



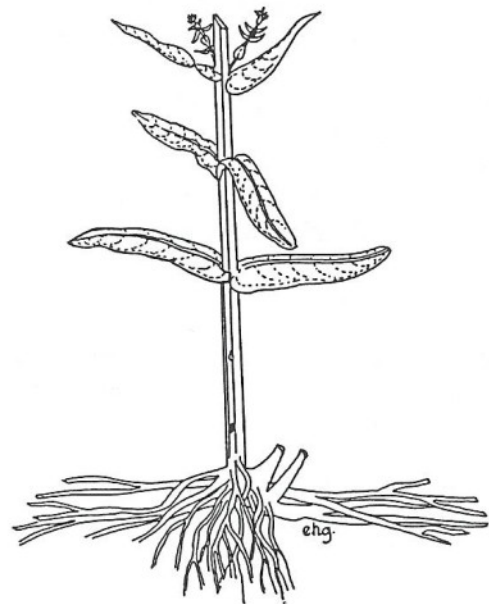
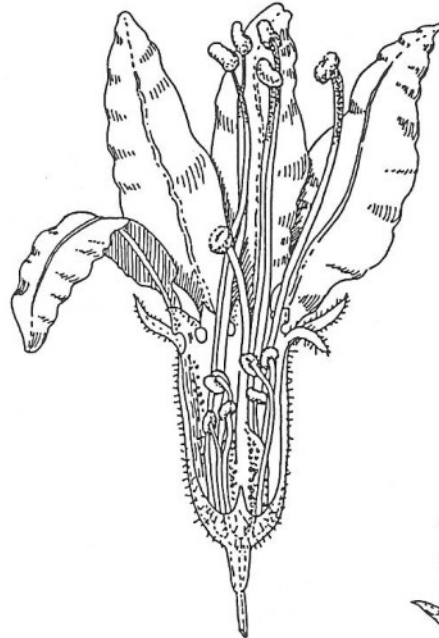
Castilleja

The Newsletter
of the Wyoming
Native Plant Society

May 1998
Volume 17, No. 2

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Purple Loosestrife (*Lythrum salicaria*) is a beautiful, but undesirable exotic herb that may be slowly increasing in eastern Wyoming. This purple-flowered member of the loosestrife family (Lythraceae) is native to Eurasia but has become established in wetland areas throughout eastern North America and more sporadically in the west. Purple loosestrife is an aggressive species that can form extensive colonies and choke out native species. Winged loosestrife (*Lythrum alatum*) is a related, native species that differs in having solitary or paired flowers in the leaf axils and in having glabrous herbage. In Wyoming, *L. alatum* is restricted to Crook and Platte counties. Illustration of purple loosestrife by Ellen Hand Galligan.

WNPS NEWS

Membership Renewal/Elections: A renewal notice and ballot is enclosed with this issue. Members with a 96, 97, or 98 on their mailing label need to renew now to remain in good standing, while those with a 99 on the label are paid through the year. The following individuals have kindly agreed to run for the WNPS board: President – Charmaine Refsdal Delmatier, Vice President – Jim Ozenberger, Secretary/Treasurer – Walt Fertig, and 2-year board member – Nina Haas. As always, write-in votes are welcome. Members are also encouraged to provide recommendations for next years annual meeting/field trip location.

New Members: Please welcome the following new members of WNPS: Walter and Carol Hartung (Cody).

We're looking for new members: Do you know someone who would be interested in joining WNPS? Send their name or encourage them to contact the Society for a complimentary newsletter.

Attention Readers: We are always looking for articles and illustrations for the newsletter. Items for the October issue are needed by 20 September 1998.

Treasurer's Report: Balance as of 24 May 1998:
General Fund \$310.01; 1998-99 Student Scholarship Fund \$265.00; Total funds: 575.01 WF

Wyoming Native Plant Society
1604 Grand Ave., Laramie, WY 82070

President: Charmaine Refsdal Delmatier (Green River)
Vice President: Dick Scott (Riverton)
Secretary-Treasurer: Walt Fertig (Laramie)
Board Members: Katy Duffy (Moran)
Jennifer Whipple (Mammoth)
Newsletter Editor: Walt Fertig (307) 745-5026 (wk)/e-mail: wyndd@lariat.org

Teton Chapter: PO Box 82, Wilson, WY 83014 (Joan Lucas, Treasurer). For general information on events, call Katy Duffy (543-2959).

Contributors to this issue: Bill Brenneman, Walter Fertig (WF), Ellen Hand Galligan, Jeanne Janish, C.L. Porter, and Laura Welp.

Requiem of an Aspen Clone

By Bill Brenneman

For nearly two decades I have hiked and snowshoed by a heavily initialed aspen with a "95" (1895!). Finally, I decided to discover how old the tree was. With welcome help from Chris Fastie, a post-doc from the University of Wyoming Botany Department, I was able to date the tree with an increment borer. This 17 inch dbh, 70 foot tall aspen was about 190 years old. Growth averaged about one millimeter per year for the last 50 years; clearly a decadent tree. A clone growing from roots perhaps thousands of years old is slowly being killed by encroaching conifers. Exacerbating its demise and of others all over the Rockies are pathogens and ungulate damage (elk and moose). Moose, reintroduced to the Rawahs about a decade ago are debarking larger stems and browsing smaller sprouts to oblivion. Bark damage alone may not be lethal but these injuries allow entry of pathogens, such as false tinder fungus and cytospera canker.

Charles King (wildlife ecologist at Utah State) believes aspen groves in the Rockies may be doomed (see the May 1997 issue of "The Journal of Forestry"). In the paper he contends that Indians, prior to white settlement, used fire to preserve aspen, and they also kept ungulate populations low by intensive hunting. If you agree with his thesis, should we attempt to preserve our valuable aspen clones by fire?

Below: Aspen by C. L. Porter.



Summer Field Trips

Annual Meeting/Field Trip: The 1998 annual meeting and field trip is scheduled for Saturday, August 1 in the Green River Lakes area of the western Wind River Range. Our itinerary will include visits to Kendall Warm Springs, the Green River Lake fen, and a hike along the east or west shore of lower Green River Lake (depending on which has the most wildflowers). Plan to meet at the end of WY state highway 352 (the Green River Lakes Road) at the large dirt parking area right at the boundary of Bridger-Teton National Forest at 9:00 AM (this site is ca 30 miles from Pinedale). We will have a brief business meeting, select a site for next years meeting, and then proceed up the Green River Lakes Road to Kendall Warm Springs (for those who might arrive late, the springs are ca 4.5 miles farther north on the Green River Lakes road - look for the throng of botanists). If there is interest, an additional hike into the alpine will occur on Sunday, August 2. Camping is available at several developed campgrounds and lodging is also available in Pinedale. For more details, call Walt Fertig (745-5026) or Charmaine Refsdal Delmatier (875-6437).

National Elk Refuge wetlands: The day before the annual meeting (Friday, July 31), spend the morning investigating the wetland flora of the National Elk Refuge with Walt Fertig and Bruce Smith. The Refuge's Flat Creek Fen is one of the largest calcareous wetlands in the state and supports populations of over one dozen rare boreal plant species. Plan to meet at Refuge headquarters in Jackson at 9:00 AM for a half-day expedition. Participants should bring a sack lunch and water-friendly footwear. For more information, contact Walt at 745-5026.

Ferris Mountains/Beaver Rim: On Saturday, June 20, join fellow WNPS members on an exploration of the flora on the north side of the Ferris Mountains. This area is home to several Wyoming or regional endemic plants, including the Devil's Gate twinpod, erect cryptantha, Wyoming locoweed, and bun milkvetch, as well as other showy plains, forest, and wetland plants. Meet at the Three Forks (Muddy Gap) Service Station at the junction of highways 287/789 and 220 at 9:00 AM. Members are

encouraged to camp out Saturday night at the foot of Ferris Mountain and then spend Sunday morning visiting the Beaver Rim area to locate the only known population of Desert yellowhead (*Yermo xanthocephalus*), a species that is a candidate for listing under the Endangered Species Act. Walt Fertig, Charmaine Refsdal Delmatier, and (hopefully) Bob Dorn will be leading the trip. For more information, call Walt (745-5026) or Char (875-6437).

Teton Chapter Field Trips

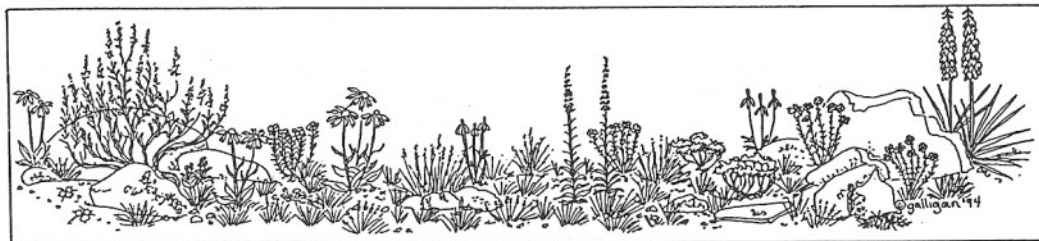
For general information on these and future activities, call Katy (543-2959) or Diane (733-5812).

Berry Plants of Blacktail Butte: Todd Embree will lead two trips on Saturday, June 6 (Berry Plants in Flower) and on Saturday, August 22 (Berry Plants in Fruit). Both trips are from 9:00 AM to noon. Meet at the Blacktail Butte Parking Area (just north of Moose Junction before Antelope Flats on the main highway in Grand Teton National Park). For more information, call Todd at 307-739-2314.

Evening Hike on the Put Put Trail: See what's blooming with Jim Ozenberger (Jackson Ranger District ecologist) on a strenuous hike at 5:30 PM, Tuesday, June 9. Meet at the Elk Refuge Road on Broadway just past the Lame Duck (restaurant, that is). Bring a sandwich and warm clothes! For more information, call Jim at 734-2854 (evenings) or 739-5431 (days).

Summer Solstice Ski to Beartooth Pass: On June 19 (?), 20, 21 join Todd Embree in finding springtime alpine wildflowers. This trip will include camping out for 1-2 nights in Rock Creek Canyon near Red Lodge, Montana. Call Todd at 739-2314 to be in on the plan.

Evening Hike to the top of Snow King: Join the intrepid Jim Ozenberger on a very strenuous hike geared for folks who want to identify plants that they pass on the way to the top of the peak. Meet at the softball field at the base of Snow King at 5:30 PM on Tuesday, June 23. Warm clothes are advised. Call Jim at 734-2854 (evenings) or 739-5431 (days).



Botany Briefs

Botany on the Internet: Botanists with a bent for computers might be interested in the following plant-oriented web sites on the internet:

Wyoming Rare Plant Field Guide:
<http://www.nbs.gov/resource/dist/others/wyplant.htm>

Rocky Mountain Herbarium:
<http://www.uwyo.edu/a&s/bot/herb.htm>

The Rocky Mountain Herbarium Wyoming Plant Atlas (On The University of Wyoming's Spatial Data Visualization Center website): <http://www.sdvc.uwyo.edu/wbn/> (available this summer).

Western Wetland Flora:
<http://www.npsc.nbs.gov/resource/othrdata/wetflor.htm>

If you know of any other web sites of interest to WNPS members, send them to the newsletter editor. Coming Soon, Wyoming Native Plant Society's own website!

Teton Science School Natural History Seminars for Adults:

The Teton Science School in Jackson Hole, Wyoming, is offering a variety of botany and natural history courses this summer. A sampling is listed below. For more information on these, or other offerings, please contact Claudia at the school (307) 733-4765 or check their website (www.tetonscience.org).

Wonders of Wildflowers with Kristi Dahl (June 19)

Field Botany, Flora of the Tetons with Dr. Leila Shultz (June 23-26)

Wildflower Taxonomy and Identification with Stuart Markow (July 10-11)

Keeping a Wildflower Journal with Meredith Campbell (July 13)

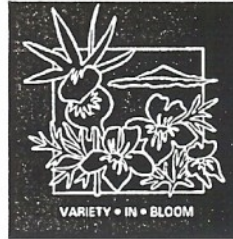
Alpine Wildflowers with Kim Springer (July 16)

Wildflower Walk with Dr. Bill Edwards (July 18)

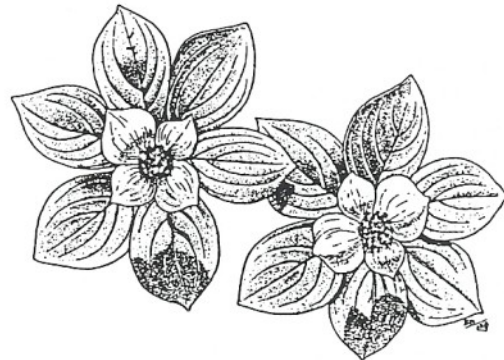
Many Uses of Plants with Jean Jorgensen and Eugenie Copp (July 29)

Wetlands Identification, Delineation, Mapping and Characterization with Oliver Grah (August 3-5)

Preserving Wildflowers with Stuart Markow (August 15).



Celebrating Wildflowers



National Wildflower Week Hotline:

Once again, the US Forest Service and other public land management agencies are scheduling activities across the nation to promote the appreciation and conservation of wildflowers. Although Wildflower Week is officially celebrated from May 17-23, activities will still be taking place over the rest of the flowering season. For more information on activities throughout the nation, call the National Wildflower Hotline tollfree at 1-800-354-4595.

The Thunder Basin National Grassland has produced a packet of materials about wildflower week (including wildflower seeds provided by Wind River Seed Co.) and is planning a variety of activities this summer. For more information, contact the Douglas Ranger District (358-4690) or attend the National Grassland Information Fair in Douglas (2250 E. Richards) on June 8, 1998 from 3-6 PM.

Woodsman, Spare That Dead Tree

By Walter Fertig

Living trees are universally praised for their beauty and economic value, but dead trees evoke an entirely different response. To a commercial forester, a dead tree is the epitome of waste, both of space and of lost revenue. The park manager views the dead tree as a safety hazard due to falling limbs or fire. For the homeowner or hiker the deceased tree is simply an untidy eyesore. Invariably, our gut reaction is to remove the offending tree.

But there is much more to a dead tree than meets the eye. As a source of food and shelter for wildlife, a dead tree can be just as valuable as a living one. More importantly, dead trees are a warehouse of stored nutrients, that when returned to the soil foster the growth of a new generation of forest plants and trees.

Insects initiate the process of converting dead timber into new resources. Certain beetles, and other insects with hard mouth-parts, are able to bore into the bark and hard sapwood. Fungi find a suitable home in the dark tunnels created by the borers and will begin to decay the inner tree tissues. As the fungi microflora evolves, new insect grazers are attracted to the tree. Studies of northwestern forests reveal that eventually more than 300 species of insects will utilize a dead tree for food and to reproduce.

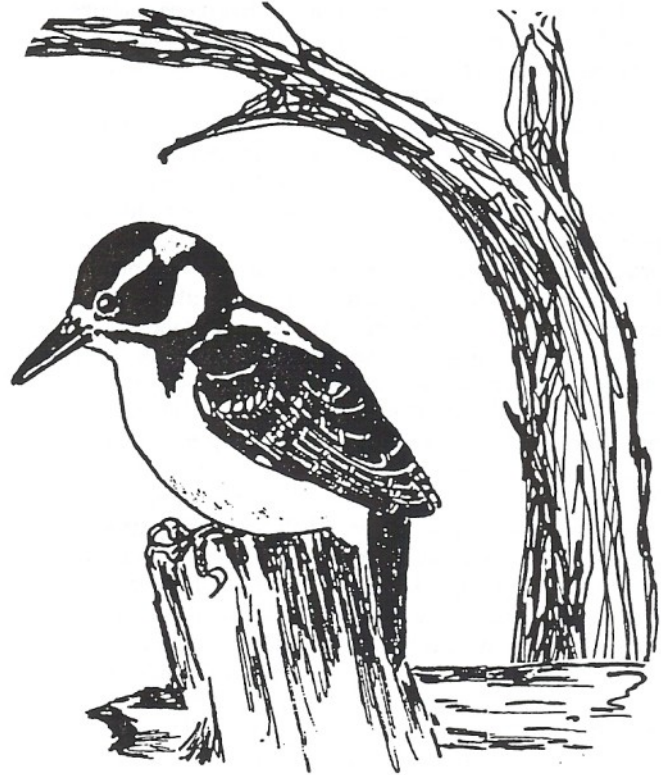
The insects themselves provide a source of protein for dozens of species of birds and omnivorous mammals. These in turn may become food for birds of prey and higher mammalian carnivores. This makes the dead tree the base of a large forest food chain.

Dead trees are a major resource for woodpeckers. The birds are first attracted to dead snags to feed on carpenter ants and grubs. With their chisel-sharp bills, woodpeckers are also able to drill out nesting holes in the dead wood. These cavities not only serve woodpecker families, but also give shelter for squirrels, chickadees, wrens, wood warblers, nuthatches, screech owls, and wood ducks which could not otherwise make their own holes.

As the tree continues to decay, stormy weather will begin to damage the crown and branches, creating new openings for wildlife shelter. Hawks, owls, raccoons, flying squirrels, and bats are quick to take advantage of such new sites.

Surrounding plants and trees also benefit from the passing of a tree. Openings in the canopy formed by tree death allow sunlight to flood the forest floor. Seeds that may have lain dormant in the soil for years, or shorter underbrush previously stunted by lack of light respond to sunnier conditions with a burst of growth. In addition, water and minerals used by the tree when it was living are now available for other plants.

While the tree gradually decomposes, the nutrients it accumulated during its life are returned to the soil bit by bit. This occurs by leaching or through the dead bodies and feces of insect decomposers. The release of mineral nutrients, like calcium, potassium, and nitrogen to the soil is particularly important because such nutrients are often in low supply under natural conditions. The time-released influx of natural



fertilizer provided by decaying trees helps maintain a rich woodland system, which in turn benefits wildlife and man.

Foresters in our National Forests are now beginning to recognize the value of leaving some dead trees in the stands they manage. Removing a dead tree prematurely deprives hundreds of wildlife species of valuable habitat and food. It reduces the finite nutrient supply that long term growth depends on. Although economic realities may prevent leaving all dead trees standing, the prudent forester now realizes that leaving some dead trees is important for future forest productivity.

In natural systems no resource is ever wasted. We could profit a great deal by following nature's example.

The Great Divide Basin – Worth a Look

By Laura Welp

For many people, the Great Divide Basin does not leap to mind when considering recreational destinations and glorious vistas in Wyoming. Most only know the area from the vantage point of I-80, from which they see a vast, unbroken plain of dry sagebrush grassland broken only by the occasional ranch road winding into the desolate distance. But if one ventures onto the backroads and into the basin, there are wonderful opportunities for botanizing, hiking, and camping, all of which can be enjoyed in rare solitude.

The Great Divide Basin is found in south-central Wyoming roughly between the Wamsutter Basin and the Green Mountains. The basin is completely enclosed by the Continental Divide and has no external drainage outlets. All the water coming into the bowl evaporates away, leaving behind a fine, salty soil that poses challenges for the plants living there. It is the driest area in the state, with only 8 inches of precipitation annually in the middle of the basin.

Several interesting topographical features are found here. During the Quaternary period, very large lakes formed in western Wyoming following the Pleistocene glaciations. One such lake, a saline playa around 220 feet deep and 7,720 square miles, inundated most of the Great Divide Basin. It was named Lake Wamsutter, after the town along the interstate that sits on the ancient lake's long-disappeared shoreline. This lake laid down sediments that have a profound effect on modern soils and plant distributions. For example, greasewood vegetation occurs mainly within the outline of the lake, where soils are the most saline and fine-textured. Lake Wamsutter disappeared about 10,000 years ago, but remnant playa lakes still occupy the lowest parts of the basin and provide a unique habitat for vegetation. Most of these lakes are ephemeral, but perennial ones, such as Lost Creek Lake and Circle Bar Lake, are present-day reminders of that ancient saline lake.

Mud volcanoes are another interesting landscape feature in the basin, particularly around the Chain-of-Lakes area. These are mounds 3-25 feet tall that are dotted throughout the sparsely vegetated playa systems. Dennis Knight describes Ferdinand Hayden's 1877 discovery of mud volcanoes in his book, *Mountains and Plains* (1994). At that time, the mounds had pools of water at their tops, and would emit bubbles of gas through them. The curious Hayden shot a rifle ball down through one of the holes and was rewarded by a sudden 10-foot eruption of water and mud that showered all around. He concluded that gas must be present under the earth there, held in by mechanical pressure. Knight goes on to say that the mud volcanoes are now dormant, possibly because pumping groundwater for livestock and industry may have reduced ground pressure, or simply because the eruptions are cyclic rather than continuous.

The Killpecker Sand Dunes, one of the largest active dune fields in North America, are also found in the Great Divide Basin. These formed after the playa lakes dried up and strong westerly winds blew sand across the basin into a dune field

440 km. These dunes actually offer a moister environment for plants and animals than the surrounding desert, and are an important source of water for creatures such as the desert elk and antelope herds that frequent the area.

Most of the basin vegetation is characterized by Wyoming big sagebrush. Sagebrush communities here have relatively few species, but the dominant ones, such as sagebrush, rabbitbrush, and wheatgrass, have a lot of genetic diversity. Even though members of a species look alike, they may actually have genetic and ecological variations that allow them to adapt to different ecological communities. Big sagebrush (*Artemisia tridentata*), for example, has three different varieties, each of which grow in a different habitat. It is a uniquely adapted desert plant, with many ways of coping as water availability decreases over the course of the summer. For instance, it has a shallow root system to take advantage of surface moisture early in the growing season, and a deep root system to capture ground water later in the season. It produces large leaves in the spring to maximize photosynthesis when moisture is most abundant; when water gets scarce, the plant drops those leaves and relies on smaller, evergreen ones that require less water. The leaves also have stomates that can close rapidly as water stress develops during the day. Through these adaptations, sagebrush is able to maximize photosynthesis and minimize water loss. No wonder it is the most common vegetation type in the high desert plains. For those interested in this community, there are many places in the Great Divide Basin that offer vantage points from which the sagebrush plains roll away, gently undulating, to the horizon. And if such a serene tableau doesn't excite you, it may help to remember that similar large extents of (relatively) unbroken native vegetation really are rare elsewhere.

Greasewood and saltbush vegetation is another common community in the Great Divide Basin. Most of the dominant species found in this type are members of the goosefoot family, such as greasewood, Gardner saltbush, winterfat, spiny hopsage, and four-wing saltbush, but birdfoot sagewort and bud sagewort (both composites) are also common. Few plants can survive the high salinity, severe aridity, and temperature extremes of the salt desert habitat. Those that can have similar features such as succulence, dull foliage, water storage hairs, mealiness, salt-secreting glands, or small leaves. Some species are spiny to minimize grazing. Others produce both ephemeral and persistent leaves to maximize photosynthesis and minimize transpiration. Desert shrubs also may have high genetic diversity that allows them to adapt to a wide variety of habitat conditions. These plants, which survive so well under harsh conditions, would grow better under more favorable conditions if they could get them; however, they do not compete well with other species, which may be why desert shrubs are not more widespread. Many of these plants can be seen to maximum advantage in the Red Desert, in the southwest part of the Great Divide Basin. The contrast between the red soil and the green greasewood shrubs is subtly beautiful, and with a little understanding of the physiological wonders taking place before your eyes as these shrubs struggle to survive, a trip to the Red Desert can be delightful.

A fine vista of the Great Divide Basin can be had from

Bush Rim, which looks out south and east over the area. From here one can also see the Honeycomb Buttes badlands nearby, whose colorful red, blue, and gray bands are even more striking at sunset. This spot is one of the best places to spend a summer evening. The next day, an intrepid explorer could (with plenty of water) hike around the badlands, which support interesting plant communities and possibly rare plants, such as the large-fruited bladderpod (a Wyoming endemic). Badlands are difficult habitats for plants because their soils are made up of fine clay particles that expand and contract with wetting and drying, so plants are subject to high levels of disturbance and erosion. The unstable substrate makes it difficult for plants to get established, which is one reason that badlands are sparsely vegetated.

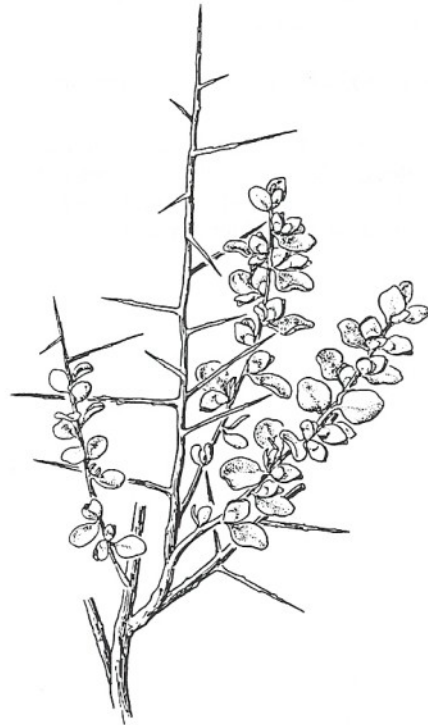
The sagebrush-grassland and greasewood saltbush communities are host to several rare species. Regional endemics such as Nelson's milkvetch and erect cryptantha, which are only known from southern Wyoming and parts Colorado and Utah, are found in sagebrush grassland. Species that are on the periphery of their range in Wyoming, such as sticky scorpion weed, Nevada bulrush and Hayden's milkvetch, are also found in this community type. Nelson phacelia, another peripheral species, is restricted to highly alkaline desert regions in southern Wyoming, western Utah, and northern Nevada, and actually requires the sagebrush grassland and greasewood saltbush habitat.

The popular impression of the Great Divide Basin described in the first paragraph has not changed since the last century when travelers began coming into the country on their way out west. To struggling immigrants, who often labored under harsh and hazardous conditions toward uncertain outcomes, the sagebrush plains were hostile, destitute wastelands, described by P. St. G. Cooke as "only redeemed from nakedness by melancholy artemisias and absinthia". Major Osborne Cross was speaking of an area only a little north of the Great Divide Basin when he wrote in his journal "... We passed thorough a dreary, hilly country, meeting with nothing in the least interesting to the traveler, being destitute of vegetation, except the artemisia, which was seen from the highest hill to the lowest valley, now and then interspersed with alkaline ponds, which were greatly dreaded by the emigrants." These dry hills and plains were only obstacles to hurry through as quickly as possible. As people began making their homes in the region, however, the Great Divide Basin, in particular the Red Desert, became important for the greasewood saltbush vegetation, which was valued livestock forage. (For more historical information, see "The Wyoming Landscape 1805-1878 by R. Dorn, 1986).

In recent times, the natural gas industry has been booming in the Great Divide Basin. Roads, pipelines, and drilling platforms have proliferated in these formerly isolated areas, and growth is expected to increase. So if you happen to pass through the Great Divide Basin, hopefully your informed eye will meet with more than a dreary, hilly country. But you'd better hurry.

[Ed. Note: Laura received a WNPS student scholarship in 1996 to conduct a floristic survey of the Great Divide Basin].

Below: Common saltbushes of the Great Divide Basin: Spiny saltbush (*Atriplex confertifolia*) top, and Gardner saltbush (*Atriplex gardneri*) bottom. Drawings by Jeanne Janish, illustrator of the Northwest and Intermountain floras who passed away this Spring.



Letters:

Greetings from Oregon, home of Bigfoot, Bob Packwood and now the home of Barney Baxter, bard of Burns (not Burns, Oregon). Burns Oregon will never be as famous as Burns, WY. Burns WY has a new red water tank, *Gaura neomexicana*, mud volleyball, and Antelope Truck Stop meatballs. Like, wow, man!

I've already joined the Oregon Native Plant Society, but don't find it to have the *elan*, the *esprit de corps*, the *joie de vive* of the Wyoming Society.

John Baxter, BOA (Bard of Ashland, Oregon).

[John "Barney" Baxter, alias the "Bard of Burns", the "Poet Lariat of Wyoming", "Dr. Smut" (as in fungus), and frequent contributor to *Castilleja*, recently retired to Oregon. Fan mail can be sent to John in care of the Society].



Wyoming Native Plant Society
1604 Grand Ave.
Laramie, WY 82070

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 \$5 annually.

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

Wyoming Native Plant Society
1604 Grand Ave.
Laramie, WY 82070

Wyoming Native Plant Society

Name:

Address:

\$5.00 Regular Membership

\$15.00 Scholarship Supporting Member

(\$10.00 goes to the annual scholarship fund)