs Avenue, had deteriorated too much for simple renovation, so they made the difficult choice to raze it. The curvilinear architectural masterpiece that replaced it deserves a spot on Boise's list of heritage homes, with a key centerpiece being an impressive interior water feature, more characteristic of gardens than of living rooms. A commodious library provided ample room for Chris's large collection of botanical books, with a special climate-controlled vault for the rarest items. Once completed, the Boise home provided luxurious living quarters for Chris and Sharon (and Roosevelt), with plenty of room for guests and whatever family members were in residence. In addition to Sara, the new "hybrid family" now included Penny and Pat, Sharon's two children from her previous marriage to William Crowley (an innovative software entrepreneur for whom my brother coincidentally worked at one time); all three children were now in college, soon to be starting their own families.

Chris and Sharon also took over the maintenance and further development of the spacious gardens around the Boise home and Charlie's Garden in McCall. Both properties have subsequently served as perfect locations for a wide diversity of botanical receptions and other gatherings, as many of us can attest. In both places, many of the classic features and original plantings were left untouched, but other rectilinear beds were gradually replaced with more enticing curved paths and raised berms. Chris continued Charlie's use of both gardens for experimental horticulture, trying out a wide diversity of plants

from areas with comparable growing conditions around the world. Plants representing unusual families, genera, and species were given priority, reflecting his long-standing botanical interests. Chris's love of geology was also in full play, resulting in the inclusion of both numerous rocks collected in Idaho, with a preference for greenish boulders from the ancient suture zone northwest of McCall, and large, striking art stones imported from China. Much of Chris's time in Idaho was spent either out looking for more rocks, or arranging them as stairways and other features throughout Charlie's Garden. He also took regular advantage of a source in China that converted Chris's sketches into a variety of ornamental structures carved from a high-grade granite, which was more uniform and fine grained than, but still harmonious with, the local Idaho Batholith.

Chris Davidson and Sharon Christoph in Charlie's Garden, 2012.

Chris also developed increasing ties to Boise State University, in particular to fellow botanist James F. Smith and the Snake River Plains Herbarium. Chris and Jim began collaborative phylogenetic research on the large tropical genus *Piper* (Piperaceae), which includes culinary black pepper (e.g., Smith et al. 2008). The BSU connection deepened when Sven Buerki joined the faculty in 2017, with Chris's encouragement and backing; this personal relationship became particularly close, with the Buerkis effectively adopted into the extended Davidson/Christoph family. In October 2018, Chris and Sharon even funded a "Forum on Biodiversity of Global Hotspots" at BSU, with Sven as one of a number of distinguished speakers from around the country and beyond. Both botanical research and the herbarium at BSU have been ongoing recipients of Chris's financial generosity, and the herbarium serves as a primary repository for Chris's collections from throughout the world.

Chris Davidson hiking near McCall with Jim Smith and Barbara Ertter. Photo by Steve Martin.

Among the many other organizations for which Chris and Sharon became major benefactors were the Idaho Shakespeare Festival, The Nature Conservancy, the Organization for Tropical Studies, and the Limbe Botanic Garden in Cameroon. As a result of their support of botanical gardens and research in Africa, Chris received an honorary chiefdom in Ghana, while Sharon became an honorary queen mother. They also provided funding for the science building at Whitman College (Chris's alma mater) and are acknowledged as primary supporters of the completely revised second edition of *Flora of the Pacific Northwest*, as well as Vol. 9 of *Flora of North America* (which includes various genera for which I was an author). Much of this funding was done under the auspices of the Botanical Research Foundation of Idaho, formalized in 2008.

All of these activities were tangential, however, to the massive undertaking that consumed the majority of Chris and Sharon's efforts for the next two decades, and which now represents their crowning legacy. This was the audaciously named Flora of the World project, which had the goal of taking diagnostic digital photos of every angiosperm plant family in the world (a moving target, given the ongoing phylogenetic upheaval), in their natural habitat to the extent possible, backed by herbarium specimens as vouchers and made freely available at https://floraoftheworld.org/. Genera within each family provided a secondary goal, especially if rare or otherwise noteworthy. The project emerged when Chris and Sharon took stock of their resources and primary interests (i.e., phylogenetic diversity, international travel, photography) and decided on how they could make the greatest contribution to the international botanical community: *Flora of the World* (FoW) emerged as the winner, to our collective good fortune.

With the decision made, and cameras in hand, Chris and Sharon became globe-trotters extraordinaire, returning to biodiversity hotspots like Madagascar, New Caledonia, and South Africa multiple times in order to catch all of their target plant families in flower and fruit (Miller 2018). Locating these targets depended heavily on collaborations developed with a wide network of local botanists, who often benefited from having critical fieldwork funded by the FoW project. Many of these botanists were affiliated with the Missouri Botanical Garden, with which Chris and Sharon soon forged a close relationship and lasting friendships with numerous staff members. The expeditions were also often tied to significant capacity-building contributions to the various host countries, especially in Africa and South America.

Everyone who had the opportunity to accompany Chris and Sharon on one of these expeditions has their

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own story to tell, replete with adventures and surprises. For Jim Smith, this was their trip to west-central Africa, which included flying into a Nigerian airport only to learn that their outbound flight didn't exist; Sharon's skills and persistence were put to the test before an alternative was arranged. As recalled by Jim, "A nice sentiment that came out of that was when Sharon proposed that if they could only get 1 ticket that I be the one to take it and Chris immediately said, 'and if there are only two, do we leave Jim here? No, we all go or we all stay.'"

Chris Davidson photographing plants in Iraqi Kurdistan, with Tony Miller and Sharon Christoph, 2010.

My own opportunity to join Chris and Sharon on an international adventure was in June 2010, when Ihsan Al-Shehbaz, an Iraqi-American botanist at the Missouri Botanical Garden, arranged for us to participate in a botanical survey of the Kurdish-controlled portion of northeastern Iraq (as presented in a talk to Pahove in March 2011). This was during the optimistic period between the fall of Saddam Hussein and the rise of ISIS, with our hosts among the leaders of the aspirational semi-autonomous Kurdish Regional Government (KRG). Memorable highlights include the students and peshmerga guides trying to get Chris to join them in a traditional line dance; Sharon and I being entertained by a beautifully clad group of young women while resting our feet after a long, hot hike; and convincing our hosts that, no, we did NOT want to visit the Iranian border crossing! Alas, although we did find Biebersteiniaceae, which was the primary target family for FoW, it was already dried up. Chris and Sharon accordingly returned a couple of years later to catch it in bloom, this time personally hosted by the KRG prime minister and his wife, who had worked as a botanist in Beltsville, Maryland.

Young Iraqi botanists and pesmerga trying to get Chris to join a line dance, 2010.

As a key difference from the usual FoW trips, which Chris and Sharon routinely funded, we were repeatedly told to "keep your hands out of your pockets"; i.e., not pay for anything. As partial reciprocation, we subsequently arranged for some of our Kurdish hosts to tour botanical gardens throughout the western US in 2011, in preparation for building their own. After rendezvousing with the delegation in Austin, we traveled to Phoenix, the San Francisco Bay Area, and Boise (including the Idaho Botanical Garden, of course!) This was by no means the only time that Chris and Sharon generously hosted international visitors, but it was certainly among the more memorable.

Local destinations were also fair game, each with their own adventures. In July 2008, College of Idaho professor Don Mansfield drove Chris and a few others of us to where the Three Forks of the Owyhee River converge in Malheur County, Oregon, a remote area accessible only by a challenging road not for the faint-hearted. Exploring the riparian wetlands necessitated some wading in the mid-summer flow, as well as keeping an eye out for the occasional rattlesnake. Chris was delighted to bag fertile Ceratophyllaceae, with *Nitrophila*, *Porterella*, *Triglochin*, *Glaux*, and a number of other genera and species as bonus finds.

The time between international jaunts was mostly spent in either Boise or McCall, delighting in quality time with family and friends, sorting and uploading photos, and planning for pending and future expeditions. In the summer months, Chris and Sharon could often be found working away in Charlie's Garden, where Chris laid much of the stone steps himself, using rocks gathered from nearby parts of Idaho. They also enjoyed introducing their visiting friends to the best that Idaho had to offer, from fine dining (always in jeans!) to whitewater rafting to road trips around the state—the last always with cameras in hand, of course, to catch such regional rarities as *Dasynotus daubenmirei*. And when Botany 2014 was held in Boise, one of the field trips was scheduled for Charlie's Garden, and the nearby pteridology field trip along Sylvan Creek ended at Chris and Sharon's private beach, where participants were graciously treated to refreshments while puzzling over E*quisetum* and *Isoetes* (http://2014.botanyconference.org/info/fieldtripsdescr.php).

Chris and Sharon enjoying dinner at Shore Lodge, McCall, with Alexa DiNicola, Noel and Pat Holmgren, 2015.

Another Idaho-based interest was added to Chris's list in late 2014, when I stumbled across a deposit of Miocene

plant fossils in Ponderosa State Park, just a short paddle from our respective cabins in McCall. As happens, it turns out that credit for the original discovery of the locality actually goes to Chris, who found some fossils at or near the same spot in the late 1970's ("not long after the fossils were formed," according to a letter written decades later). This was presumably during his summer vacation, when he was working at the Los Angeles Natural History Museum. Chris sent his samples to paleobotanist Howard Schorn at UC-Berkeley Museum of Paleontology; a handful were retained and added to the museum's permanent collections. However, the relatively poor quality of the surface-collected fossils, and an only mildly encouraging response from Schorn, were insufficient to deflect Chris from his burgeoning interest in tropical botany.

I was more fortunate, thanks in large part to linking up with paleobotanist Patrick Fields, who had worked with Schorn while a graduate student at UC-Berkeley. Pat's "day job" was on the faculty at Olivet College in Michigan, but he spent part of each summer working on western plant fossils at the Orma J. Smith Museum of Natural History at The College of Idaho. What started out looking like a fairly humdrum fossil flora, dubbed the Ponderosa Flora by Pat, soon proved to be much more significant, especially when more localities were discovered and better preserved material below the surface came to light. A formal publication is in preparation, and an interpretive exhibit is currently under construction for the park's visitor center. Over 70 different kinds of plant fossils have been found thus far, including several new to science—at least one to be named after Chris.

Fossils collected by Chris Davidson in the late 1970s, Univ. California Museum of Paleontology.

To our delight, Chris's decades-old interest was quickly rekindled, and he enthusiastically joined some of the collecting teams, along with Pat, myself, the park's interpretive ranger, and several other volunteers. As one contribution to the cause, he helped arrange for geologist Spencer Wood and geologist/paleobotanist Bill Rember to join us one weekend, trying to puzzle out the geology of the peninsula and how the fossils were formed. He also donated one of his former FoW cameras to the Museum for photographing cataloged specimens and funded some curatorial supplies as well. Equally important, the Ponderosa Flora project expanded our collective circle of friends: Chris and Sharon paid for, and sometimes hosted, additional visits to Idaho by Pat, and we have all repeatedly visited Bill Rember's personal piece of the world-famous Clarkia flora in northern Idaho. Chris particularly enjoyed a trip to the Seven Devils Mountains with Pat, as a kindred spirit who was equally interested in both botany and geology.

Chris Davidson collecting fossils with Patrick Fields and Terri Bryant, 2015.

Although not as well-known to most INPS members as are some of the more locally involved botanists, Chris (and Sharon) did occasionally participate in, or otherwise contribute to, some of our group activities. They joined the Idaho Botanical Foray to the Bear River Range in 2012, at least for a day or two, and the following year hosted a party at Charlie's Garden for botanists en route to the 2013 Foray at Hazard Lake. For the latter, Chris came up with the banner and stand—built of plastic tubing—that became an iconic part of subsequent Forays. Charlie's Garden was also one of the field trip destinations during the INPS annual meeting to McCall in 2019; although Chris had initially agreed to lead this trip, a substitute leader (me) had to step in due to a scheduling miscommunication. Most recently, Chris was the keynote speaker at the Idaho Rare Plant Conference in February 2020, filling us in on the latest with the Flora of the World project. Chris and Sharon were also regulars at, and occasional hosts of, the ongoing "Annual Meeting of the Idaho Botanical Society" and various local botanical receptions.

Chris's talk to the Rare Plant Conference was just before the world turned upside down, as the COVID-19 pandemic swept the globe. International travel came to a screeching halt,

Chris Davidson pressing plants with Brittni Brown at the 2012 Idaho Botanical Foray. Photo by Steve Martin.

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Christopher Davidson ...*Continued from Page 15*

forcing Chris and Sharon to abandon all their carefully planned trips for the unknown future. The silver lining was they could turn their attention instead to the recently rebuilt "cabin" at McCall, an all-season residence that provided increased room and modern comforts while still remaining harmonious with its natural surroundings. Deprived of the usual international outlets for their energy, Chris and Sharon instead focused on furnishing and landscaping the new house, which became a haven to enjoy with extended family and friends. Playing with his and Sharon's grandchildren remained a particular delight for Chris; building an impressive fieldstone retaining wall, with an abundance of succulents and other plants tucked in, was another source of pleasure.

Chris and Sharon at McCall "cabin," 2021.

Tragically, right when the pandemic had eased sufficiently to resume long-deferred new expeditions, in hot pursuit of the final eight families still needed for FoW, Chris was diagnosed with renal cancer. Although initially thought to be treatable, the unexpectedly aggressive malignancy resulted in Chris's rapid decline, ending with his death at home, Sharon and Sara at his side, on 29 August 2022. Celebrations of Life were held the following two weeks, at both Charlie's Garden and their Boise home, with condolences and accolades flooding in from around the globe.

Chris leaves an impressive legacy, with Flora of the World, Charlie's Garden, the Idaho Botanical Garden, and general capacity-building sharing top billing along with his and Sharon's children and grandchildren. Eight tropical plant species are named for Chris, and an additional two bear epithets honoring both him and Sharon, as does the genus *Christopheria* (Smith & Clark 2013). Plans are underway to ensure the continued maintenance and development of the FoW website at Boise State University, with special attention to the remaining families still needed to complete the tally. Charlie's Garden will remain in the family, the extensive botanical library will go to Boise State University, and the best disposition of the pollination manuscript that was his passion for a decade is also under consideration. In addition, a small endowment is currently being established in Chris's honor to support paleobotany curation at the Orma J. Smith Museum of Natural History at The College of Idaho.

Stairway built by Chris in Charlie's Garden.

No tribute to Chris is complete without addressing his signature sense of humor, a dry wit that subtly permeated conversations and letters. Behind his droll Groucho Marx-like visage lay a delivery style more reminiscent of Mark Twain, catching you off guard with deadpan interjections. He loved nothing better than inviting you to join him on extended flights of whimsical fancy, challenging you to keep up. He enjoyed repeatedly watching favorite classics like *Monty Python and the Holy Grail,* which he had memorized, and he even penned two witty articles under the nom de plume "Harald Harebrush" for *The New Boise Rag*, a humor mini-magazine that briefly existed in 1982 (A. Minskoff, pers. comm. 2022).

We miss you, Chris, for your humor, your passion, your generosity, your joy of life, your friendship. You have left the world a brighter and richer place by your time in it, and we are grateful for and enriched by the gift of your memories.

Very special thanks to Sharon Christoph, Jim Smith, Pat Fields, Charlotte Taylor, and Alan Minskoff for freely sharing their own memories of Chris during the preparation of this tribute, and to Steve Martin for allowing the use of his photos. All other photos are by the author. •

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In Memorium

Sylvia Chatburn 1940-2022

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Sylvia Chatburn passed away on February 11, 2022 after a long illness. She had been the manager of the Kinnikinnick Native Plant Arboretum in Lakeview Park since 2000. We know Sylvia because of her connection with the Arboretum, but her life extended far beyond Sandpoint and led to her successful leadership.

Sylvia was born on January 30, 1940 and grew up in Sagle on a large dairy farm. She attended local schools and graduated from Sandpoint High School. She went on to graduate from Wake Forest University in North Carolina. After college she married, raised three children in California and, for several years, lived in Spain; it was there that her travel interest began. In later years, she visited Europe, Egypt, Australia, and South America, including the Galapagos.

She and her family moved back to Sagle, settling on 90 acres, where she gardened and finished the home interior, even doing the woodworking of the kitchen and bathroom cabinets. It was during this time that she lost her husband.

In 1997, a group formed that was interested in native plants and an area to display them. After much searching, they found a corner of Lakeview Park that seemed like a good place. A legal agreement was made with the city of Sandpoint, the Historical Museum and KNPS for an arboretum to be started.

Sylvia headed up a group of volunteers, under the auspices of Lois Wythe, to prepare the area for public display, including paths and habitat areas. Sylvia developed the descriptions and prepared the signs, which are in the Arboretum today. Volunteers are the backbone of the Arboretum, and many have worked there for years. Arbor Day, plant sales, student and other tours are some of the activities that take place in the spring and summer.

Sylvia's additional activities with KNPS included the development and editing of the book, *Landscaping with Native Plants in the Idaho Panhandle*. The book was printed in 2011 and continues to be very popular. Sylvia was active with the Monday Hikers and the Woman's Campout, where she was able to enrich the hikes with her knowledge of native plants. She will be greatly missed. •

CALYPSO CHAPTER

When: Chapter meetings are held on the first Wednesday evenings of March, April, May, and October at 7:00 pm. The public is invited to all chapter activities, which may change, so watch chapter emails for updates.
Where: Meeting are held in the Wildlife Building, North Idaho Fairgrounds, Coeur d'Alene.
Contact: For more information about Calypso Chapter activities, contact Derek Antonelli: ds.ca.antonelli@gmail.com, (208) 691-1070.
Upcoming Events
March 8: Derek Antonelli will give a presentation on the Lily Families.
April 5: George Dumoff will give a presentation on Earthworms and Plants.
April 22: Spring Plant Walk. Post Falls Community Forest.
April 28 to May 1: Worldwide City Nature Challenge, Submit iNaturalist observations. Chapter will plan an outing to support this event.
May 3: The presentation topic for this meeting has not been determined yet. Please submit topic suggestions for this or future meetings.
May 20: Spring Plant Walk. Rathdrum Mountain Park.
June 10: Summer Plant Walk, Location TBD.
July 8: Summer Plant Walk. Location TBD.
July 13 to 17: Idaho Botanical Foray. Cabinet Mountains.

LOASA CHAPTER

When: Meetings are held third Thursday of each month at 7:00 p.m.
Where: Taylor Building, Room 247, College of Southern Idaho, Twin Falls.
Contact: Bill Bridges, bridgesbill34@yahoo.com

PAHOVE CHAPTER

When: Meetings are held the second Tuesday of each month from October–April starting at 7:00 pm. Times, dates, and topics are tentative. Current information will be sent to members via email. Annoucements are also posted on the Pahove Chapter page of the INPS website: https://idahonativeplants.org/pahove/
Where: Chapter presentations currently offer hybrid viewing formats, both in-person at MK Nature Center and a Zoom link for at-home enjoyment.
Contact: For more information about Pahove Chapter activities visit the website: www.idahonativeplants.org or email Karie Pappani at pahove.chapter.president@gmail.com.
Past Events
The Idaho Rare Plant Conference 2023 was a huge success! Learn more in the next issue of *Sage Notes*!
Upcoming Events
March 14: Matt Lavin PhD, Professor at Montana State University will present "The sagebrush sea in southeastern Idaho, Montana, and Wyoming: composition, distinction, and conservation value."
April 11: Bob Moseley will present "Revisiting Shangri-La: Photographing a Century of Environmental and Cultural Change in the Mountains of Southwest China."
April TBA: Native Plant Sale, M.K. Nature Center
May 14: Wildflower Plus Show, Idaho Botanical Garden
May 18: Orton Botanical Garden Tour, Twin Falls
Other News
The chapter currently has tote bags for sale with the Pahove Chapter logo. The cost is $22. Please contact us if you are interested in purchasing one.

SAWABI CHAPTER

When: The Board announces its at least quarterly meetings. Plant walks generally occur each Saturday and Monday through the early blooming season and as the season allows thereafter. Winter programs are scheduled for the first Monday evening of the month. An autumn potluck is also planned.
Where: Winter programs are presented in the North Fork room of the ISU Student Union Building in Pocatello. Field trips generally car-pool from the bison statue in front of the ISU Museum of Natural History.
Contact: Paul Allen at pokyallen@hotmail.com, 208-241-5265
Past Events
Our **Winter Program** featured Wallace Keck, Conservation Supervisor for City of the Rocks, who focused on *Pinus monophylla* (the single leaf pinyon).
Upcoming Events
Plant Walks are ongoing, but not scheduled. Contact Paul Allen if you wish to be alerted.
In **April** we will have a display at the local Environmental Fair celebrating Earth Day.

UPPER SNAKE CHAPTER (INACTIVE)

Contact: Kristin Kaser, kaser.kristin@gmail.com

WHITE PINE CHAPTER

When: Meetings are typically held the third Thursday of the month, September through April. Current information is posted on our chapter webpage:

https://www.whitepineinps.org/WPschedule.html
Chapter members will receive an email notification before all events.
Where: We are currently offering hybrid meetings. The in-person meetings are held at the 1912 Center in Moscow with a zoom link for virtual attendance.
Contact: For more information about White Pine Chapter activities, contact us at INPS, White Pine Chapter, PO Box 8481, Moscow, ID 83843 or whitepine.chapter@gmail.com. Visit the chapter website for upcoming event information: https://www.whitepineinps.org/

Past Events

February 23: Presentation by Joe Kuhl, Director of Stillinger Herbarium, University of Idaho.

Upcoming Events

March 16: Presentation by Alan Martinson about invasive plants. 7:00 pm at the 1912 Center.
April 20: Presentation by Mike Mancuso, President of INPS. 7:00 pm at the 1912 Center.
May 7: Field trip to Mary M. McCroskey State Park led by Pam Brunsfeld.
May 12-13: Annual Native Plant Sale at Latah Fairgrounds.

WOOD RIVER CHAPTER

When: Typically we have talks in the cold months and walks in the warm ones. Non-members are welcome. Please see our website or email newsletter for information on all programs.
Where: Field trip and talk locations and details will be included with the description, posted online and emailed to members and other interested parties.
Contact: For more information about Wood River Chapter activities: email: woodriverinps@gmail.com; website: www.woodriverinps.wixsite.com/wrinps; phone: Mary (559) 696-9953; to subscribe to the newsletter: email us.

Past Events

February 25: "Basics of Using Native Plants in Home Landscapes." Mindy Rider discussed how native plants differ from ornamental varieties. She outlined their differing water needs and growth habits. Rider made some recommendations about her favorite natives to use in your landscape and how to start them from seeds. Mindy Rider is well qualified to educate about native plants. She has worked as a landscaper and horticulturalist for 25 years. Rider currently starts, grows and installs native plants at the Hunger Coalition as part of her job as Food Production Manager.

Upcoming Events

March 23: Talk presented by Linda Ries at 5:30 pm at Town Center West, Hailey. "What's that Buzzing in my Yard? A Quick Look at the Amazing World of Native Bees." Learn how to identify local native bees, explore their life cycles and gain tips on how to encourage these bees to thrive and survive in your yard. This class will focus on bumble bees, mason bees, and leaf cutter bees, as well as other native bees. Learn how native bees contrast with imported honeybees and the increasing threats from pesticides and poor cultural practices. We will also discuss which bees pollinate your fruit trees and vegetables. Our presenter, Linda Ries, has loved insects since she was a girl. After gaining her Forest Biology B.S., Linda worked for 20 years for the U.S. Forest Service. She continues to educate us through her work with 4-H, the Hailey Arboretum and the Hailey Tree Committee. This talk is cosponsored by the Hailey Public Library and will be recorded and available in the future on our chapter's website.
May 20 or June 3: Camas Prairie Trip to Centennial Marsh. Details will be announced when we can see when the camas lilies will bloom and that information will be available on our chapter website and through our email newsletter. •

IDAHO NATIVE PLANT SOCIETY
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www.idahonativeplants.org
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□ White Pine (Moscow)
□ Wood River (Ketchum/Sun Valley)
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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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Past Issues: Available online.
https://idahonativeplants.org/sage-notes/