



Castilleja

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Laramie False Sagebrush Saga

By Bonnie Heidel

In May, 1898, Aven Nelson first laid eyes on a yellow-flowered silvery sentinel perched above Laramie that he would later describe as *Tanacetum simplex* (Nelson 1899). Nelson's discovery came to be called Laramie false sagebrush (*Sphaeromeria simplex*), more closely related to *Artemisia* than to *Tanacetum* (Holmgren et al. 1976), in the North American *Sphaeromeria* genus. Laramie false sagebrush all but disappeared from botanical view after 1907, so it was included on the first roster of over 3000 United States plants identified by the Smithsonian Institute as possibly in need of protection under the 1973 Endangered Species Act (ESA).

A new chapter in the Laramie false sagebrush story opened when the type locality was rediscovered outside of Laramie by Robert Dorn in 1978. It was made a Category 1 species for listing on December 15, 1980 under the ESA, as heralded in "PLANT NEWZ" of the first Wyoming Native Plant Society Newsletter [1(1)] in May of 1981. The type locality was the site of a proposed quarry, a threat to the survival of the species. These dire



Above: Laramie false sagebrush (*Sphaeromeria simplex*).
By B. Heidel.

circumstances were changed by a conservation easement at the center of the type locality by The Nature Conservancy, a five-year effort that culminated in 1982.

Exciting survey results marked the start of a new chapter. Five additional populations were discovered by Robert Dorn starting in 1984 straddling four counties (Mountain West Environmental Services 1996) and six more populations were found in the 1990's by Walter Fertig, Ronald Hartman, and Amy (Roderick) Taylor. It remained on the Category 2 list until that list was discontinued in 1996. (*Continued on p. 8*)

30th Anniversary



2011 marks the 30th Anniversary of Wyoming Native Plant Society! Our Society was officially established in the merry month of May. But anniversary articles will run all year long.

Mark your calendar: The 2011 annual meeting of Wyoming Native Plant Society will be on June 24-26 in the Bighorn Mountains. You are cordially invited. The itinerary will be in the May newsletter and in a field trip mailing!

Field trip mailing: Look for a slate of fieldtrips across the state that will be announced in a separate spring mailing. The homepage will also be used to post any late additions or changes.

New Members: Please welcome the following new members to WNPS: Calla Canaday, Lusk; Lisa Cox, Laramie; Katie Driver, Fort Collins, CO; Julie Giacobassi, Wilson; Tim Lingle, Pinedale; Jarren Kuipers, Cody; Marion Mahaffey, Kemmerer; Steven Rolfsmeier, Chadron, NE; Brian Sebade, Lander; Patricia Siegel, Teton Village; and Amarina Wuenschel, Laramie.

Members for Life: Thank you to new life members! The lifetime membership option was created with passage of the 2010 By-Laws amendments. The lifetime membership fee is \$200, of which \$50 is directed to the Scholarship Fund.

2011 Scholarship Winner: We are proud to announce that the 2011 Markow Botany Research Scholarship is awarded to Nick Dobric for his Masters research on "Forest regeneration response to a bark beetle outbreak in northwest Wyoming." Nick is a University of Wyoming graduate student in the Botany Department, receiving the \$500 grant.

...See botanical New Year's Resolutions made by the President, p. 5.

Wyoming Native Plant Society
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Treasurer's Report: Balance as of 14 Feb:
Scholarship = \$2,705; General = \$3,693; Total = \$6,398.

Contributors to this Issue: Ann Boelter, Robert Dorn, Walter Fertig, Bonnie Heidel, Marcel Jouseau, Elena Kosovich-Anderson, Amy Taylor, Dorothy Tuthill.

The next newsletter deadline is April 18. Articles, announcements, and suggestions are welcome any time!

And now a word about our carbon footprint: The 100% recycled paper stock that was used last year would not fold well if the newsletter issue ran more than 10 pages, and it was literally heavier to mail, increasing postage costs when issues exceeded 8 pages. The stock used in this issue is only 10% recycled but from a Colorado mill. We are working with the University of Wyoming Copy Center to find the ideal, and welcome member expertise or research legwork.

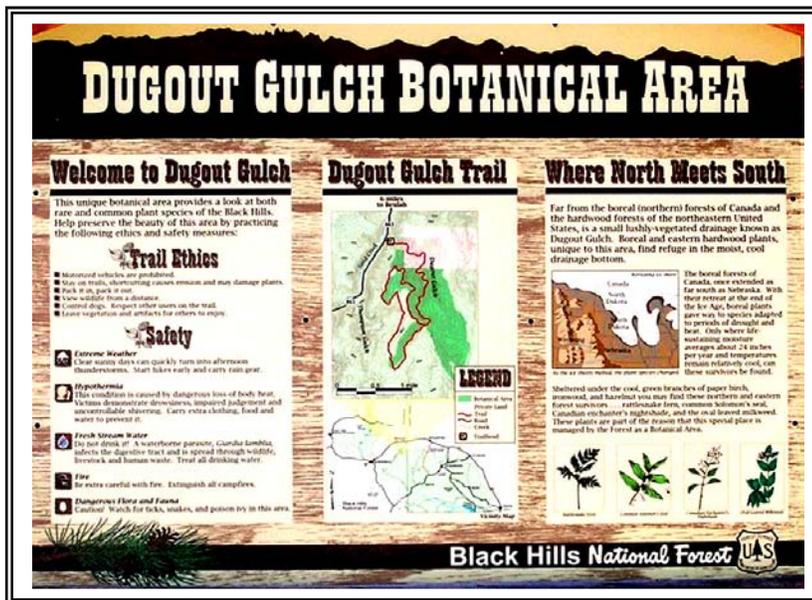
Wyoming Native Plant Society Beginnings

By Robert Dorn

The Wyoming Native Plant Society is indirectly a product of the environmental movement of the 1960's and 1970's. Before that time there was little attention paid to the environment. Rachel Carson's book *Silent Spring* in 1962 awakened the public to their surroundings. Wyoming was at the forefront of the movement, passing our first mine reclamation law in 1969 which required the filling of pits, regrading, and seeding. There was no requirement for the seeding to be successful, however. The National Environmental Policy Act, passed in 1970, required environmental analyses for all federally funded projects. This was followed by the Endangered Species Act in 1973. In that same year the Wyoming Environmental Quality Act was passed. This required mined lands to be returned to an equal or better use compared to premining. The Federal Surface Mining Act, passed in 1977, regulated coal mining in the entire country. Provisions were incorporated to allow states to run their own coal programs after "jumping through the usual federal hoops." Federal funding was provided for certain aspects of the program. In that same year, 1977, I began working for the Wyoming Department of Environmental Quality (DEQ) as a plant ecologist. Part of the Federal funding could be used to obtain data on rare or endangered species. DEQ contracted with The Nature Conservancy to establish a Natural Heritage Program in the state. An office was opened in Cheyenne and I was appointed the liaison between the Conservancy and DEQ. Bob Lichvar was the plant taxonomist with the Conservancy and he was primarily responsible for establishing the Wyoming Native Plant Society. Other Conservancy personnel among our first members included Mark Stromberg (zoologist), Don Shute, Ellen Collins, Tom Wolf, and Linda Williamson.

In the early years, the Society was involved with nominating research natural areas on the national forests. Most of these failed because of the provision that required at least 50 years of no grazing on the area. There were few other

avenues for protection at that time. One notable success we did have was stopping a logging road from being constructed through Dugout Gulch in the Black Hills. Dugout Gulch harbors a dozen or more rare Wyoming plants. I discovered the area on July 3, 1976 when I found three first state records, *Geum canadense*, *Polygonatum biflorum*, and *Halenia deflexa*. I also found five additional first state records in Crook County and two first state records for Montana during that weeklong field trip to give you some idea of how well the area was collected at that time. The Society had its annual meeting and field trip there in 1982 only to discover that the gulch was staked for a new logging road. We then contacted the Forest Service and voiced our concern about the road. You can see a brief history of the proceeding by visiting the Society website and looking at the Society newsletters for October 1982, page 2, and November 1984, page 5. The ultimate outcome did not materialize until many years later when it became a designated Botanical Area.



Above: Black Hills National Forest sign

It doesn't hurt to be vocal. Civilized society has been busy destroying the planet. If someone doesn't point out the biological resources we have, they will be destroyed and the average person will never know it happened. I would hope that some of our younger members, if they are so inclined, will become active in speaking out and pursuing protections for important native plant areas.

Not So Long Ago...



1987 Annual Meeting Attendees – left to right, 1st row: Louis Williams, Robert Dorn, Gail Chance, Jane Dorn, Virginia Wheeler, Marlene Juday, Michele Potkin; 2nd row: Neil Snow, Dennis Knight, Erwin Evert, Ronald Hartman, Rick Juday, Ernie Nelson; 3rd row: Larry Cook, George Jones, Pat Pachuta, Hollis Marriott. Photo by Phil White.

Even as we rally around plants, we celebrate members, both new and long-standing. Above is one of the earliest gatherings ever captured on film, taken in the Laramie Range. Below is a flashback to 1981, drawn from newsletters and archives for the first 20 years (Vignettes by Walter Fertig. Reprinted from *Castilleja* 20(2); posted online).

1981 Ronald Reagan had just been inaugurated as the nation's 40th President, James Watt was making headlines as the new Secretary of the Interior, Governor Ed Herschler was advocating economic development on "Wyoming's terms", and a group of plucky, pie-eating biologists met in Cheyenne to found the Wyoming Native Plant Society. The inaugural, 2-page issue of the Wyoming Native Plant Society Newsletter appeared on May 18 and was sent to 23 members. By the end of the year, membership would grow to 41 and the Society's bank account would reach \$220.



Much of the efforts of the Society in 1981 were directed at recruiting new members, establishing the by-laws, and promoting education and plant conservation. During its first year, the newsletter featured short articles on efforts to list two Wyoming endemics (Laramie false sagebrush and Ross' bentgrass) under the Endangered Species Act, threats to the rare meadow pussytoes from proposed gold mining in the South Pass Area, and the first installments in a series of articles on the early botanical exploration of Wyoming.

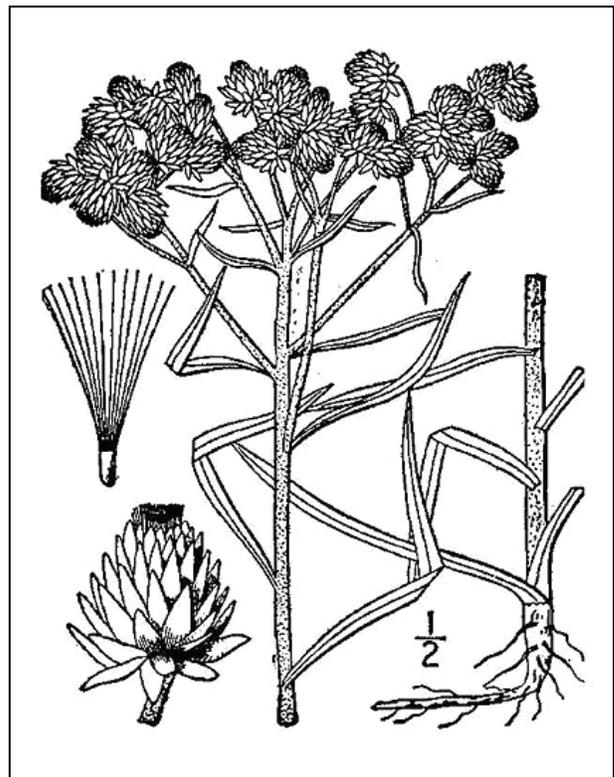
President's Greeting and New Year's Botanical Resolutions

By Amy Taylor

Greetings from the northwest corner of Wyoming. As newly elected president, I am honored and excited to come on board as Wyoming Native Plant Society (WNPS) celebrates 30 years of promoting the state's native plants and habitats. Anniversaries offer the opportunity to reflect back and look forward. I first became involved in WNPS in 1997 as a graduate student in the Botany Department at the University of Wyoming. I quickly became a WNPS groupie. Field trips were a chance to experience Wyoming's wild landscape, visit the rarest plants, and rub botanical elbows with some of the best folks. Among them were Stuart Markow, Robert Dorn, Walter Fertig, Ron Hartman, Ernie Nelson, Hollis Marriot, Erwin Evert, Charmaine Delmatier, and fellow graduate students.

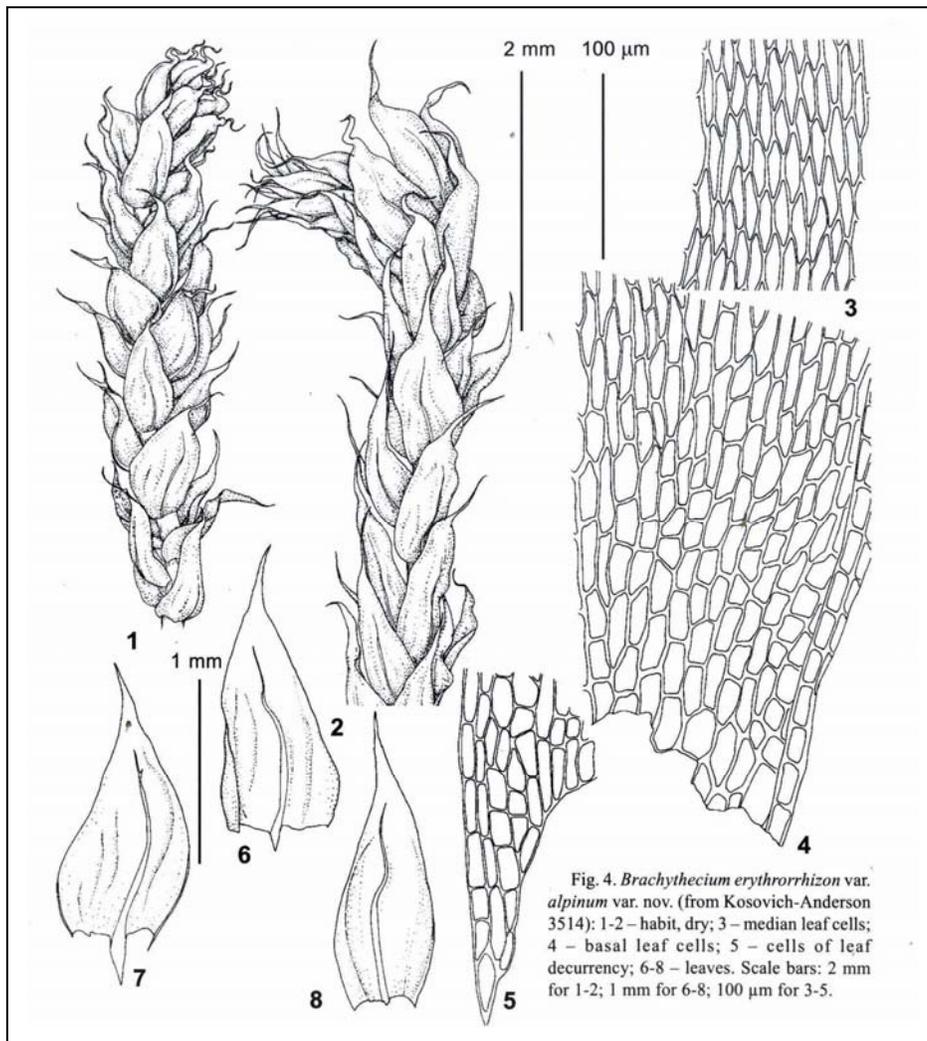
Fourteen years later, WNPS remains my source for botanical inspiration, information, and connection to others in the state. Each year I look forward to four newsletters (*Castilleja*), local field trips, and the annual meeting. And while I've never been great at making and keeping New Year's resolutions, I decided I might have better luck with botanical New Year's resolutions – *especially if they are in print!* My list, in no particular order, is below. I encourage you to make your own list.

1. Attend annual meeting in the Bighorn Mountains
2. Differentiate between local Aster species **and** try to remember to which genera they are now assigned - *Almutaster*, *Eucephalus*, *Eurybia*, *Ionactis*, *Oreostemma*, and *Symphyotrichum* (Dorn's Third Edition of *Vascular Plants of Wyoming*, 2001)
3. Add to my book collection: Field Guide to Grasses of Wyoming (Skinner 2010), vintage flower books



Above: Pearly everlasting (*Anaphalis margaritacea*) adorns Wyoming byways. From: N.L. Britton and Addison Brown. 1913. *An Illustrated Flora of the Northern United States, Canada and the British Possessions*. Charles Scribner's Sons, New York, NY. Images scanned by Omnitek Information Services, Inc. for the Kentucky Native Plant Society.

4. Hug a whitebark pine (*Pinus albicaulis*)
5. Seek out plants to add to my "life list" – Jones columbine (*Aquilegia jonesii*) and Hesperochiron (*Hesperochiron* sp.) – a member of the Waterleaf family that stumped most everyone at a recent Teton Chapter game night of "Wildflower Jeopardy".
6. Lead a local field trip
7. Collect heartleaf arnica (*Arnica cordifolia*) to make a sore-muscle/bruise salve.
8. Teach our 5-year old daughter at least 5 new wildflowers
9. Contribute to *Castilleja* newsletter
10. Think of WNPS whenever I see pearly everlasting (*Anaphalis margaritacea*) . . . Pearls, after all, are the traditional 30th anniversary gift. ...Happy 30th Anniversary Wyoming Native Plant Society!



Above: *Brachythecium erythrorrhizon* Bruch, Schimp. & Gumbel var. *alpinum* Kosovich-Anderson & Ignatov. Illustration by E. A. Ignatova. Reprinted with permission from *Arctoa*.

Wyoming Brachytheciaceae (Bryophyta): three rarities for North America

Three significant Brachytheciaceae moss discoveries were recently announced from collections made on the Beartooth Plateau of Wyoming (Kosovich-Anderson and Ignatov 2010). They include the newly-described variety, *Brachythecium erythrorrhizon* Bruch, Schimp. & Gumbel var. *alpinum* Kosovich-Anderson & Ignatov; *Brachythecium brandegei* (Austin) H. Rob., a species previously considered a highly localized endemic of Colorado; and *Sciuro-hypnum glaciale* (Bruch, Schimp. & Gumbel) Ignatov & Huttunen, an arctic-alpine species collected for the first time in continental North America, far-removed from the nearest known localities in Greenland and representing an extraordinary disjunction in the Rocky Mountains. All three taxa were collected as part of the senior author's documentation of the bryophyte flora in the Beartooth Mountains (Shoshone National Forest). The newly discovered mosses are rare in North America and may warrant conservation consideration in the state.

References

Kosovich-Anderson, Y.I, and M.S. Ignatov, 2010. Three interesting Brachytheciaceae mosses from the Beartooth Plateau (Rocky Mountains, Wyoming, U.S.A.) *Arctoa* 19: 183-190. Posted electronically at: <http://arctoa.ru/ru/Archive-ru/19/17Wyoming.pdf> .

A Surprising Addition to the Flora of Wyoming

By Marcel Jouseau

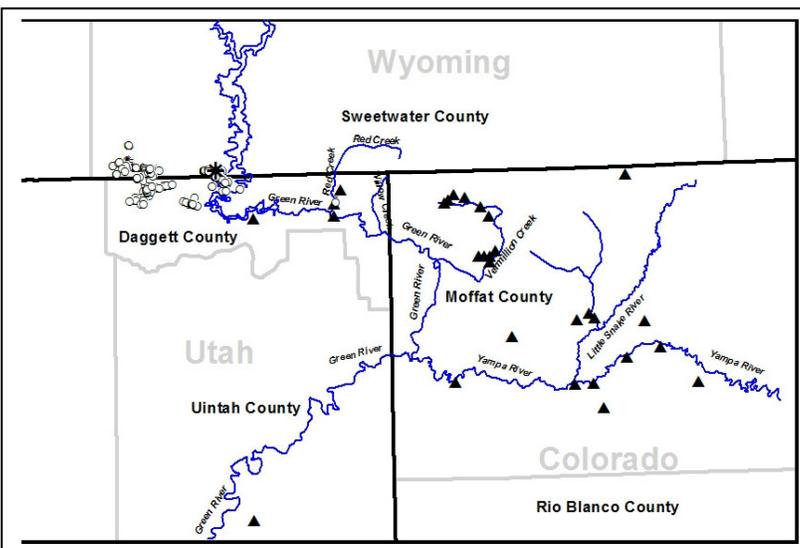
A large genus of Wyoming plants just got larger. There is one new addition to the *Penstemon* genus, previously reported with 46 taxa (Dorn 2001). In early June 2010, while carrying out a mapping survey to document the geographic distribution of *Penstemon acaulis* L.O. Williams, in southwest Wyoming, I came across plants of *Penstemon yampaensis* Penland [syn. *P. a.* var. *yampaensis* (Penl.) Neese]. This lucky find occurred on a ridge north of the Lucerne Valley, approximately one mile north of the Wyoming-Utah state line. A voucher was deposited in the Rocky Mountain Herbarium (accession # RM 827540) viewable at: <http://www.rmh.uwyo.edu/>.

distribution of *P. acaulis* is limited to the Flaming Gorge Basin with its northern limit a narrow strip of land in Sweetwater County north of the Utah-Wyoming state line. The eastern limit Red Creek, Browns Park area, in Daggett Co, Utah; the western limit is about 5 miles west of McKinnon, Sweetwater County and the southern limit is Phil Pico Peak lower slopes and Sheep Creek Gap in Daggett County, Utah (see map) However, the identity of the specimens collected in the Red Creek area and a specimen of *P. acaulis* collected in Uintah Co., Utah (Kass & Preston #2679) may not have been finally resolved as they may belong to *P. yampaensis* (Franklin, 1992). Franklin states that the range of *P. acaulis* "does not extend further east than the east end of the Lucerne Valley Peninsula." The location of the new find of *P. yampaensis* places this record approximately 25 miles northwest of the westernmost record in

Browns Park and practically in the center of the known distribution of *P. acaulis*.

Previously the potential overlap of the two taxa had been suggested by Fertig and Welp (2001) who stated: "Specimens of *P. acaulis* from the Brown's Park area along the Utah/Colorado border have broader l leaves and appear to be morphologically transitional towards *P. yampaensis*..." echoing Neese in Welsh et al. (1987) who wrote: "*Penstemon acaulis* is an unusual penstemon of unparalleled dwarf habit. Plants at the eastern end of the distribution have slightly larger leaves and flowers and have been recognized as *P. yampaensis* Penl., but specimens from Brown's Park, Utah, near the Colorado border are

geographically and morphologically transitional. The variation seems best recognized at the varietal level...".



Above: Distribution of *Penstemon acaulis* (○) and *P. yampaensis* (▲) plus its new location in Wyoming (*). Map by M. Jouseau.

Up to now *Penstemon yampaensis* was known only from northwestern Colorado Moffat County and northeastern Utah Daggett County and Uintah County. More specifically, in Colorado the taxon is found in the Yampa River watershed, Vermillion Creek watershed, Snake and Little Snake watersheds. Better known locations include Irish Canyon, Maybell, Sunbeam. In Utah it is known from Clay Basin and Browns Park in Daggett Co. and one location in Uintah Co. By contrast the

A comparison of the voucher with the voucher for the specimen collected by Penland and deposited in the Rocky Mountain Herbarium (accession # RM 248800) shows identical characteristics. The plant is definitely caespitose and acaulescent. The leaves are cineraceous (grey color), 20 mm long and 2.5 mm wide, oblanceolate, acute. The calyx is 6.5 mm long with lobes that are long and acuminate. The corolla is 16 mm long, rosy pink and externally pubescent, with golden

beard in the throat. Three flowers emanated from the same point on the stem, on individual pedicels 7mm long and 0.5 mm in diameter. No seeds were observed on the plant.

Penstemon yampaensis was found growing in shallow, sandy soil on a flat rocky ledge of the Wasatch Formation, as determined by overlaying the location of the plant specimen on a digital copy of Love's map of the geology of Wyoming. The ground was void of any forbs, other than *P. acaulis*, or grasses. The conditions are windy and arid. A few junipers are scattered along the ridge. Plants are permanently exposed to full sun.

It is always thrilling to find new locations of taxa outside their known distribution and this find was especially so, as it was unexpected. With this find come questions regarding the distribution of the two varietal forms as well as the evolution of these two taxa. This find also suggests the need for

surveys to determine whether additional plants of *P. yampaensis* can be found in Wyoming along the Utah and Colorado state lines and to determine the overall distributions of the two taxa in the regional context of the three states and the extent of the overlap and transitional forms.

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- Neese, E. 1987. *Penstemon* Mitch. in: A Utah Flora, Great Basin Naturalist Memoir No.9, 1987, Brigham Young University. ed.: Welsh Stanley L., D. Atwood, S. Goodrich and L.C. Higgins. pp. 894.

Laramie false sagebrush saga, cont. from p. 1

The rocky, wind-swept habitats of Laramie false sagebrush were on lands managed by the BLM. So in 2001, Laramie false sagebrush was designated sensitive by the Wyoming BLM. The BLM sensitive species designation is intended to help prevent the need for federal listing of species as Threatened or Endangered.

More recently, major new wind energy resource areas were identified that overlap with known and potential distribution of Laramie false sagebrush. The potential distribution was identified in a model (Fertig and Thurston 2003) that had never been tested. For these reasons, additional surveys were conducted by Wyoming Natural Diversity Database in 2009.

In ensuing work, we (Joy Handley and I) expanded the distribution of Laramie false sagebrush at ten known collection stations and found six new populations, for a total of 22 population records in parts of the Laramie and Shirley Basins, and in the Shirley Mountains. The most current status report (Handley and Heidel 2010) brings all prior work into the "GIS age" and provides current information needed to maintain its populations, building on all other botanical endeavors.

Laramie false sagebrush has become a landmark plant of sorts for the Wyoming Native Plant Society, and this article is by no means the last chapter in the saga. We run it as a tribute to the legions of people who have made contributions to its current status, to all who care enough about plants to read about them, and as a bridge to the saga chapters that have yet to be written.

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Berry Center: Breaking New Ground By Dorothy Tuthill, Associate Director



Above: Bird's-eye view of Robert & Carol Berry Biological Conservation Center. By Malone Belton Abel PC.

Next time you visit the University of Wyoming campus, be sure to stop by the new Berry Biodiversity Conservation Center (BC), located a few buildings north of the Botany Department, just south of Lewis Street. The structure and its missions have been under construction for the last two years or so, and both reflect a progressive vision for UW. The structure will be LEED certified, hopefully at the level of GOLD, the second highest grade for a green building. Landscaping on all sides will provide continuity between the building and the campus grounds, and a sense of place, with local boulders, mature spruce trees, perennial plants, and plenty of places to sit and relax or study.

One of the Center's missions is to inspire passion for the natural world, provide a public gateway to all the related facilities and resources on campus, and increase understanding of biodiversity and intact ecosystems. Still in development, plans include state-wide science activities, a variety of on-campus opportunities for K-12 students, and programs and events of local interest at the Center's auditorium. Several rooms are equipped for long-distance education, with videoconferencing and webcasting capabilities.

Another of the Berry Center's missions is to enhance collaborative and interdisciplinary research by bringing together scientists, students and laboratories from across campus. Three of the labs

are core facilities available to all researchers and students, including the Nucleic Acid Exploration Facility, the Macromolecular Core Equipment Facility, and the Stable Isotope Facility. The Berry Center is also home to the director of the Program in Ecology, twenty-two graduate students from four departments, the Zoology Department's vertebrate collection, two Zoology faculty members, the Berry Chair in Ecology, and the Wyoming Natural Diversity Database, a research group on Wyoming's rare species.

The green roof is a feature that will especially interest Wyoming botanists, to be planted in the summer of 2011. This 3600 square foot space covers much of the first floor, including the vertebrate collection room, where its insulating effects reduce the cost and effort of keeping that large room at correct temperature. The roof will be planted with 4200 seedlings and plantlets, in about 50 different species, all found within the Laramie Basin or surrounding foothills. The irrigation system is zonal, so that the combination of soil depth and watering differences will provide a variety of microclimates. A winding flagstone path will lead visitors among the plantings, which will include a cactus garden, a variety of shrubs, and swales of wild flowers. As in the Laramie Basin, the whole will be tied together with grasses and sedges. Most of the plants will be purchased, but some must be grown from seed. Faculty and students in the Department of Plant Sciences have already begun that task.

Not only will the garden be beautiful and inspiring (we hope!), it will provide educational opportunities for students of all ages. No other native-plant green roof has been constructed at such a high elevation, nor, of course, has any used this combination of species. There will be plenty to investigate—from species-specific mortality, to seed set, to pollinators, and much more—to keep students occupied for years.

The Berry Center was made possible through the generosity of Robert and Carol Berry, of Wolf, WY, with support of the Wyoming State Legislature. The Berrys are actively involved in conservation and restoration of the orange-breasted falcon, a native of South and Central America. When visiting the BC, be sure to stop in the administration office to say HI and admire the commissioned painting of these elegant birds.

What Good Is It For?

The rarest native plants and their habitats are more than curios. Laramie false sagebrush, highlighted in this issue, was identified as source of a potential antitumor drug in the 1980's.

Dugout Gulch, also mentioned in this issue, is featured in a new report to the Forest Service that documents Bigelow's tansy-aster (*Dietaria bigelovii*; syn. *Machaeranthera bigelovii*) as a new addition to the Black Hills flora. It is a northern outpost of global species' distribution, an extension of over 100 miles from the Laramie Mountains (Elliott 2011). Dugout Gulch is truly a textbook in biogeography, and we haven't begun to read all the pages!

References

Elliott, B.A. 2011. Dugout Gulch floristic inventory.
Prepared for Black Hills National Forest.
Elliott Consulting, Laramie, WY.

Wyoming Native Plant Society is a non-profit organization established in 1981 to encourage the appreciation and conservation of the native plants and plant communities of Wyoming. The Society promotes education and research through its newsletter, field trips, and annual student scholarship award. Membership is open to individuals, families, or organizations. To join or renew, return this form to:

Wyoming Native Plant Society
P.O. Box 2500, Laramie, WY 82073

Name: _____

Address: _____

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- \$7.50 Regular Membership
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