

*Castilleja linariifolia*

# Castilleja

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## Introducing: The Wyoming Basin Ecoregion

You won't find it on any highway maps or road signs, but the Wyoming Basin Ecoregion is a recurring image in cartographic circles that is starting to appear in land management discussions. I live in the Wyoming Basin Ecoregion, and many of you do, too! It covers over half of Wyoming (Figure 1) with limited extensions into four adjoining states.

How do you describe such a vast area? The Bureau of Land Management is the primary federal land-managing area in this landscape, and maintains a web posting on it (<http://www.blm.gov/wo/st/en/prog/more/LandscapeApproach/reas/wybasin.html>) that opens with a summary:

"The Wyoming Basin Ecoregion encompasses over 33,000,000 acres in five states, Wyoming, Colorado, Utah, Idaho and Montana. Approximately 54 percent of this acreage is sagebrush steppe. This ecoregion contains many important wildlife and vegetative habitats and populations. Among them are: the greater sage grouse, large, intact sagebrush steppe habitat, mule deer, the range margin populations of whitebark pine and portions of the headwaters of the Colorado, Platte, Missouri and Snake Rivers. It is also the location of some of the largest natural gas deposits found on public lands in the continental United States and important potential wind energy sites."

A new regional scale of planning is given to the Wyoming Basins Ecoregion, with a management framework larger than field office resource management plans in "rapid ecoloregional assessments (REA)." The Wyoming Basin REA first identifies key conservation elements and agents of change in this landscape, in a document called the Wyoming Basin REA work plan by Carr et al. (2013), and linked to the Wyoming Basin Ecoregion web posting "WYB USGS Work Plan." The rest of Wyoming falls into Northwestern Plains and Southern Great Plains REAs. (Cont. p. 9)

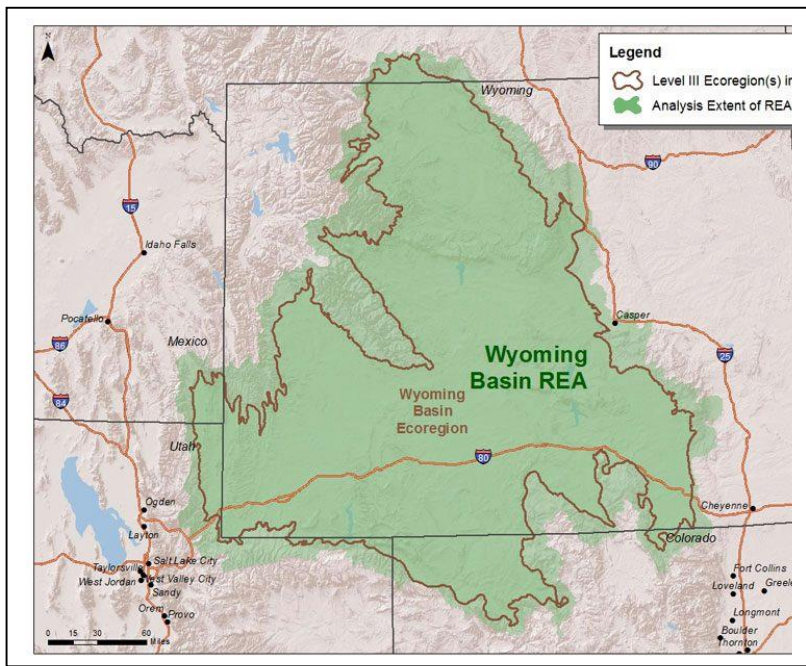


Figure 1. Wyoming Basin Ecoregion, from Carr et al. (2013)

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## WYNPS News

In this issue: 2016 Annual Meeting in Dubois – trips, registration, and more! Now's a great time to register.

### Spring Program of Teton Plants Chapter:

**Tuesday, March 22, 6-8pm**, "Biomolecules and Folklore: Understanding Traditional Plant Use in the Tetons through Archaeology and Ethnography," Teton County Library, 125 Virginian Lane, Jackson. Presentation by Matt Stirn, Rebecca Sgouros, and Sharon Kahin of the Jackson Hole Historical Society and Museum. The Tetons were a wealth of plant and animal resources for the Native American tribes who frequented the area. Wild edibles covered the valley floor of Jackson Hole and continued up into the Tetons above tree line. The talk will begin by looking at research currently being conducted in the Teton and Wind River Ranges, and will explore how archaeologists use tactics such as archaeobotany, biomolecular residue analysis, and satellite imagery to uncover clues about past plant use. The presentation will cover information on traditional use of edible and medicinal plants in the Jackson Hole and the Greater Yellowstone Region learned from recent oral histories conducted with both Shoshone and Crow elders and healers. Free and open to the public. Co-sponsored by the Teton County Library.

**Tuesday, April 26, 6-8pm**, "The Ecology of Wyoming: Twenty Years of Remarkable Changes," Teton County Library, 125 Virginian Lane, Jackson. Our speaker will be Dennis H. Knight, Professor Emeritus, Department of Botany and Program in Ecology, a University of Wyoming, Laramie, professor for 35 years. Dr. Knight will present an overview of what's new in the second edition of his book, *Mountains and Plains: The Ecology of Wyoming Landscapes*, published in 2014 by Yale University Press, first published in 1994.

Treasurer's Report: Balance as of 15 Feb 2016: Scholarship = \$2,445.50; General = \$6,542.23; Total = \$8,987.73.

Contributors to this Issue: Ann Boelter, Karen Clause, Robert Dorn, Bonnie Heidel, Kristina Hufford, Amy Taylor.

Deadline for next Issue: Announcements and articles are welcome at any time. The next deadline is 15 Apr.

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

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New Members: Please welcome the following new members to WYNPS: Jeanne Browne, Jackson; Diane Hazen, Jackson; Jack Hunter, Jackson; Kevin Krasnow, Jackson; Bob McCoy, Pocatello, Idaho; Lisa Ridgway, Wilson; Alice Stevenson, Victor, Idaho; Stephanie Winters, Gillette.



Message from the President:  
How about this weather? I guess we have El Niño to thank (or curse, if you live in my part of the state).

Thank you to all the members for supporting me in a second term as President. It is an honor to serve the Society and its members. Greetings and welcome to the 2016 Board of Directors: Brian Sebade (Vice President), Jeanette Flaig (Secretary/Treasurer), Walt Fertig, and Bob Giurgevich.

We have been busy putting together the details of the 2016 Annual Meeting, to be held June 17-20 in Dubois.

It will be a great program, and I hope you will consider joining us. It's a great place to meet new faces, see old friends, and take in the local flora and scenery. Our Saturday evening speaker is Dr. Jack States, and you won't want to miss!

~Karen Clause, President

### WYNPS Board – 2015

President: Karen Clause, Pinedale

([kdclause@centurytel.net](mailto:kdclause@centurytel.net))

Vice-President: Brian Sebade, Laramie

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Sec.-Treasurer: Jeanette Flaig ([flaig.jvh@gmail.com](mailto:flaig.jvh@gmail.com))

Board-at-large:

Walt Fertig, Phoenix, AZ ('14-'15)

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Bob Giurgevich, Sheridan ('15-'16)

([bobgiurgevich@live.com](mailto:bobgiurgevich@live.com))

### Other contacts:

WYNPS homepage: [www.wynps.org](http://www.wynps.org); also on Facebook

Teton Plants Chapter: Amy Taylor, Treasurer

([tetonplants@gmail.com](mailto:tetonplants@gmail.com)) and homepage

<http://www.tetonplants.org/>

Sublette Chapter: Julie Kraft, President

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Editor: Bonnie Heidel ([bheidel@uwyo.edu](mailto:bheidel@uwyo.edu))

Webmaster: Brenna Marsicek

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Bighorn Native Plant Society: Jean Daly, Treasurer (P.O. Box 21, Big Horn, WY 82833)

## 2016 WYNPS ANNUAL MEETING SCHEDULE – DUBOIS, WY

### Friday June 17<sup>th</sup> –CHECK-IN AT KOA CAMPGROUND and CAMPFIRE TALK

3-6 pm – Check-in at central meeting area (KOA campground) – pick up registration packets and sign liability waiver. The KOA campground is located 1 block from town (from Hwy 26/287, turn at the Conoco Station onto Riverton St. and go south 1 block). A map of hike destinations and trip rosters will be available for viewing at the registration area.

Dinner on your own, remember to bring a camp chair for sitting around the fire!

7:30 pm or so – Campfire Talk: ***“Ethnobotany of the Dubois Area” with John Mionczynski***

### Saturday June 18<sup>th</sup> –HALF-DAY or FULL-DAY FIELD TRIPS

Bring your lunch, bug spray, bear spray, water, rain gear, and waterproof footwear

Half-day trips – meet at KOA Campground central meeting area

9 am – 12 pm **BYRD DRAW** half-day hike – Leaders: Walt Fertig (tentative) and RT Hawke

Spend an easy half-day in the Wind River Badlands just east of Dubois looking at the rare Dubois milkvetch (*Astragalus gilviflorus* var. *purpureus*) and desert plant communities found in this harsh yet beautiful landscape. Parking is limited, car-pooling necessary.

12 pm – 5pm **UNION PASS** half-day hike – Leaders: Walt Fertig (tentative) and RT Hawke

Take a 45 minute drive (one-way) to the top of the Wind River Mountains to see the spectacular spring bloom in a mountain meadow plant community. Final destination subject to road and weather conditions.

Full-day trips – meet at KOA Campground central meeting area

**BITTERROOT AND SHEEP TRAPS** - Leaders: Meredith & Tory Taylor and Charmaine Delmatier

This is an easy 1 mile (each way) hike on public lands. See prehistoric sheep traps and discuss archeology and ethnobotany. Car-pooling recommended, about 45 minute drive (one-way) up the East Fork. After enjoying the bitterroot (*Lewisia pygmaea*), evening-primrose (*Oenothera* spp.), penstemon (*Penstemon* spp.), and whatever else is in bloom, the trip will head back to Dubois with other potential stops along the way to fill the day.

**WHISKEY MOUNTAIN via WHISKEY CREEK** – Leaders: Kim Springer and Lynn Stewart (maximum group size: 20)

This is a long and strenuous journey (~8 miles round trip) with ~3,000 vertical feet climbed, but there is so much to see along the trail! Trailhead accessible to passenger cars. The end destination is Jones (limestone) columbine (*Aquilegia jonesii*). Trip route subject to road and weather conditions.

**HORSE/PARK CREEK BURN & DOUBLE CABIN** – Leaders: Bonnie Heidel and Lynn Kinter (tentative)

Take a 20 minute car drive (one-way) and stop to wander through a recently burned landscape. Learn about fire ecology of the area as well as the plants that thrive in post-burn environments. The journey will continue up the road as far as conditions allow, hopefully as far as Double Cabin, to enjoy mountain vistas and flora.

### Saturday evening – DENNISON LODGE

5:30 pm Social

6:00-7:00 Dinner

7:30-8:30 Program – ***“Wildflowers of the Rocky Mountain forest-tundra ecotone, their symbionts and South American cousins”*** by Dr. Jack Sterling States, Professor of Biology, Emeritus, N. Arizona University. Dr. States is a fungi expert and author of *Biological Soil Crusts of the Red Desert* (2008) and many other publications. He is the co-author of *Wildflowers of Wyoming* (2004) and has recently released a 2<sup>nd</sup> Edition (2015) of this must-have, full-color field guide.

### Sunday morning June 19<sup>th</sup> – KOA CAMPGROUND

8:00 am WYNPS annual meeting and coffee!

### Sunday - HALF-DAY or a FULL DAY FIELD TRIPS

Half-day trips – meet at KOA Campground central meeting area

9 am – 12 pm **BYRD DRAW** – Leaders: Lynn Kinter (tentative) and Lillian McMath

Spend an easy half-day in the Wind River badlands just east of Dubois looking at the rare Dubois milkvetch (*Astragalus gilviflorus* var. *purpureus*) and desert plant communities found in this harsh and beautiful landscape. Parking is limited, car-pooling is necessary.

12 pm – 5 pm **UNION PASS** – Leaders: Lynn Kinter (tentative) and Bruce S. Thompson – see next page

Take a 45 minute drive (one-way) to Union Pass at the top of the Wind River Mountains to see the spectacular spring bloom in a mountain meadows. Final destination subject to road and weather conditions.

9 am – 12 pm **HORSE/PARK CREEK BURN** – Leaders: Walt Fertig (tentative) and Charmaine Delmatier

Take a 20 minute drive (one-way) and stop to wander through a recently burned landscape. Learn about fire ecology of the area as well as the plants that thrive in post-burn environments.

12 pm – 5 pm **DOUBLE CABIN** – Leaders: Walt Fertig (tentative) and Charmaine Delmatier

Those who wish to continue from Horse/Park Creek Burn, can drive up the road as far as it will allow, hopefully to Double Cabin, to enjoy mountain vistas and flora.

#### Full-day trips – meet at KOA Campground central meeting area

9 am – 5 pm **WHISKEY MOUNTAIN via WEST TORREY RIM** – Leaders: Bonnie Heidel and Lynn Stewart (max. group: 20)

This is a strenuous journey 3 mile round trip, but well worth the effort. Only 4wd vehicles can access the trailhead (steep and rocky), car-pooling is a necessity. From the trailhead, climb app. 1400 vertical feet in about 1 ½ miles to see Jones (limestone) columbine (*Aquilegia jonesii*) and the alpine landscape. Adventurous souls can continue to the top of Whiskey Mountain (~11,000 feet) for a view that will knock your socks off! Trip route subject to road and weather conditions.

9am – 5 pm **BOMBER BASIN** – Leaders: RT Hawke and Mary Blackburn (maximum group size: 20)

Come join us for spectacular trip into the Wind River Range. We will be going up the scenic Torrey Valley which contains impressive geology, world renowned petroglyphs, Bighorn sheep range and many plant species. We will making short stops along the valley to observe all of the above, before we reach the trailhead (which is one of the major entries into the range). Bomber Falls is an option 3.4 miles (one-way) from the Trail Lake trailhead into the Fitzpatrick wilderness, a moderate hike gaining 1200 feet past Torrey Falls along East Torrey Creek into mountain meadows at the base of the Falls.

#### **Monday morning June 20th – HALF-DAY TRIPS**

##### Half-day trips – meet at KOA Campground central meeting area

8 am – **WEST BOUND: ETHNOBOTANY AT BROOKS LAKE** – Leaders: Meredith & Tory Taylor and Amy Taylor

West-bound travelers leaving Dubois can enjoy an easy half-day hike near Brooks Lake and see and learn all kinds of native edible and medicinal plants such as spring beauty (*Claytonia lanceolata*), arnica (*Arnica* spp.), fireweed (*Chamerion angustifolium*), Indian paintbrush (*Castilleja* spp.), elderberry (*Sambucus racemosa*), strawberry (*Fragaria* spp.), raspberry (*Rubus* spp.), and gooseberry (*Ribes montigenum*).

8 am – **EAST BOUND: SPRING RANCH** – Leaders: RT Hawke and Mary Blackburn

As you leave town heading east, stop at Spring Ranch for a leisurely stroll through the sloping sage and badlands at the base of the Wind River Mtns and the riparian area along the Wind River. We may see the Dubois milkvetch along with a palette of more than 120 other early blooming species on this longest continually working ranch in the Upper Wind River Valley.

#### **LODGING and CAMPING**

Reserve cabins or camping at the Dubois KOA where Wyoming Native Plant Society attendees have a group discount. *It is located 1 block from town (from Hwy 26/287, turn at the Conoco Station onto Riverton St. and go south 1 block).*

You can register by mail (225 Welly St., Dubois, WY 82513), by phone (1-800-562-0806) or on-line

([www.koa.com/campgrounds/dubois](http://www.koa.com/campgrounds/dubois)). Just say that you are with Wyoming Native Plant Society and they will give a 20% discount off the full prices for cabins, tent camping or RV (below). Amenities include laundry, fishing, and heated pool.

Tent Camping: \$30.00

Cabins (no linens):

2 person cabins: \$60.00

4 person cabins: \$70.00

5 person cabins: \$145.00 (Full bathrooms, kitchenettes)

RV Camping (go on-line for full options): Water/electric: \$45.00 Full hook up: \$50.00 River front: \$53.00

Other options include free dispersed camping at the east end of Ring Lake and the south end of Trail Lake (both in Torrey Valley).

Torrey Valley affords great views and a quiet getaway recommended for RVs especially since the only amenities are pit toilets.

Horse Creek Campground, located 12 miles north of Dubois on Hwy 285, is a Forest Service facility with tables and toilets. For more public camping information go to <http://www.fs.usda.gov/activity/shoshone/recreation/camping-cabins>. Another free tent camping

alternative is the mouth of Byrd Draw, adjacent to Lillian McMath's home. She has generously invited up to 20 folks (no children) to camp in her yard along the Wind River at the start of our badlands hike up the draw. If interested in camping here, please contact

Mary Blackburn at [mary.blackburn47@yahoo.com](mailto:mary.blackburn47@yahoo.com) for more information and reservations. For other local accommodations go to

<http://www.duboiswyomingchamber.org/lodging.html>. For more information when planning an extended trip:

<http://windriver.org/welcome-to-wyomings-best-adventure/>.

## 2016 WYNPS Annual Meeting Registration Form

The event is open to the public, membership to the Society is not required. However, registration is required to attend. Please return this form by **June 1, 2013** for dinner reservations and to help us prepare. No dogs, please, on any of the hikes.

Name \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone \_\_\_\_\_ Email \_\_\_\_\_

I (we) plan to participate on: \_\_\_\_\_ Friday \_\_\_\_\_ Saturday \_\_\_\_\_ Sunday \_\_\_\_\_ Monday

Lodging information is contained in the schedule information. All reservations are on your own.

### Saturday hike preference:

\_\_\_\_\_ Byrd Draw half-day field trip \_\_\_\_\_ Union Pass half-day field trip (pm)  
\_\_\_\_\_ Bitterroot and Sheep Traps full-day field trip  
\_\_\_\_\_ Whiskey Mountain full-day field trip  
\_\_\_\_\_ Horse/Park Creek Burn & Double Cabin full-day field trip

### Sunday hike preference:

\_\_\_\_\_ Byrd Draw half-day field trip (am) \_\_\_\_\_ Union Pass half-day field trip (pm)  
\_\_\_\_\_ Horse/Park Creek Burn half-day field trip (am) \_\_\_\_\_ Double Cabin half-day field trip (pm)  
\_\_\_\_\_ Whiskey Mountain full-day field trip  
\_\_\_\_\_ Bomber Basin full-day field trip

### Monday hike preference:

\_\_\_\_\_ West-bound (Brooks Lake)  
\_\_\_\_\_ East-bound (Spring Ranch)

Saturday evening dinner at Dennison Lodge in Dubois. Price is \$18.50 per person and includes a hearty Italian buffet, dessert, iced tea or lemonade. No alcohol is sold but you may bring your own.

Please indicate if you have any special dietary restrictions or needs: \_\_\_\_\_

Number in party \_\_\_\_\_ x \$15/person registration fee = \$ \_\_\_\_\_

Number of dinners \_\_\_\_\_ x \$18.50/dinner = \$ \_\_\_\_\_

Membership (optional; see below) = \$ \_\_\_\_\_

Total enclosed = \$ \_\_\_\_\_

**Please mail completed registration form and payment (check or money order) to WYNPS, P.O. Box 2449, Laramie, WY 82073 or register online at <http://www.wynps.org/>. Please contact Karen Clause ([kdclause@centurytel.net](mailto:kdclause@centurytel.net)) if you have any questions.**

Checklists of plants we may see are posted at the WYNPS homepage.

### Become a member of WYNPS! Annual membership choices:

\_\_\_\_\_ \$10 Regular annual membership  
\_\_\_\_\_ \$20 Scholarship Supporting Member (\$10 for annual membership and \$10 to scholarship fund)  
\_\_\_\_\_ \$300 Life Membership (\$150 for membership and \$150 to scholarship fund)

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.

\_\_\_\_\_ \$5 Sublette Chapter annual membership  
\_\_\_\_\_ \$5 Teton Plants Chapter annual membership



Botanist's Bookshelf –

Bone, M., D. Johnson, P. Kelaidis, M. Kintgen and L. G. Vickerman. 2015. **Steppes: The plants and ecology of the world's semi-arid regions**. Timber Press, Portland, OR. 360 pp. (Hardcover, 9" x 10.5"). (ISBN 978-1-60469-465-9] \$49.95 + shipping.

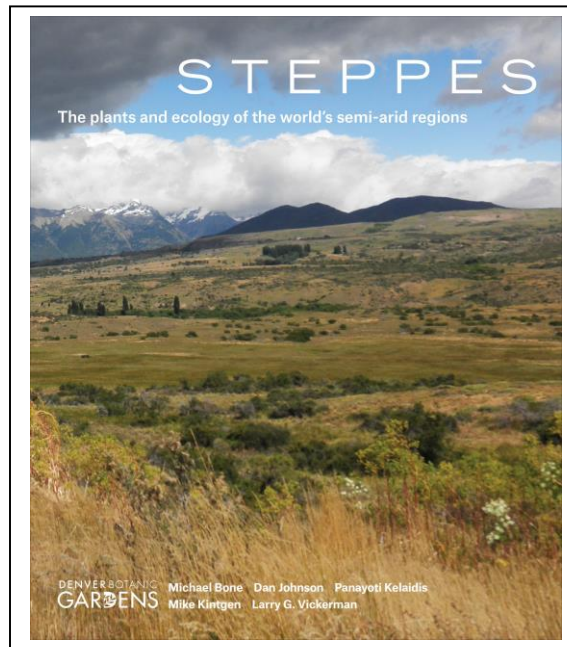
By Kristina M. Hufford

*"To make a prairie it takes a clover  
and one bee,  
One clover, and a bee.  
And revery.  
The revery alone will do,  
If bees are few."*

Emily Dickinson (1755)

There are many words to describe grassland and shrubland ecosystems, and among the most familiar are "prairie" and "steppe." The steppe biome, defined by its continental climate and diverse flora, is found in four distinct regions around the world; including Central Asia, South Africa, Patagonia, and here in Central North America. Though botanists and horticulturalists have long noted similarities in vegetation among steppe regions, none have attempted a comparative study. In one volume, authors from the Denver Botanic Gardens achieve this comparison through photographic and descriptive tours of steppe vegetation across four continents.

Though difficult to define, steppe regions are recognizable landscapes that include grasslands, shrublands and high mountain sites with characteristic rocky soils, hot summers, and cold winters. Often bound by mountain ranges to the west and affected by the resulting rain shadow, steppes experience temperature extremes and semi-arid to arid climate conditions. Steppes were critical for early human development, supporting nomadic peoples from prehistoric to modern times. Most of the world's grain production occurs in these regions, as well as large herds of wild or domesticated ungulates, including North American bison. Today many people are returning to continental interiors, drawn by the need for natural resources and driven by a growing



population. That migration will increase pressure on native vegetation, and may at the same time spark the imagination of plant enthusiasts who endeavor to grow and expand western gardens.

Among the largest plant families common to the steppes are the grasses (Poaceae), asters (Asteraceae), mustards (Brassicaceae), and figworts (Scrophulariaceae). Though the species may differ, the genus is often familiar to those with botanical inclinations. Parallels among vegetation across the continents are uncanny in steppe regions, and I've often

heard travelers, after a 20-hour flight and upon arrival in Mongolia, find themselves in an environment remarkably similar to the North American sagebrush steppe. Over 6000 miles to the east and across the Pacific, *Artemisia* and *Krascheninnikovia* species similar to our Wyoming big sagebrush and winterfat thrive on the Mongolian Plateau. The authors note these similarities and the tremendous, untapped horticultural potential of exotic species for gardens in Denver and nearby communities. They also remind us that tremendous potential may be realized by weedy invasion.

Plants derived from semi-arid regions worldwide are water-wise and candidates for western gardens. These species include a range of stunning flowers from *Clematis* to *Delphinium*, and *Geranium* to *Lilium*. At the same time, cross-continental introductions (whether deliberate or accidental) have led to some of the most extreme conversions in grassland flora documented in human history. Similar adaptations, including drought and cold tolerance, led to the invasion of *Bromus tectorum*, also known as downy brome or cheatgrass, across millions of acres in the Great Basin of western North America. Such invasions are now famous for rapid land conversion from sagebrush steppe to fire-tolerant, cheatgrass grasslands, leading to ongoing investigations of cheatgrass control.

Nevertheless many species, both native and introduced, represent potential ornamentals that, with careful observation and testing, may improve our

civic centers and backyards. The authors devote significant time to native plants found in the Central and Intermountain North American Steppe. These species, once widespread, are often impacted by heavy grazing, agricultural production, and other land development. As a result, native plants may not receive the attention they deserve. To remedy this discrepancy, “Plant Primers” are included in each section by the authors, and describe plant families and candidate species suitable for western gardens. Among them are the Penstemons, showy flowers native to North America and important species for pollinators.

Throughout the volume, readers will find detailed descriptions of habitat as well as virtual tours of the landscapes from Central Asia to Southern Africa. These sections open up a world of information that is sure to please armchair readers as well as globetrotters. Along with detailed descriptions of

plant families and plant-human interactions, the authors have more than accomplished their goal to introduce the “steppes” and their remarkable vegetation to the public, and are sure to inspire gardeners throughout the Central and Intermountain West. One caveat is the potential difficulty in establishing some species that are recommended for Denver gardens. Quick investigations of plant hardiness zones and a willingness to experiment should suffice for high altitude gardens. And even though we may not all travel to see Patagonian steppes or South African Karoo, we may visit in “revery” and our daydreams will take us and our gardens on trips to far off places.

(Dr. Kristina Hufford is professor in the Department of Ecosystem Science and Management, University of Wyoming, Laramie, WY, and her work includes sagebrush steppe restoration.)

## A State Shrub for Wyoming? <sup>1</sup>

Hulett high school students are onto something big for Wyoming, nominating Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) as State Shrub. Their class project in high school biology is now Senate File 52. When the three students presented their case to the State House of Representatives on 22 Feb, they received standing ovation.

Wyoming big sagebrush is the most widespread woody sagebrush taxon in the state, prevalent over vast areas of basin and plains, and present in almost all counties (Rocky Mountain Herbarium 2016; Figure 1).

If SF 52 reaches the Governor’s desk and is signed into law, then we have a State Shrub befitting of Wyoming, and a motivated class of Hulett students to thank.

### Reference

Rocky Mountain Herbarium. 2016. Specimen database. <http://www.rmh.uwyo.edu/> [Accessed 28 Feb 2016]

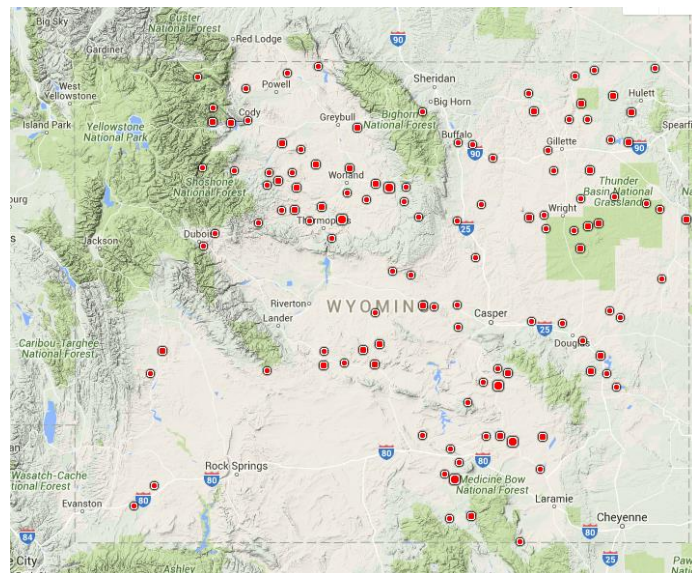
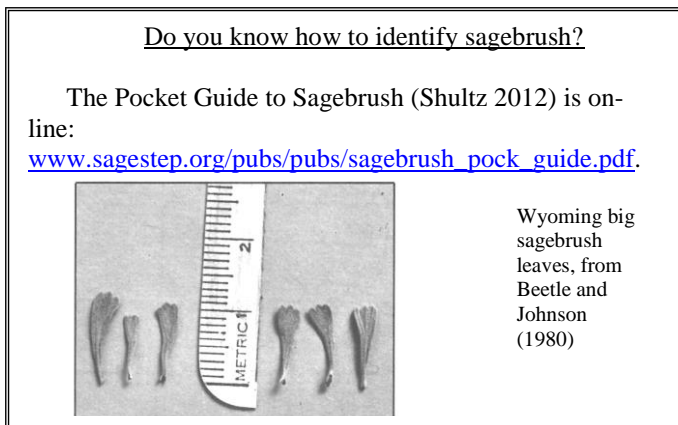


Figure 1. *Artemisia tridentata* ssp. *wyomingensis* distribution in Wyoming (Rocky Mountain Herbarium 2016)

<sup>1</sup> More complete information is presented in the Casper Star-Tribune of 28 Feb 2016 from which this article was extracted. The status of state legislation is posted on <http://www.wyoleg.gov>.



## Growing Native Plants

### **Part 19. Wetland Gardens**

By Robert Dorn

Wetland gardens range from subirrigated upland sites to open water whether flowing or stagnant. Often both subirrigated upland and open water are part of the garden. Sedges and rushes are usually dominant on the upland portion but intermixed with flowering forbs. Flowing water will support the fewest showy species such as *Ranunculus aquatilis*. The five examples which follow are for upland sites or stagnant water. Go to the Society website to see them in color.

*Asclepias incarnata*, Swamp Milkweed, grows to 5 feet tall and 1 foot wide. The leaves are opposite, to 6 inches long and 1.5 inches wide. The flowers are pale to bright rose-pink, to 0.4 inch long, and arranged in dense umbellate clusters of up to 40 flowers at the tips of stems and branches. They appear from June to August. The plants occur naturally in swampy areas of the plains and basins. They prefer full sun and silty or clayey, wet to moist soils. It can be grown from seed, either planted in the fall, or in late spring after at least 30 days cold stratification. Seeds may be slow to germinate as they prefer 80 degree days and 60 degree nights. It is easier to propagate from rootstock divisions. It may take 2 years to reach blooming size. There are several cultivars in the nursery trade.



*Asclepias incarnata*, Carbon County, Montana

*Eupatoriadelphus maculatus* (*Eutrochium maculatum*), Spotted Joe-pyeweed, grows to 5 feet tall and 1.5 feet wide. The leaves are whorled with 3 to 5

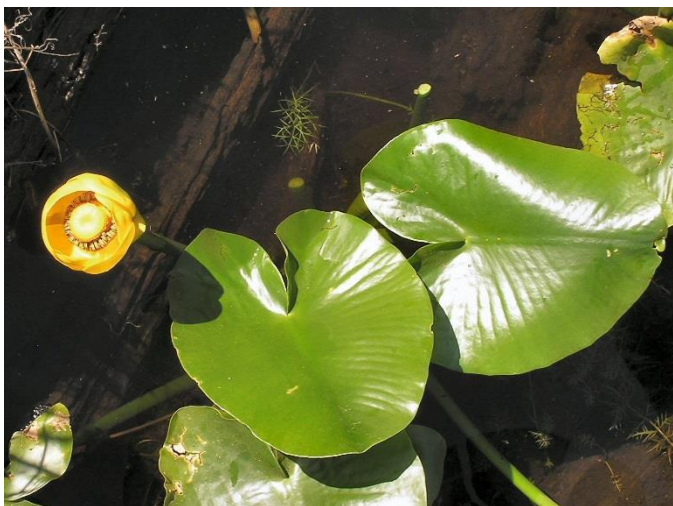
at each node, lance shaped, and to 8 inches long and 3 inches wide. The flowers are white, pink, or lavender, tiny, but in many flower heads densely clustered at the stem tips. The involucre bracts and exerted styles add a pink-lavender color. They appear from July to September. The plants occur naturally in moist to wet places in the plains, basins, and foothills, often along streams. They prefer full sun to light shade and moist to wet loamy soils. It can be grown from seed sown outside in the fall when the substrate is constantly moist. Barely cover the seeds with soil. It can also be grown from rootstock divisions taken in the fall and replanted with the crown just below the soil surface. There are several cultivars in the nursery trade.



*Eupatoriadelphus maculatus*, Platte County

*Nuphar polysepala*, Yellow Waterlily, grows in still or very slow moving water up to 6 feet deep. The leaves are oval with a deep notch at the base, up to 15 by 18 inches, and float on the water surface or are held just above the water. The flowers are yellow and cup shaped, up to 6 inches across, 1 per stalk, and either floating or held just above the water. They appear from May to August. The plants occur naturally in shallow lakes, ponds, and sluggish streams in the mountains. They prefer full sun and silty bottoms of lakes and ponds. They will not survive in shallow ponds that freeze to the bottom. They are rhizomatous and can be aggressive and take over a pond. To avoid this, grow them in large submerged tubs down 2 to 3 feet. They can be grown from rhizome cuttings or from seed that is first scarified and planted in soil under water in late fall below the freeze line. It is also in the nursery trade.





*Nuphar polysepala*, Fremont County, Idaho



*Polygonum amphibium* var. *emersum*, Albany County

*Polygonum amphibium* (*Persicaria amphibia*), Water Ladysthumb, has creeping or floating stems to 2 feet long. The leaves are elliptic or lance shaped, to 6 inches long and 2.5 inches wide and often floating when in water. The flowers are pinkish-rose, tiny, but in dense, crowded, oblong to ovoid clusters at tips of stems, the clusters up to 3 inches long and held upright above the water or mud. They appear from July to October. The plants occur naturally in shallow ponds, wet meadows, and on stream banks and shores in the plains, valleys, basins, and mountains. They prefer full sun in a shallow pond or muck along a shore or in a very wet meadow. They will tolerate drying after blooming. They may not bloom every year. Variety *emersum* can be grown in moist upland areas rather than very wet conditions. They can be grown from seed sown outdoors in wet mud or from rhizome cuttings. It is also in the nursery trade.



*Spiraea splendens*, Ravalli County, Montana

*Spiraea splendens*, Pink Spiraea, is a shrub to 3 feet tall. The leaves are to 3 inches long and about half as wide, toothed in the upper half. The flowers are deep rose-pink fading to light pink, small but in dense clusters to 2 inches across at the tips of stems and branches. They appear in July and August. The plants occur naturally in cool moist areas of the mountains, usually on stream banks. They prefer full sun or light shade and continuously moist soils. It can be grown from seed that has been cold stratified for at least 90 days. Barely cover with soil to allow some light exposure. It can also be grown from hardwood cuttings taken at leaf fall.

#### Wyoming Basin Ecoregion, continued from p. 1

Large-scale biomes across the region are identified as a conservation element (Table 1). Small-scale conservation elements include four plant species or species-groups (aspen, 5-needle pine, pinyon-juniper and riparian). Agents of terrestrial change include roads and railroads, oil and gas wells, wind turbines, mines, communication towers, transmission lines, urban development and agricultural development.

The Work Plan raises tough questions, e.g., where are the large, intact areas? How does BLM integrate activities at all these scales with conservation elements and threats? The Wyoming Basin REA Work Plan represents the first phase of the rapid ecoregional assessment, to be followed by a second phase that will address overarching management questions. (See next page for Table 1).

Wyoming Basin Ecoregion, cont. from p. 9  
Reference

Carr, N.B., Garman, S.L., Walters, Annika, Ray, Andrea, Melcher, C.P., Wesner, J.S., O'Donnell, M.S., Sherrill, K.R., Babel, N.C., and Bowen, Z.H., 2013, Wyoming Basin Rapid Ecoregional Assessment work plan: U.S. Geological Survey Open-File Report 2013-1223, 58 p., <http://dx.doi.org/10.3133/ofr20131223>.

**Table 1. Biomes of the Wyoming Basin Rapid Ecoregional Assessment**

Biome	% of Wyoming Basin REA	System
Lakes and reservoirs	0.6	Aquatic
Streams, rivers, and riparian	2.3	Aquatic
Wetlands	1.0	Aquatic
Sagebrush steppe	52.0	Terrestrial
Mixed desert shrublands	8.7	Terrestrial
Grasslands	7.2	Terrestrial
Foothill shrublands and woodlands	10.4	Terrestrial
Montane and subalpine forests and alpine system	13.4	Terrestrial

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Total enclosed: \_\_\_\_\_ **THANK YOU!**

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