Castilleja linariifolia

Castilleja

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Wild iris (*Iris missouriensis*) and visiting white-lined sphinx moths (*Hyles lineata*) grace the new WYNPS homepage – check it out at www.wynps.org! By Dorothy Tuthill

UPDATED Wyoming Flora Checklist

By Ben Legler, Rocky Mountain Herbarium

Just in time for the field season, the Rocky Mountain Herbarium published a 2023 update to its Wyoming Flora Checklist that can be downloaded at: https://www.rockymountainherbarium.org/index.php/research/checklists. It provides:

- A list of all Wyoming plant species growing in the wild, based on voucher specimens deposited at RM or reports in specimen-based literature such as Flora of North America (1993-present),
- Up-to-date taxonomy and nomenclature based on the professional review of the authors,
- A cross-reference to names in Dorn (2001) and other literature, where they differ,
- An indication of exotic and noxious species,
- An indication of "Wyoming plant species of concern" based on the list maintained by the Wyoming Natural Diversity Database (WYNDD).

The list is organized alphabetically by plant family within each of the four commonly recognized vascular plants groups (ferns and allies, gymnosperms, monocots, and dicots). Each scientific name includes genus + species names, followed by its author, with notes and references to literature or vouchers where relevant.

A state floristic checklist is like a botanical census, except that it is an ongoing endeavor rather than a set of pre-determined tasks every decade. The checklist is updated periodically as new classifications are published and additional species are added to the state's flora. Speaking of additional species, the Wyoming flora continues to grow with each update to the checklist! Since the previous version of the checklist was published in 2018, our state's flora has expanded in several ways. (Continued p. 5)

In this Issue:

WYNPS News

Now's the Time!: If you haven't registered for the 2023 Annual Meeting of Wyoming Native Plant Society, do it now!! The event will be June 16-18, a gala Wyoming Wildflower Weekend. We will converge on Clark, WY, and look forward to six exciting hikes, creative art workshops with native plant themes, a first-time raffle, a Saturday evening pizza party and special talk by David Tank, Rocky Mountain Herbarium Director. Go online to register and see the agenda, or mail in the registration form that was in your March newsletter. Please register for receipt by June 8 to help us plan. Walk-ins are welcome too.

2023 Scholarship Announced: Winners of the Society Scholarship are Chelsea-Victoria Turner (UW) and Rachel Renne (Yale); receiving $779 and $1000 for their research in Wyoming, respectively. Congratulations!

New members: Please welcome the following new members to WYNPS: Barbara Amidon, Missoula, MT; Brenda Baker, Daniel; Lynea Beauregard, Cheyenne; Gretchen Beerline, Powell; Rita Bove, Laramie; Adrien Clement, Pinedale; Stan Dempsey, Golden, CO; Gail Fustos, Pinedale; Diane Guslander, Jackson; Teresa Mawdsley, Frederick, MD; Molly Murphy, Jackson; Amanda O'Keefe, Worland; Leslie Patton, Cody; Pat Poletti, Cora; Craig Smith, Pinedale; Joan Sapp, Estes Park, CO; Robyn Tait, Omaha, NE; Joanne Theobold, Casper; Joy Ufford, Bondurant; Alexander Zaideman, YNP.

WYNPS Board – 2023

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Message from the Editor:

Original newsletter articles are special but so are PAST newsletter articles with new and better access!

Robert Dorn provided a series of articles on "Growing Native Plants" in every issue of *Castilleja* for 10 years (2012-2022). Now, readers can search an index to this phenomenal series to look up a favorite wildflower and the growing conditions most suited for it to flourish in their gardens, or else to find out which native plants might be suited for difficult conditions in a corner of the yard. This issue has more information about the index.

Dorn wrote the definitive book on the Wyoming flora, co-authored the definitive book on landscaping with native plants with Jane Dorn, and then wrote 10 years of articles about growing native plants for the newsletter, accompanied by wonderful Dorn photos.

~Bonnie Heidel

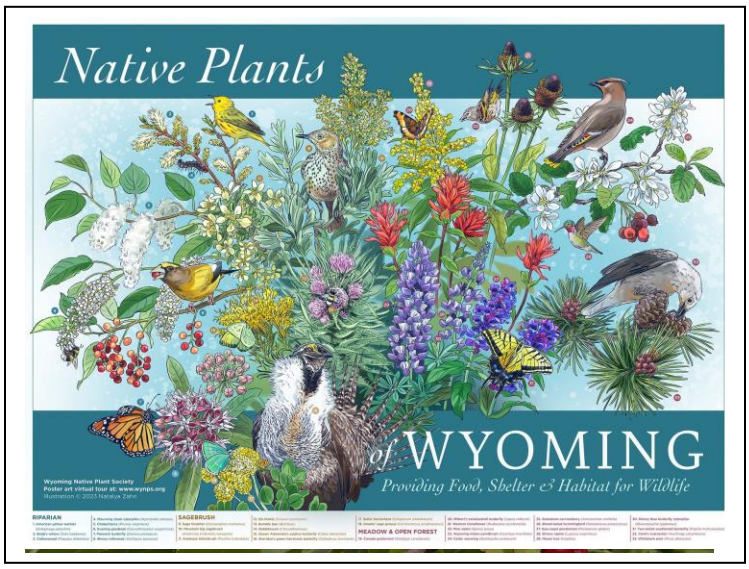
Next issue: Please send articles and announcements for the next newsletter by 15 October to:

Wyoming Native Plant Society
P.O. Box 2449
Laramie, WY 82073

Treasurer's Report: Balance as of 10 May: Scholarship = $989; General = $20,704; Total = $11,692

2023 Renewal – It's never too late: You can still renew by filling out and mailing the renewal insert (see December issue), the small form at the back of this issue, or online via PayPal (www.wynps.org).

Contributors to this Issue: Emma Freeland, Bonnie Heidel, Ben Legler, Meredith Taylor and Dorothy Tuthill.



Announcing:

New Wyoming Native Plant Poster

A colorful new Wyoming Native Plant Poster is now available! The virtual poster is fully interactive, with an introduction to each of species included. Free copies can be downloaded from the Society homepage (www.wynps.org; the required password is native-plants) for printing on standard letter-size paper, or a wall-size copy is available to members while supply lasts (1 per member).

It features 21 native plants of Wyoming and their native animal neighbors, residents of Wyoming meadows and open forest, riparian habitats, and sagebrush steppe.

This poster represents artwork by Natalie Zahn, with the commission, distribution and full support by Kimberley Morrow, as a joint project of the Garden Club of America with Wyoming Native Plant Society. To order copies, please contact: wynps@wynps.org. Our thanks for this member contribution!

Growing Native Plants: Wyoming Index At Your Fingertips

Insights on growing native plants are now available online, with ten years of Robert Dorn's *Castilleja* articles as posted on our homepage (www.wynps.org – see it under Announcements).

Profiles of over 220 native Wyoming species are included that highlight distinguishing characteristics while also addressing growth form, phenology, cultivation/propagation information, and natural habitat conditions that pertain to garden settings. Each profile is accompanied by a sharp color photograph by Robert and Jane Dorn. This new index of articles can be searched by:

- plant group (e.g., conifer tree, short shrub, cacti, annual forbs, and special garden settings)
- plant names (scientific names or common names)
- year and date, or volume and issue

Each species is linked to the issue in which it appeared.

Chokecherry (*Prunus virginiana*) as photographed by Robert and Jane Dorn is now featured on the WYNPS homepage. This photo is the "Growing Natives" series and in their book *"Growing Native Plants of the Rocky Mountain Area"* (Dorn and Dorn 2007).

There are even more native species treated, with lists of native plants by precipitation zone, and tables organized by plant groups, in the book "Growing Native Plants of the Rocky Mountain Area" (Dorn, R. D. and J. L. Dorn). Serious gardeners may want to order this reference book. It is still available at: https://www.lulu.com, Click on Bookstore, then search: "growing native plants" ($115). An alternative to purchasing the book is to buy a CD of the book, available from Cheyenne Audubon. The person to contact for ordering a CD is Mark Gorges at: mgorges@juno.com. ($10 for the CD).

This addition to the website complements a new resource for native plant enthusiasts, a web page dedicated to gardening with native plants: http://www.wynps.org/garden-with-native-plants/.

Alive and Well

Hall's Milkweed rediscovered in Wyoming after 60 years!

By Dorothy Tuthill, Biodiversity Institute

Hall's milkweed (*Asclepias hallii*) photographed in the 2020 Wyoming Bioblitz, by Evan Barrientos

In July, 1916, Dr. Aven Nelson, founder of the Rocky Mountain Herbarium (RM), collected a specimen of Hall's milkweed, *Asclepias hallii* A. Gray, in Albany County, WY, from a sandy ravine in a location he called "Sodergreen's." We can't know if he was surprised to find this species where he did—perhaps not, since the flora was not well known then, and Hall's milkweed had been collected near Denver as recently as 1877. When Dr. C. L. Porter, Nelson's successor as RM Curator, found Hall's milkweed in the Laramie Basin, he probably wasn't surprised at all, since it was already known from the vicinity. However, Porter's 1948, 1949 and 1958 collections were the last time this milkweed was seen in Wyoming for many decades, despite an exceptional endowment of botanists and students of botany in the Laramie area.

Given all the botanists in the area, couldn't someone relocate earlier-known populations? By "Sodergreen's," Dr. Nelson may have meant the Sodergreen Ranch, headquartered about 5 miles NE of the hamlet of Woods Landing, but the ranch is (and was) a big place closed to the public. There is also a Sodergreen Rd. (also on private property) and a Sodergreen Lake (public access—no *A. hallii* has been seen there). Dr. Porter was not much better about specifying location: 10 miles SW of the cement plant on Sand Creek Rd should be findable, but the 1949 "gravelly hills near Woods Landing" and 1958 "clayey, gravelly slopes near Woods Landing" are probably not. And yet…

Asclepias hallii was rediscovered in 2020 on gravelly hills not too far from Woods Landing! Evan Barrientos, a nature enthusiast who works for Audubon Rockies, was walking off-trail on the west side of Sheep Mountain, elevation approximately 8200 ft, when he encountered the milkweed and made a submission to iNaturalist for the Virtual Wyoming BioBlitz. Evan's observation can be viewed at https://www.inaturalist.org/observations/53678924.

As a result of this find, the Wyoming Natural Diversity Database (WYNDD) has changed the state rank of *Asclepias hallii* from SH (known only from historic records) to S1 (critically imperiled), and the number of SH taxa in Wyoming has dropped from 26 to 25. Notably, this is the first iNaturalist record to be directly incorporated into the WYNDD database; it was accepted for WYNDD entry in light of the photo quality and the research grade status that Evan's observation earned. The current Wyoming Field Guide entry can be viewed at https://fieldguide.wyndd.org/?species=asclepias%20hallii. All parties hope to be able to collect a specimen for the RM this summer, thus continuing the line of evidence for *Asclepias hallii* in Wyoming.

Asclepias hallii is the second SH-ranked species to be rediscovered in recent years, both on Medicine Bow National Forest; *Polystichum scopulinum* (mountain hollyfern) was recently rediscovered in the Laramie Peak area as described in a recent *Castilleja* article (Pappas 2022).

Hall's milkweed is at the northern end of its range in Wyoming and most likely to be encountered in the mountains and basins of central and southern Colorado. However, its range is much broader, encompassing mountain ranges (Cont. p. 5)

Hall's milkweed rediscovered, cont. from p. 4
of AZ, NM, UT and NV, and east into the Colorado plains (https://swbiodiversity.org/seinet/collections/map/googlemap.php?usethes=1&taxa=3759). It inhabits rocky slopes or roadsides in sagebrush steppe, pinyon pine-juniper woodlands, ponderosa pine forests, and mixed conifer forests, from 6,000 to over 8,000 ft (1800-2400+ m) (Nabhan et al 2015). Fishbein (in prog.) states that *A. hallii* is the only milkweed likely to be encountered at elevations above 8200 ft (2500 m). However, it is common nowhere. According to NatureServe, *A. hallii* is vulnerable (S3) in Colorado, critically imperiled (S1) in Utah, and vulnerable (G3) across its entire range. It has no state rank assigned in Nevada, Arizona or New Mexico. (https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.157728/Asclepias_hallii).

References

Fishbein, M. In prep. *Asclepias*. For: Flora of North America Editorial Committee, eds. 1993+. Flora of North America North of Mexico. 22+ vols. New York and Oxford. Vol. 14.

Nabhan, G., S. Buckley, and H. Dial. 2015. Pollinator Plants of the Desert Southwest: Native Milkweeds (Asclepias spp.). USDA-Natural Resources Conservation Service, Tucson Plant Materials Center, Tucson, AZ. TN-PM-16-1-AZ.

Pappas, G. 2022. Fun finds on the Medicine Bow National Forest. *Castilleja* 41(4), p 3-5.

Native Seed Collection with BLM in Fremont County

The Bureau of Land Management office in Lander seeks volunteers to collect native seeds in Fremont County. We plan to collect a variety of grasses, forbs, and shrubs that will be grown out for seed increase and used in wildlife habitat restoration projects. We do not yet know the exact dates, times, and places for the collections, however, typically our seed collecting takes place in late June through mid July. If you are interested in helping collect native seed, please email Emma Freeland at efreeland@blm.gov to get on an email list. We will email out dates and times of seed collection opportunities as they arise.

Updated Wyoming Flora Checklist, cont. from p. 1
through the discovery of species new to science (e.g., a newly-described species of broomrape [*Aphyllon franciscanum*}), range extensions of native species into Wyoming (e.g., flatstem spikerush [*Eleocharis compressa*]), and the detection of new exotics (e.g., clammy goosefoot [*Dysphania pumilio*] and an annual grass [*Vulpia myuros*}). A comparison of the number of different taxa in the updated checklist with those previously reported (Dorn 2001, Nelson 2018) is in Table 1.

Category	Dorn (2001)	Nelson (2018)	Nelson & Legler (2023)
Families	142	119	134
Genera	723	765	784
Species	2,515	2,696	2,716
Subspecies/varieties	713	895	874
Minimum Rank Taxa[1]	2,798	2,966	2,988
Native[2]	2,471	2,578	2,581
Exotic[2]	327	388	407

[1]Minimum rank taxa are those at the lowest recognized taxonomic ranks, including all subspecies and varieties plus species that do not contain subspecies or varieties.

[2]Counts for native and exotic taxa represent minimum rank taxa.

Recommended citation: Nelson, B.E. and B.S. Legler. 2023. Checklist of the Wyoming Flora. Rocky Mountain Herbarium, University of Wyoming. Laramie, WY. https://www.rockymountainherbarium.org/index.php/research/checklists.

Editor's note: Discoveries of new state flora additions are usually announced by their discoverers in *Castilleja*. These announcements do NOT take the place of a peer-reviewed journal publication detailing the discovery as published separately. Also, this newsletter does not cover all the additions that come from *Flora of North America* and other literature compiled by RM for maintaining the state checklist.

Long-Lived Cushion Plants

By Bonnie Heidel,
Wyoming Natural Diversity Database

Shoshonea (*Shoshonea pulvinata*) mat, by Bonnie Heidel

What would you say if I told you that Wyoming has long-lived Carrots? Some of Wyoming's most amazing seniors in the Plant Kingdom are underfoot. I refer to mat-forming plants such as Shoshonea (*Shoshonea pulvinata*), in the Carrot Family (Apiaceae), that cling to rocky outcrops.

Shoshonea is endemic to mountains on the east and north sides of the Big Horn Basin (Absaroka, Beartooth, Owl Creek and Pryor Mountains) in Hot Springs, Park and possibly Fremont counties, Wyoming and Carbon County, Montana. We will look for it in flower at the 2023 Wildflower Weekend on hikes to Bald Peak and Heart Mountain.

Mat-forming plants do not divulge their age. Only by monitoring Shoshonea in permanent belt transects were Montana botanists able to tease out population trends, and some details of individual growth, fecundity, recruitment and mortality.

A recent study monitored individual plants of three populations at seven times over the span of 25 years (Pipp 2016). The majority of plants present in Year 25 were also present in Year 1, at two of three transects! The catch is that researchers did not know plant age in Year 1, though plant size might be used to ballpark potential ages.

The most exposed site had the highest levels of both recruitment and mortality. Populations were relatively stable with only one reading showing significant increase in numbers (in 1999 at two of the three populations), Overall, total plant surface area declined in two of the three populations. The best news is no news – threats were not detected from wild horses, native ungulates, energy development or recreation.

Reference

Pipp, A. 2016. Monitoring *Shoshonea pulvinata* in the Prior and Beartooth Mountains, Carbon County, Montana, 1991-2015 Trend report. Prepared for Bureau of Land Management, by Montana Natural Heritage Program.

Swamp Lake Special Botanical Area

By Bonnie Heidel, Wyoming Natural Diversity Database

A small group of botanists got together in 1986 for a Wyoming Native Plant Society gathering at Swamp Lake, and the rest is history. Botanizing by Erwin Evert, Robert Dorn, Ron Hartman and Ernie Nelson leading to the highest bounty of state records at one place in recent history, also leading to designation of Swamp Lake Special Botanical Area as the first Botanical Area recognized in Wyoming.

Intensive and exhaustive botanical studies at Swamp Lake were later conducted by Walter Fertig and George Jones (Fertig and Jones 1992). Only years later was Swamp Lake recognized as the largest fen system (peatland) in Wyoming, after extensive fen inventories and studies in the Beartooth Mountains (Heidel et al. 2017) and Yellowstone National Park (Lemley 2007).

At least three more Wyoming Native Plant Society hikes have returned to Swamp Lake. -It's time for us to return this year!

Walter Fertig pointed out a botanical spectacle when he co-led the 2013 Swamp Lake hike, the year we gathered in the Beartooth Mtns. By Dorothy Tuthill.

References

Fertig and Jones. 1992. Plant communities and rare plant species of Swamp Lake Special Botanical Area.

Heidel, B., W. Fertig, S. Mellmann-Brown, K. Dwire and K. Houston. 2017. Beartooth fens and their rare plants.

Ethnobotany - **Part 6. *Salix* species**

By Meredith Taylor, Certified Wyoming Naturalist

Coyote willow (*Salix exigua* var. *exigua*) is the most widespread willow in Wyoming, found in every county. By: Robert Dorn, from: Dorn, R. D. 1997. Rocky Mountain Region Willow Identification Field Guide. U.S. Department of Agriculture, Forest Service, Rocky Mountain Region, Denver, CO.

Leaves of Coyote willow are linear, with entire or widely-spaced jagged edges on short petioles. Fully expanded leaves are mostly silvery or pale green and often hairy. By: Robert Dorn.

Salix is the large and diverse willow genus comprised of about 400 species found originally in Europe, Asia and Africa, but is native to northern temperate climates mostly in the Northern Hemisphere. *Salix* is a member of the Salicaceae (Willow Family). Willow species grow as deciduous shrubs, 1-30 m, usually in riparian alpine or subalpine meadows at 1000-4000m elevation. The stem has yellow to reddish brown bark. The alternate leaves are narrow elliptical or lance-shaped 30-90 mm. Inflorescences have two stamens on a yellow pistillate flower that bloom as male and female catkins or pussy willows on leafy shoots in May-June on seeds with silky hairs.

Willows have been used medicinally as a traditional anti-inflammatory tea for muscle and joint pain, headache or fever. The willow bark and leaves are rich in acetylsalicylic acid or salicin that was derived from salicylic acid, the active chemical of the synthetic aspirin used today. This author shared this knowledge with native elders on the Wind River Reservation to cure a headache by chewing willow bark. We all laughed as elders were amused by us whites treating them with native willow medicine.

Willows are important wildlife habitat for many species including, but not limited to beavers, moose, deer, birds, and pollinators like bees and hummingbirds. As a quick growing, fast-spreading plant, willows help stabilize riparian areas and filter run-off during spring floods. Fresh willow twigs can be propagated easily by inserting stems in wet soil each Spring. The flexible willow stems have long been popular for making baskets, fish traps, woven backrests and wicker furniture by native people.

This article is for educational purposes and does not condone collecting of plants that readers can't identify with certainty. The ethics of wild plant collecting is to tread softly through the plant's habitat and only pick the occasional leaf or flower to protect plant sustainability as described at this agency link: http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprd3822046.pdf.

Check directly with the agency about their policy if you want to harvest native plants on public land.

GETTING TO KNOW PLANT FAMILIES

Have you ever wanted a simple introduction to plant identification? -Maybe for a Scout troop or in getting to know your own garden better? Rocky Mountain Herbarium has a great new brochure introducing five of the largest plant families in Wyoming!

It is a beautiful, simple guide (5 ½" x 8 ½") to five of the largest plant families growing wild! If you learn to recognize these five, you have a gateway to identifying a huge share of all plants in our state (and in your garden).

All members are invited to test it out at the 2023 annual meeting, where it will be part of the Plant Family ID workshop by RM on 16 June.

It is available for download at: https://www.rockymountainherbarium.org/

WYOMING NATIVE PLANT SOCIETY MEMBERSHIP FORM

Date _____

Name _____

Address _____

Email _____

Please check all appropriate boxes:

[ ] New member
[ ] Renewing member
[ ] Check here if this an address change
[ ] Annual membership with email notification of newsletters: $10
[ ] Annual membership with mailed newsletters: $12
[ ] Annual membership with scholarship support and email notification of newsletters: $20
[ ] Annual membership with scholarship support and mailed newsletters: $22
[ ] Life membership with email notification of newsletters: $300
[ ] Life membership with mailed newsletters: $300

In addition to the statewide organization, we have two chapters. Membership in chapters is optional; chapter members must also be members of the statewide organization.

[ ] Teton Plants Chapter annual membership: $5
[ ] Sublette Chapter annual membership: $5
[ ] Additional donation of $_____

Total enclosed: _____

Please write checks to **Wyoming Native Plant Society**

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