Castilleja

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In this issue:

Entire-leaved Pepperweed (*Lepidium integrifolium*) is a white-flowered, fleshy-rooted perennial in the mustard family (Brassicaceae) restricted to southwestern Wyoming and northern and central Utah. In Wyoming, this species is currently known only from alkaline wetlands in Fossil Butte National Monument, where it is often found with Greasewood on slightly raised clay mounds. Other historical populations near Carter and Cokeville, Wyoming have not been relocated in recent years, nor, have any populations been found recently in Utah, where this species may be extirpated. Despite its rarity, Entire-leaved pepperweed has no formal, legal protection, although it has recently been proposed for "Sensitive" status by the BLM Wyoming State Office. The colonies on Fossil Butte National Monument were only discovered in 1996 by Park naturalist Clay Kyte and are currently thriving under full protection. Illustration by Walter Fertig.

WNPS NEWS

Y2K + 1 Student Scholarship: The WNPS Board is pleased to announce the winner of the 2001 student scholarship: Justen Bryant Whittall of the University of California at Santa Barbara. Justen's project will address the "Pollination and habitat characterization of the rare Wyoming endemic *Aquilegia laramiensis* (Ranunculaceae): the missing link to understanding the diversification of North American columbines?". The Board has awarded Justen a scholarship of $500. The remaining funds in the scholarship pool will be applied to the 2002 contest. Thanks are extended to all those who applied this year and to WNPS members who made the scholarship possible through their generous contributions.

Summer 2001 Field Trips: The WNPS annual meeting/field trip is scheduled for the weekend of June 23-24, 2001 in the Bighorn Mountains. On Saturday, June 23, we plan to visit the Story area for Mountain and Yellow ladys slippers, the Sourdough Creek area for the Northern blackberry (*Rubus acaulis*), and subalpine areas along Highway 16, before camping at The Nature Conservancy's Tensleep Preserve. On Sunday, we will explore Tensleep for Cary's penstemon and other rare plants, and if time allows, visit the Hyattville area for the endemic Hyattville milkvetch (*Astragalus jejunus* var. *articulatus*).

A second field trip will be held in the Sierra Madre in mid July. We plan to visit the Jerry Park area to see Colorado tansy-aster (*Machaeranthera coloradensis*) and other regional endemics and the Deep Creek area for Clustered ladys slippers, Short-styled bluebells, and other interesting species. Look for more details on both trips in the May newsletter.

Election Time is Near: It is time once again to fill upcoming vacancies on the WNPS Board. If you are interested, or know someone who ought to run, please contact the Secretary-Treasurer. A ballot will appear with the annual renewal notice in the upcoming May issue.

New Members: Please welcome the following new members of WNPS: Jan and Dave Dobak (Portland, OR), Debra Stern (Laramie), Richard Vincent (Laramie).

Treasurer's Report: Balance as of 26 March 2001: General Fund $627.61; 2000-2001 Student Scholarship Fund $187.50; Total funds: $815.11.

Wyoming Native Plant Society
PO Box 3452, Laramie, WY 82071

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Contributors to this issue: John Baxter (JB), Bill Brenneman, Robert Dorn (RD), Walter Fertig (WF), Lynn Kinter, Stuart Markow.

Letters

Dear Editor: Regarding the article "The enemy of native plants: noxious weeds" (*Castilleja* December 2000): while stressing the enormity of this invasion, the author's list is incomplete and their controls are futile. A few of the omitted species are cheatgrass (*Bromus tectorum*), know mantling much of our rangeland (and most difficult to control) and Russian olive (*Elaeagnus angustifolia*), now invading our cottonwoods in the North Platte River drainage. Sadly, private and public nurseries continue to sell this and other undesireable exotics.

The foremost and only economical control for undesireable weeds is biological control. Wyoming and Colorado authorities have been controlling Purple loosestrife (*Lythrum salicaria*) with an imported beetle (*Galerucella* spp.). The same authorities control Canada thistle (*Cirsium arvense*) with a beetle from the Balkans where Canada thistle is native.

Herbicides are usually a failure on WY Hwy 10 (near my home). Mullein (*Verbascum thapsus*) seems to thrive on 2,4D and now dominates. On other highways, it may be benign exotics such as Smooth brome (*Bromus inermis*) which is immune to phenoxy sprays. Such exotics are poised to invade adjacent overgrazed or burnt range land.

I made a survey last year for the Medicine Bow National Forest and found few noxious weeds above 8000 feet in elevation. Even on recent clear cuts I found only the transitory Foxtail (*Hordeum jubatum*), a native that often acts weedy. At lower elevations along the North Platte River I did find undesireable aliens on equestrian trails and on a prescribed burn area. On this site Musk thistle (*Carduus nutans*) was dominant. Dalmatian toadflax (*Linaria dalmatica*), which might be eliminated economically with herbicides, was found at long abandoned homesteads in the Medicine Bow.

- Bill Brenneman, Jelm, WY.

[Ed. Note: The article by Parsons, Succop, and Byrne specifically addressed only the 20 species officially listed as Noxious Weeds by the State of Wyoming.]

Botany Briefs

Macoun's Bindweed IS Found in Wyoming. Macoun's bindweed (*Calystegia macounii*), a twining perennial in the Morning-glory family, was reported for Wyoming in the *Flora of the Great Plains* (1986), based on an historical collection from "4 miles below U.L. Ranch" in Niobrara County made in the late 1890s. This record had been considered questionable and the species was not included in Dorn's *Vascular Plants of Wyoming* (1992). In September 2000, Laura Welp and I discovered a small population of Macoun's bindweed in a moist meadow along Diamond Creek on F.E. Warren Air Force Base, just west of Cheyenne (Laramie County). Macoun's bindweed can be distinguished from its close relative, *C. sepium* (featured on the cover of the May 1999 issue of *Castilleja*) by its pubescent herbage and rounded, rather than angular, leaf bases. *C. macounii* is a weedy native found primarily in the Great Plains from eastern Montana to Colorado and east to Minnesota and Missouri. WF

The Life Cycle of *Puccinia similis* on *Artemisia* species. The rust fungus *Puccinia similis* is widespread in Wyoming on *Artemisia tridentata, A. cana,* and *A. tripartita.* Until recently, the initial stages (spermagonia and aecia) of the life cycle were unknown. In June, 1997, overwintered teliospores were used to inoculate rust-free plants of *Artemisia tridentata* and *A. cana.* Spermagonia and aecidioid aecia developed on both host species. JB

Update on Blowout Penstemon in Wyoming. In July 2000, Frank Blomquist of the BLM Rawlins Field Office and I located a second population of Blowout penstemon (*Penstemon haydenii*) in Wyoming, approximately 5 miles north of the first population of this federally Endangered plant that Frank discovered in 1996 (see *Castilleja,* October 1999). This population, located along the south flank of Bear Mountain and adjacent slopes of Junk Hill, numbered between 3500-5000 individuals in 2000, making it the largest known population of Blowout penstemon in the world! The plants are located primarily on steep slopes of shifting sand piled up at the base of granitic and sedimentary slopes. Blowout penstemon occurs most commonly on sparsely vegetated slopes with Blowout grass (*Redfieldia flexuosa*), Thickspike wheatgrass (*Elymus lanceolatus*), and Lemon scurf-pea (*Psoralidium lanceolatum*), but may also be found in choppy dunes amid Silver sagebrush (*Artemisia cana*), or above seep springs dominated by Chokecherry (*Prunus virginiana*) and Stinging nettle (*Urtica dioica*). Surprisingly, Blowout penstemon seems to be absent from more gently rolling dunes that occur widely in the Ferris Mountain area and vicinity. These low dunes may not capture enough winter moisture in the form of blowing snow, or lack supplemental water sources from mountain springs to maintain penstemon populations. WF

Above: Blowout penstemon on steep, sandy slope by Walter Fertig.

Are Some "Weeds" Really Native? Purslane (*Portulaca oleracea*) is a low-growing, yellow-flowered annual forb with somewhat succulent leaves. It occurs widely across North America (and Wyoming) as a weed in disturbed soils of roadsides, trails, and gardens. Purslane is considered non-native in most floras, and is thought to have first reached the Caribbean and New England with European colonists in the 16th and 17th centuries. Recent fossil pollen samples from Crawford Lake in Ontario, however, indicate that purslane was present in an Iroquois village as early as 1360 – over 130 years before Columbus reached the Americas. Crawford Lake is permanently stratified (there is no spring and fall turnover of water and sediments as is typical of most temperate zone lakes) and so annual layers of sediments are produced and can be precisely dated. Archaeological data indicate that the Iroquois were raising maize and beans in the area at the time purslane pollen and seeds were being buried by lake sediments.

Other recent paleobotanical studies indicate that Carpetweed (*Mollugo verticillata*), another presumed exotic, was present at Pre-Columbian sites in Tennessee and Alabama. Likewise, seeds of bugseed (*Corispermum* spp.), a group of annual chenopods often presumed to be introduced from Eurasia, have shown up in late Pleistocene soils in Alaska, western Canada, and the southwestern US. While these species may behave as weeds and are increasing and spreading in the wake of human-induced habitat destruction, all should be considered native to North America. WF

Reference: Jackson, S.L. 1997. Documenting natural and human-caused plant invasions using paleoecological methods. In: J.O. Lukens & J.W. Thieret (eds.) Assessment and Management of Plant Invasions. Springer-Verlag.

True Grit:
The Dirt on Cryptogamic Crusts

by Lynn Kinter and Stuart Markow

An afternoon stroll across the arid grasslands near Dubois reveals an odd patch of ground surface that is distinctly different from that of the surrounding mosaic of bare soil and low vegetation. The coarse, dark, granular appearance suggests that someone had dumped a bag of brown sugar out on the desert floor in hopes that it would somehow improve the stark, monotonous landscape. Closer inspection reveals that it is actually a mat of what seems to be tiny plants in various stages of growth, development, and decomposition. It looks like it might be alive. And at the same time, it doesn't ...

What we are looking at, of course, is what is referred to as a cryptogamic crust, also known as biological soil crust, microbiotic crust, and cryptobiotic crust. Regardless of the adjectives that one prefers to use, this "crust" has been described as "a dense, low-growing community of various combinations of bacteria, algae, mosses, liverworts, cyanobacteria, fungi and lichens." These organisms grow together at the soil surface, with algal filaments, fungal hyphae, moss rhizoids, and bacterial colonies intertwining and growing down into the soil to form a living crust.

In the United States, cryptogamic crusts develop best in semiarid shrublands. However, they may form in a variety of habitats including grasslands, open woodlands, subalpine slopes, and arctic tundra. The exact composition of these crusts varies greatly with climate, soils, and other environmental factors. In desert habitats, species of filamentous cyanobacteria (AKA blue-green algae) dominate along with certain groups of diatoms. Other kinds of algae are found in sagebrush or grasslands, and lichens may be especially common in soils with particular texture and mineral content.

None of these provide the kind of visual display created by wildflowers or glowing sunsets, and are, therefore, rarely featured on posters, placemats, or lunchboxes. However, it has recently been discovered that these curious biological conglomerates exert a major influence on terrestrial ecosystems. In the last 50 years, several hundred papers have been published documenting the importance of crusts to site stability and productivity, particularly in the arid west. Let's take a look at some of the effects attributed to these strange communities:

Erosion control: The rough, tightly woven surface of cryptogamic crusts helps to hold soil in place in areas characterized by persistent wind and occasional torrential downpours. Additionally, the photosynthetic components often leak sticky carbohydrates which readily adhere to soil particles, holding them in place. A study conducted in Australia demonstrated that, as

Above: Scanning electron micrograph of cyanobacterial sheath material sticking to sand grains (90 x). Photo from USGS/BRD soil crust web site (www.soilcrust.org).

cryptogamic cover increased, erosion declined exponentially. In another study, crusts actually trapped wind-blown particles, resulting in the accumulation of soil, rather than loss of it.

Improved soil fertility: Crustal organisms routinely release photosynthetic products to the soil where they can be used by other organisms. Some of them also fix significant amounts of nitrogen, and the crust as a whole can increase soil levels of phosphorus, potassium, and other minerals by retaining fine soil particles. These nutrients are readily available to vascular plants, and such plants growing in crusted soils generally have much higher mineral content compared to those growing in non-crusted soils.

Provision of food: Cryptogamic crusts provide food for insects, snails, nematodes, protozoans, and other invertebrates. Many of these are prey items for rodents, birds, lizards, spiders, and scorpions, thus helping to support the lower tiers of the food chain.

Favorable site conditions for seedling establishment: Seeds located in cracks and crevices of crustal surfaces may have a nutrient and moisture advantage and enhanced seedling establishment. Study of a rare mustard (*Arabis fecunda*) in Montana disclosed higher numbers of older and larger plants on crusted soils, indicating increased seedling survival over those in soils without crust.

The effects of cryptogamic crusts on soil moisture are curiously contradictory. On one hand, they decrease water permeability by sealing the soil surface, yet the rough crust seems to increase infiltration by detaining small pools of water. They may retard evaporation by holding moisture in the soil, or accelerate it because dark-colored crusted soil absorbs more sunlight than does light-colored bare ground. However, following evaporation, the crusts may contain ten times as much water as non-crusted soils.

Several other ecological roles of cryptogamic crusts have been suggested. While research has not identified every function and mechanism of these communities, they undoubtedly contribute to the well-being of the ecosystem in numerous ways.

These crusts are relatively fragile, and highly vulnerable to the abuses that have been imposed on western rangelands in general. Trampling, whether by humans, wildlife or livestock, takes a heavy toll. Because growth generally occurs only during periods of favorable moisture conditions, recovery may take 100 years or more, depending on the degree of destruction and local site conditions. Fire, vehicular travel, and pollution all contribute to their demise.

However, probably the greatest impact to cryptogamic crusts is from deliberate destruction of them in the name of "habitat improvement" which is, essentially, a euphemism for growing more food for livestock and, sometimes, for big game. In the 1930s, range managers noted that mechanical pitting resulted in increased forage production. The reasoning behind this operation was to "encourage water infiltration and decrease water runoff .... pitting minimizes wind effects and traps moisture." Despite the lack of scientific support, this treatment has been used on millions of acres of rangeland ever since.

Some livestock operators have gone a step further and used this concept to justify high intensity grazing, on the premise that livestock trampling grinds and fragments the soil particles in a manner similar to mechanical pitting. No doubt there is a short term flush in plant growth (at least, under some circumstances), but, to date, no research has assessed long term effects of crust destruction. Based on what is known about them now, it appears likely that evaporation would increase, and, ultimately, lower productivity. Increased erosion is also likely. Additionally, crust destruction seems to encourage the establishment of weedy annuals such as cheatgrass. Increased biomass of these species could produce more fine fuels, shorten the fire return interval, and further degrade the site.

Despite the fact that here has been no research conducted to investigate the long-term consequences of crust destruction, range managers still use mechanical pitting to increase water infiltration and forage production. Over one hundred papers published in recent years attest to the ecological benefits of these crusts. However, popular thinking and pressure from the commodity interests continue to direct land management activities.

Clearly, there is still much to be learned about these communities, in terms of both their structure and ecology. As it stands now, we have only a partial knowledge of their species composition, and new taxa are showing up all the time. Recent examination of soil crusts in central Wyoming by mycologists Jack States and Martha Christiansen (both at the University of Wyoming) disclosed the presence of 8 species of fungi which were previously unknown to the area. Who knows what new organisms may be found in the future, and what their potential benefits may be? Only intensive study culminating in clear understanding will enable us to decide how to best treat these complex systems, for the benefit of ourselves and for the other organisms with which we share the earth.

Plant Names - Part 2

The International Code of Botanical Nomenclature (ICBN or Code) is the law book for naming plants. The Code consists of six principles followed by rules, which are mandatory, and recommendations, which are not mandatory. Briefly, the principles are: botanical nomenclature is independent of zoological nomenclature, names are based on nomenclatural types (usually a preserved specimen), priority of publication governs, there can be only one correct name for each taxon, names are in Latin, and the rules are retroactive. A sampling of rules follows. A name can be used only if it was validly and effectively published. "Valid" and "effective" are defined in the Code. The specific epithet may not be the same as the generic name. For example, *Acer acer* is inadmissible. A new combination is not valid unless its basionym is indicated along with a full and direct reference to its author and place of valid publication. A name for a new taxon must be accompanied by a Latin description or diagnosis. When a name is transferred, the original author's name must be cited in parentheses followed by the name of the transferring author, for example, *Atriplex canescens* (Pursh) Nutt. which is based on *Calligonum canescens* Pursh. A name has no priority outside its own rank. For example, *Magnolia virginiana* var. *foetida* L. (1753) when raised to a species is called *M. grandiflora* L. (1759), not *M. foetida* (L.) Sarg. (1889). An example of a recommendation is: authors should avoid names which are very long and difficult to pronounce in Latin. RD

In Quotes By Robert Dorn

F. V. Hayden, United States Geologist
Trifolium haydenii, Carex haydeniana
Preliminary Report of the United States Geological Survey of Wyoming.... 42nd Congr., 2nd Sess., House Exec. Doc. No. 325:78. 1872. October 1870
"After passing the Medicine Bow Creek eastward, the country assumes a more cheerful aspect; the water is as pure as crystal, and grass covers the surface very thickly. Dense groves of aspen are abundant among the foot-hills, and the little streams are all fringed with timber."

Conserving the Botanical Values of the Beartooth Plateau

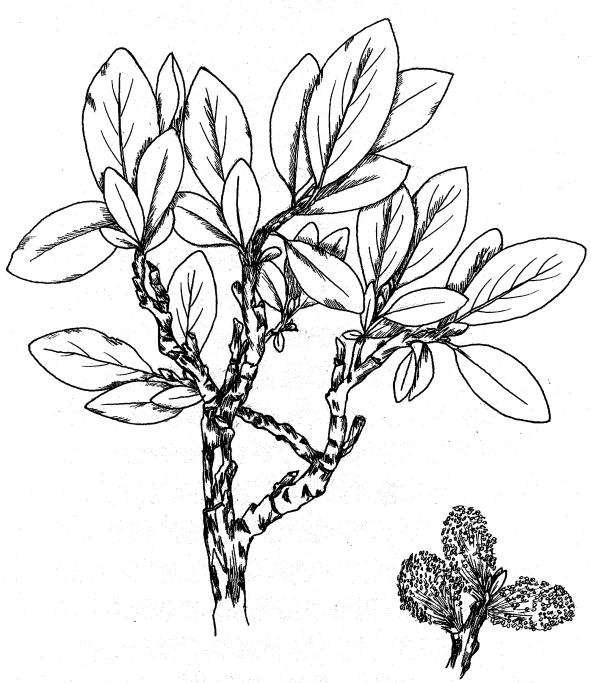
By Walter Fertig

There are many superlative mountain ranges in Wyoming and Montana, but few as well-loved and readily accessible as the Beartooths. This massive block of uplifted Precambrian gneiss and granite (containing some of the oldest known rocks on the continent) provides a year-round playground and source of scenic wonder for the residents of Cody, Cooke City, and Red Lodge, as well as hundreds of thousands of tourists descending on Yellowstone National Park via US Highway 212. This meandering highway crosses the top of the Beartooth Plateau near the Montana/Wyoming state line and is one of the few sites in either state where a paved road provides immediate access to alpine habitats. The plateau contains a rich mosaic of alpine tundra, bog, talus slope, and subalpine forest habitats amid a biscuitboard landscape of deep, lake-filled glacial cirques and rock-lined canyons.

The Beartooth Plateau has been recognized as a significant botanical area since the 1930s, when early collectors first documented an unusually high concentration of arctic/alpine and Northern Rocky Mountain disjuncts. Several of these species, including Oeder's lousewort (*Pedicularis oederi*) and Barratt's willow (*Salix barrattiana*), are not found outside of the Beartooth Plateau south of the Canadian border. In all, over 200 vascular plant species have been documented from the alpine zone, including over 30 which are rare or restricted in Wyoming. Beginning in the late 1950s, Phil Johnson and Dwight Billings conducted pioneering ecological research on the Beartooth Plateau on the effects of soil freeze/thaw cycles on alpine tundra vegetation. More recent studies continue to build on their foundation.

Recognizing the ecological significance of the Beartooth Plateau, Shoshone National Forest first proposed protecting a portion of the area as a Research Natural Area (RNA) in 1975. RNAs are areas of public land that are managed in a natural condition so that researchers have a baseline for comparison of unmanaged versus highly managed sites. These areas are managed to protect the primary biological or ecological values identified for the site. Although RNA protection can be as stringent as a formally designated Wilderness Area, compatible human activities can be (and usually are) allowed.

The area selected for RNA establishment is centered on the Twin Lakes Basin, a deep glacial cirque carved into imposing granite cliffs and containing two large subalpine lakes and numerous smaller lakes and ponds. Twin Lakes Basin is surrounded by rolling alpine tundra slopes, rock outcrops, and small alpine wetlands.



Above: Barratt's willow (*Salix barrattiana*). The small population found along the Montana/Wyoming state line consists only of staminate ("male") plants and is widely isolated from the nearest known population in British Columbia. Illustration by Walter Fertig.

The entire area is bounded on the south and east by the Beartooth Highway, and on the north by the Montana State line and the Rock Creek drainage.

The ecological and botanical variability of the Twin Lakes area is largely driven by topographic features and their influence on snow distribution and soil development. Much of the topographic variability is the result of freeze and thaw of the permafrost-like soils. Common "cryopedogenic" features of the area include frost hummocks, frost boils, stone nets, stone stripes, and solifluction terraces.

Wind-blasted ridgecrests and windward slopes on the plateau rimming Twin Lakes Basin are dominated by ground-hugging cushion plants adapted to water stress. The predominant vegetation in these microhabitats consists of Ross's avens (*Geum rossii*), Curly sedge (*Carex rupestris*), Cushion phlox (*Phlox pulvinata*), Moss campion (*Silene acaulis*), Alpine sheep grass (*Festuca brachyphylla*), and Timberline bluegrass (*Poa rupicola*). Areas of dark, clay-rich soil derived from intrusive volcanic dikes may be dominated by Rocky Mountain sagewort (*Artemisia scopulorum*) or the alpine phase of the widespread Silvery lupine (*Lupinus argenteus* var. *depressus*). Concave surfaces or lee slopes that accumulate more snow support a richer variety of forbs and grasses. Ross's avens may still form a dense turf in these sites, but also co-occurs with Dwarf clover

(*Trifolium nanum*), Parry's clover (*T. parryi* var. *montanense*), Moss campion, Arctic sandwort (*Arenaria* or *Minuartia obtusiloba*), and American bistort (*Polygonum bistortoides*). More mesic sites often have a higher graminoid component and may be dominated by Tufted hairgrass (*Deschampsia cespitosa*) and Rocky Mountain sedge (*Carex scopulorum*).

Northern pocket gophers may be extremely abundant in the alpine tundra and can alter the local vegetation through their burrowing activities. Johnson and Billings described a Parry's clover/Arctic willow (*Salix arctica*) vegetation type associated with gopher burrows and excavations.

The areas below persistent snowbanks may be dominated by small patches of Drummond rush/Woolly pussytoes (*Juncus drummondii/Antennaria lanata*) vegetation. The wet soils and short growing season in these microsites prevent willows from becoming predominant. Cold, wet sites along gravelly streams or depressions may provide habitat for some of the smallest flowering plants to be found anywhere in the state. Icegrass (*Phippsia algida*) is an annual with stems mostly less than 4-5 inches tall that is found on wet gravels associated with small streamlets. This primarily Arctic grass occurs at only a handful of alpine sites scattered across northern Montana, northwest Wyoming, and central Colorado. Koenigia (*Koenigia islandica*) is an even smaller plant found in saturated patches of moss or poorly drained gravelly soils. This species can be easily mistaken for tiny, reddish seedlings except for the minute inflorescence of *Polygonum*-like flowers. Like *Phippsia*, Koenigia is disjunct in high mountain sites in Montana, NW Wyoming, and Colorado. Some of these wet sites also support a number of rare sedge and rush species, including Siberian kobresia (*Kobresia sibirica* or *K. macrocarpa*), Nelson's sedge (*Carex nelsonii*), Shortleaf sedge (*C. misandra*), and Three-flower rush (*Juncus triglumis*).

Cliffs and ledges of gneiss and granite talus form the rim of Twin Lakes Basin. These rocks are among the oldest documented in Wyoming and North America (some being nearly 3.8 billion years old). Stabilized shelves among the cliffs support *Geum* turf vegetation. Less stable slopes are largely unvegetated, but may provide habitat for several uncommon species, such as Fan-leaved fleabane (*Erigeron flabellifolius*) and Alpine hulsea (*Hulsea algida*). Hulsea is covered with sticky, glandular hairs as an adaptation to prevent herbivory. Erwin Evert has noted that once collected, Hulsea's "overpowering if not sickening odor is not easily forgotten".

Twin Lakes Basin itself contains a mosaic of willow thickets and moist meadows along the numerous small lakes and streams. The dominant shrub is the subalpine form of Planeleaf willow (*Salix planifolia* var. *monica*), although small patches of Glaucous willow (*S. glauca*) and Eastwood's willow (*S. eastwoodiae*) are present. Interspersed among the wetlands are drier grasslands and forb meadows dominated by Alpine sheep fescue, Spike trisetum (*Trisetum spicatum*), Rocky Mountain sagewort, and Ross's avens. Low areas at the north end of the basin support a small woodland of Subalpine fir (*Abies lasiocarpa*), Engelmann spruce (*Picea engelmannii*), and Whitebark pine (*Pinus albicaulis*) with an open understory of Grouse whortleberry (*Vaccinium scoparium*).

The Twin Lakes area borders an extensive, undeveloped alpine and subalpine plateau across the Montana state line in Custer National Forest. This area has also long been recognized as a significant ecological area and was also proposed for RNA designation. Perhaps inspired by the new tenets of ecosystem management, Custer and Shoshone National Forests agreed in the mid-1990s to pursue joint RNA designation for the combined Twin Lakes/Line Creek area. In November 1998, the new "Line Creek" RNA was proposed by both Forests to protect nearly 23,000 acres straddling the two states (see December 1998 *Castilleja*).

To ensure support for their plan, the Forest Service reached a compromise with recreational users to keep an existing trail open for snowmobile passage through the Twin Lakes Basin to more popular recreation destinations several miles to the west. Due to numerous hazards (high avalanche danger, high winds, and rocky conditions), this route receives relatively little winter recreation use (an estimated 500 user-days per year according to the Forest Service). This usage was not considered detrimental to the botanical values of the area, nor was it likely to harm sensitive animal species that do not overwinter in the basin. After receiving largely favorable public comments, the Forest Service proceeded with designating the Line Creek RNA in the summer of 2000.

Despite closing 21,000 acres to snowmobile use, this compromise unfortunately proved unacceptable to a consortium of local environmental groups that includes the Greater Yellowstone Coalition and a private individual associated with the Montana Wilderness Association. The environmental groups appealed the Forest Service's decision to establish the Line Creek RNA in August 2000 on the grounds that snow machines were incompatible with RNA designation. Ironically, the local snow machine groups in Red Lodge and Laurel Montana have intervened in support of the RNA designation. Because of the legal appeal, no action will be taken on the RNA until a review is conducted by the Washington office of the Forest Service. With the change in administration and the overall low priority of the RNA program in the Forest Service, it appears unlikely that any action will now be taken on this worthwhile measure. In the meantime, the area continues to be managed for multiple use recreation (including now unrestricted snow machine use). Sadly, an opportunity to protect a significant botanical resource in Wyoming and Montana has probably been lost.

The Wyoming Native Plant Society, established in 1981, is a non-profit organization dedicated to encouraging the appreciation and conservation of the native flora and plant communities of Wyoming. The Society promotes education and research on native plants of the state through its newsletter, field trips, and annual student scholarship award. Membership is open to individuals, families, or organizations with an interest in Wyoming's flora. Members receive *Castilleja*, the Society's quarterly newsletter, and may take part in all of the Society's programs and projects, including the annual meeting/field trip held each summer. Dues are $7.50 annually.

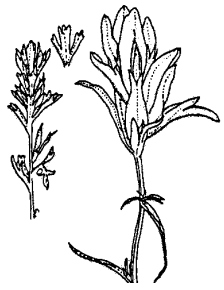
To join the Wyoming Native Plant Society, return the membership form below to:

Wyoming Native Plant Society
PO Box 3452
Laramie, WY 82071

Name:
_____

Address:
_____

___ $7.50 Regular Membership
___ $15.00 Scholarship Supporting Member
($7.50 goes to the annual scholarship fund)



Wyoming Native Plant Society
PO Box 3452
Laramie, WY 82071

Out Where the West Begins

By John "Barney" Baxter

Out where the sky's a trifle bluer,
Out where there's lots of cow manuer,
That's where the West begins.

Out where the prairie dogs are playing,
Out where the slot machines are paying,
Where there's lots of moseying and sashaying,
That's where the West begins.

Out where a man can climb a Teton
Out where the sheep eat *Halogeton*,
Which ain't no plant for sheep to eat on,
That's where the West begins.

Out where folks ride around in pickups,
Out where the Coors® will give you hiccups,
That's where the West begins.

Out where the world is in the making,
Out where the alkali is caking,
And there's lots of sourdough biscuits baking,
That's where the West begins.

Out where the sun will cause a sunburn,
And saddle sores will make your bun burn,
That's where the West begins.

Out where the wind is always blowing,
Out where the tumbleweeds are growing,
And the cockleburs catch in the hay you're mowing,
That's where the West begins.

Out where the climate sure ain't rainy,
The land of James Watt and Dick Cheney,
A couple of dudes who are really brainy,
That's where the West begins.