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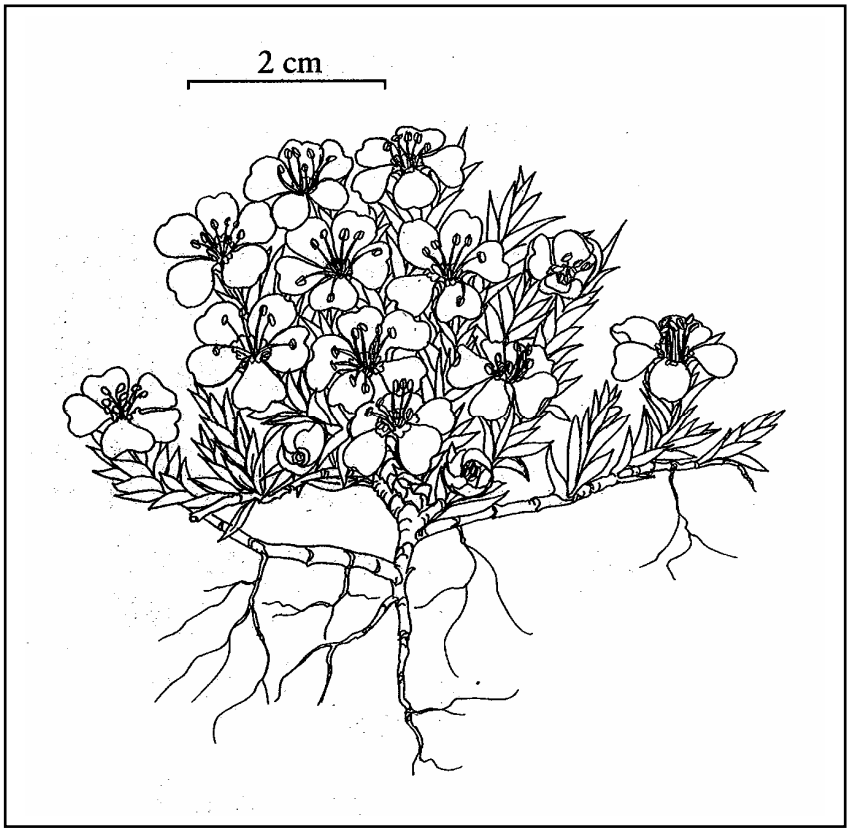
In this issue:

A Well-Cushioned Flora

All elevation zones in Wyoming display botanical wonders of architecture called "cushion plants." Cushion plants are prostrate, tap-rooted forbs that are stemless or nearly so, and grow by vegetative reproduction into mats or mounds. These plants create their own microcosm among their crowded leaves and caudex branches.



Above: *Silene acaulis*. Illustrated by Yevonne Wilson-Ramsey. From: Hartman, R. L. and R. K. Rabeler. 2005. Caryophyllaceae. In: *Flora of North America*, Vol. 5. Magnoliophyta: Caryophlyllidae, Part 2. Oxford University Press. New York, NY.

Cushion plants occupy exposed habitats and include the darlings of rock gardeners. In the arctic at least, cushion plants are the "low-budget growth form" when it comes to resource allocations in above-ground, below-ground, and reproductive growth compared with shrubs and graminoids, (reviewed in Barbour and Billings 2000). The photosynthetic rates and leaf conductance are also low for cushion plants compared to other life forms, though respiration is relatively high.

Botanists have been quick to draw parallels between arctic and alpine floras and vegetation, including cushion plants. Less widely recognized are the cushion plant species and communities in foothills (Knight 1994), intermontane basins (Jones 2004, 2005), and rudiments scattered elsewhere across our mountains and plains.

Only recently have botanists started to determine ages of "old-growth" cushion plants. Such widespread species as moss campion; also called cushion pink (*Silene acaulis*; above) can live to at least 300 years at alpine elevations in Alaska (Morris and Doak 1998). (Continued on p. 3)

WNPS News

Announcing 2007 Wyoming Plant Conference! The 2007 Wyoming Plant Conference will be held on March 20, at the University of Wyoming in Laramie, featuring new botany research results across the state, hands-on workshops, and an unparalleled gathering.

Pre-registration, agenda and lodging information will be mailed to WNPS members and distributed among sponsors. Other sponsors of the 2007 Wyoming Plant Conference include the Botany Department (UW), Wyoming Natural Diversity Database (UW), U.S. Forest Service, Bureau of Land Management, National Park Service and U.S. Fish and Wildlife Service.

2007 Annual Meeting: The 2007 WNPS Annual Meeting and fieldtrip will be held in central Wyoming out of Casper (contact: Lynn Moore). Watch for plans in the March issue.

Scholarship: The 2007 WNPS Markow Scholarship announcement is in this issue, open to all who are pursuing graduate research related to native plant species and vegetation in Wyoming. The deadline is February 17.

Ballot and Renewal: Please vote and renew early in 2007 on the enclosed sheet.

Red-letter Reminders: Alas, if you see RED on your mailing label, then this is your red-letter reminder to renew. The memberships of those people who last renewed in 2005 expired in June 2006.

Treasurer's Report: Balance as of 12/1/06: General Fund: $1474.65; Markow Scholarship Fund: $1126.50. Total Funds: $2601.15.

The **Teton Chapter** is planning monthly meetings/programs beginning in February 2007. **Thursday, February 8, 7:00 p.m. "The Making of a Field Guide"**. Natural history writer Charles Craighead and photographer Henry H. Holdsworth will discuss their efforts in creating an official guidebook of Grand Teton National Park called, "Common Wildflowers of Grand Teton National Park" (Grand Teton Natural History Association, 2005, *55 pp*). Location TBA. For more information contact Amy Taylor 733-3776.

New Members: Please welcome the following new members to WNPS: Gene and Marilyn Hayes (Bennett, CO), Karen Marshall (Thermopolis), Amber Travsky (Laramie), Dorothy Tuthill (Laramie).

Message from the President

Happy New Year to you! Thank you to all with whom I've had the privilege of working on the WNPS Board. Please look for an exciting slate of WNPS events in 2007...and ways to participate. BH

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

WNPS Board – 2006

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Correction: The previous issue included a statement that *Alisma triviale* is new to the flora; an error among the other valid additions.

Contributors to this issue: Beth Burkhart (BB), Bonnie Heidel (BH), Andrew Kratz (AK), Amy Taylor (AT), and Thea Unzner (TU). Please send YOUR news, ideas and articles - the next newsletter deadline is Feb 24.

Above: Expanses of cluster-headed chicken-sage in the Bighorn Basin. Photo by B. Heidel

Above: Cluster-headed chicken-sage (*Sphaeromeria capitata*). Photo by B. Heidel

Cushions, continued from p. 1

There are also rare cushion plant species at all elevations among Wyoming species of concern and potential concern. A tally indicates that intermontane basins have the high numbers of rare cushion plant species (12 species of 20, or 60%) compared to alpine elevations (3 species of 21; Table 1). It is also interesting to note that all basin cushion plants are regional or local endemics.

Table 1. Biogeography of Rare WY Cushion Plants

	Local Endemic	Regional Endemic	Disjunct	Peripheral
Alpine	0	0	2	1
Montane	0	3	0	0
Foothills	1	0	0	0
Basins	6	6	0	0
Plains	0	1	0	0

In addition, there are many basin species that are locally abundant and not regarded as rare, like cluster-headed chicken sage (*Sphaeromeria capitata*), even though they are regional endemics with their centers of distribution in Wyoming.

The primary habitat for many foothills and intermontane cushion plants are found on dry, wind-swept gravelly ridge "pavements" and at rimrock settings (see photos above). Some of these same settings may be mistaken for nature's parking lots, pre-developed scenic pull-offs, or ready-made sites for other surface uses. Cushion plants were spared this fall in a proposal to build a repeater station in the middle of the Beaver Rim Area of Critical Environmental Concern (Fremont County), an area with sensitive species and cushion plant communities. The original proposal was simply modified to avoid conflicts.

Cushion plants may not look like they provide shelter, but they are also size-dependent havens for insects, as documented in the first treatise on island biogeography brought to terrestrial systems (Tepedino and Stanton 1976).

What does the future hold for Wyoming's well-cushioned flora? Hopefully – cushioning! BH

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Wyoming Landscape Change

"Boundaries Without Fences: How Human Values Change the Wyoming Landscape" is a presentation by Dr. Dennis Knight offering airborne insights and well-grounded perspectives for 2007 Wyoming Humanity Council (WHC) audiences across the state. Knight is professor emeritus of botany and ecology at the University of Wyoming, popular lecturer, and author of *Mountains and Plains: The Ecology of Wyoming*. His program is illustrated with aerial photographs and satellite images of Wyoming and the Rockies.

Wyoming landscapes are laced by boundaries without fences that are visible from space and that have been created by federal, state and private entities with different management objectives. How do these borders affect wildlife and other natural resources? Are such geometric landscape patterns permanent? Knight's lecture is part of the 2007 WHC Forum, concurrent with the 2007-08 Wyoming tour of the Smithstonian exhibition: *Between Fences*. To host a 2007 Humanities Forum Program, contact the presenter directly to arrange a program date and time. Programs must take place between January 1 and October 31, 2007. Please be sure to allow at least one hour for the presentation and group discussion.

To reach Dr. Knight, in Laramie, call: (307) 742-0078, or email: dhknight@uwyo.edu. Discuss the program (audience size, age group, any special themes) and ask about audiovisual needs. Then, print out and complete the WHC application form available online at www.uwyo.edu/humanities/forms. Mail the completed application form to WHC with your application fee of $50 at least two weeks before the program date. Advance planning is encouraged as funds are limited. Organizers will receive confirmation of program booking within approximately one week. Complete information on the Wyoming Humanities Council and the other programs in the WHC 2007 Speakers Forum are posted at: http://www.uwyo.edu/HUMANITIES/. BH

U.S. Forest Service Plant Lists on National Forests and Grasslands of Wyoming

By Andrew Kratz, Rocky Mountain Region Botanist

The nine National Forests and National Grassland in Wyoming cover over nine million acres of the total state land area, including all sectors of the state and many of the highest elevations. These public lands support many plant species that are of conservation concern.

All National Forests and National Grasslands in Wyoming are currently operating under the 1982 planning rule (36 C.F.R. Part 219). These federal regulations describe how the USDA Forest Service develops and revises forest plans, as required by the Forest and Rangeland Renewable Resources Planning Act of 1974 (as amended), to provide for multiple use and sustained yield of goods and services. The 2005 planning rule superseded the 1982 regulations and now guides all revisions of Forest Plans from this point forward, including those currently underway on the Shoshone and Bridger-Teton National Forests. The 2005 regulations differ in many ways from the 1982 regulations, and Forest Service Manual direction (agency policy) is being revised to reflect the differences, including changes to policy on sensitive species.

Under current USDA regulations, the 1982 planning regulations, and existing Forest Service Manual direction, the agency is required to maintain viable populations of all native and desired non-native species on the National Forests and National Grasslands. The 2005 planning regulations eliminate the viability requirement and instead emphasize managing for ecological sustainability and supporting a diversity of native plant and animal species primarily through sustaining native ecological systems and conditions on the Forests and Grasslands. (Cont. p. 5)

Continued from p. 4
Additional species-specific protective measures may be included in plans, if, for example, uncertainty is high about whether the ecosystem diversity approach and plan components adequately provide for species of particular concern. New forest plans will identify "Species of Concern" (ranked G1-G3, T1-T3, Proposed and Candidate species, recently de-listed species, or species deemed warranted for federal listing), which could trend toward listing under the Endangered Species Act and are the most likely candidates for focused management attention in Forest Plans.

Optionally, Forest and Grassland managers may identify "Species of Interest" (such as S1-S2, N1-N2, state-listed, identified in state action plans or on the national Birds of Conservation Concern list, hunted or fished, noxious weeds, or of management interest for some other reason) to help inform the development of ecosystem diversity objectives and desired conditions for the native ecosystems. Sensitive species policy will not apply on Forests/Grasslands which develop new forest plans under the 2005 planning rule.

During the next several years, as the Forest Service implements the new regulations, there may be some public confusion about which rules or policies apply to which Forests or Grasslands, particularly with respect to various "lists" of special status species. At present, sensitive plant lists are relevant on all National Forests & Grasslands in Wyoming at least until a Forest revises its Forest Plan (sensitive species lists of the Rocky Mt. Region are posted at: www.fs.fed.us/r2/projects/scp/; contact the individual Forests of the Intermountain Region for their sensitive plant lists).

In addition, some Forests and Grasslands have developed lists of "Species of Local Interest", usually as part of plan revision under the 1982 planning rule. These are typically species that are rare within the planning unit, but are not necessarily tracked by the Wyoming Natural Diversity Database. As new plans are written under the 2005 planning rule, lists of "Sensitive Species" or "Species of Local Concern" will give way to lists of "Species of Concern" and "Species of Interest" developed for the individual forest plan. AK

Overview of U.S. Forest Service Plant Lists

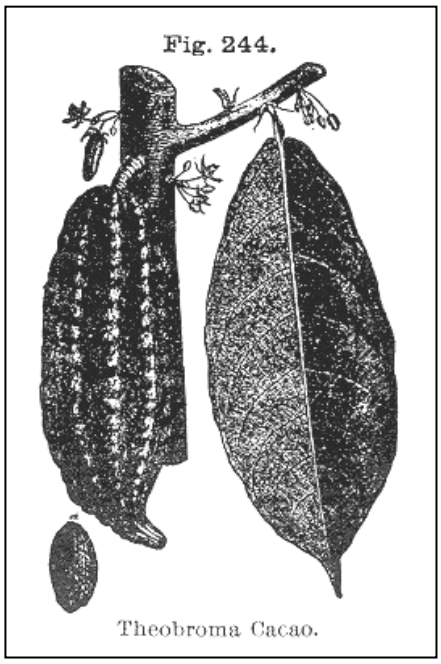
A snapshot of U.S. Forest Service lists of rare plants (those needing a higher level of management attention) is presented in the following table. See the articles on the Species of Local Concern list for Black Hills National Forest.

The challenge of developing rare species lists is especially daunting for national forests that straddle state boundaries – five of the eight national forests in Wyoming, and for national forests that do not have complete floristic lists. Where will all of this lead in plant conservation? This is a fundamental question, because the 2005 planning rule guidelines remove mention of species' viability in goals and objectives, and change the process. Stay tuned! BH

National Forest	Sensitive Species[1]	Species of Local Concern	Species of Concern	Species of Interest
Ashley NF (Flaming Gorge NRA)	Region 4	No	In progress	In progress
Bighorn NF	Region 2	Yes		
Black Hills NF	Region 2	Yes (*see article*)		
Bridger-Teton NF	Region 4	Yes	In progress	In progress
Medicine Bow NF (Medicine Bow-Routt NF)	Region 2	Yes		
Shoshone NF	Region 2	No	In progress	In progress
Targhee NF (Caribou-Targhee NF)	Region 4	Yes		
Thunder Basin NG (see Medicine Bow NF)	Region 2	Yes		
Wasatch NF (Wasatch-Cache NF)	Region 4	Yes		

Don't Look Now, But There's a Bug in Your Chocolate

(*Editor's note: The following article is taken from a pair of articles about cacao conservation, appearing in Lingua Botanica, the past newsletter for Forest Service Botanists and Plant Ecologists. Vol. 5, Issue 1 2004*.)



Bentley and Trimen, *Med. Plants*, 38

Carolus Linnaeus, Swedish botanist, spared no superlatives when it came to chocolate – the cacao tree genus that provides us with chocolate is bestowed with the genus name *Theobroma*, which means "food of the gods."

Chocolate is an excellent example of a product dependent on the critical, and often under-appreciated, work of pollinators. The cacao flower, while only about the diameter of a nickel, is complex in design and behavior, necessitating a special pollinator. This role is filled by a midge, a tiny fly that inhabits damp, shady rain forest; and the only animals that can navigate the complex cacao flower and pollinate it. It is a member of the same insect family as the "no-see-um" flies that plague us with their bites, a millimeter-long fly in the family Ceratopogonidae and the genus *Forcipomyia*.

The white cacao flowers grow directly on the trunk of the tree, and are produced all year long. It takes 5 to 8 months for a flower to ripen into a fruit the size of a rugby ball. The flowers posses both male and female parts, but the flowers cannot fertilize themselves, so rely on a pollinator to transport pollen.

The cacao-pollinating midges require humid shade with a wide range of plant species and decaying matter on the ground, which is the natural habitat of cacao. The bigger a cacao plantation, the less likely the midges will find their way into the sunny, dry and cultivated groves of cacao trees to pollinate individual flowers. Additionally, while wild cacao flowers have over 75 distinct aroma ingredients to attract pollinators, cultivated cacao has only a small percentage of those. The spread of pathogens and perils of pollinators jeopardize chocolate supplies and are leading producers back to sustainable forestry and indigenous genotypes. …Something to think about with your next bite of chocolate.

Pollinator Poster

One exciting new feature on the "Celebrating Wildflowers" website of the U.S. Forest Service (www.fs.fed.us/wildflowers/) includes information on pollinators and announces the availability of a stunning poster (insert) available at no cost. For further information contact the CoEvolution Institute at their email address, info@coevolution.org. It also includes links to a National Academy of Science report on North American pollinators, and a QuickTime movie linked at: http://www.pollinator.org/about.htm

Plant Species of Local Concern in the Black Hills National Forest - 2006 Inventory and Monitoring

By Beth Burkhart, Black Hills National Forest Botanist

In November 2005, Black Hills National Forest designated ten plant species as Species of Local Concern[1]* (SOLC). SOLC can be plant, fish and wildlife species (including subspecies or varieties). They do not meet the criteria for USDA Forest Service regional sensitive status, but could be species with declining trends in a portion of Region 2 or species that are important components of diversity in a local area (e.g., Black Hills National Forest). To be eligible for designation as SOLC, the species (or subspecies, variety) must be recognized through an established scientific process, and must be known to occur on Black Hills National Forest.

The process of determining SOLC on Black Hills National Forest involved assigning level of concern ranks for several criteria (A = high concern/issues through D = no concern/issues) for each species. Data from Dave Ode, SD Natural Heritage Program, and Bonnie Heidel, WY Natural Diversity Database, was very helpful in assigning ranks. In particular, any species that received an 'A' rank for one or more criteria was critically reviewed for inclusion as SOLC. Final determination by Black Hills National Forest for each species was based on a review and discussion of all the criteria using professional judgement.

The criteria that were used in determining plant SOLC parallel the criteria used in determining Region 2 sensitive species, including:

1 – Inclusion on at least one agency list.
2 – Geographic distribution in the Black Hills.
3 – Geographic distribution outside the Black Hills.
4 – Abundance of the species in the Black Hills.
5 – Population trend in the Black Hills.
6 – Vulnerability of habitats in the Black Hills to modification as a result of current or proposed land management activities
7 – Capability of the species to disperse.
8 – Life history and demographic characteristics of the species.

What does being designated SOLC mean for a plant species on Black Hills National Forest? SOLC are to be considered during project design, with effects to the species from alternatives evaluated and considered through the National Environmental Policy Act (NEPA) process. Effects to species are disclosed in the NEPA document if the species or its habitat is likely to be affected by the project. In essence, SOLC are offered the same protective status as R2 sensitive species on Black Hills National Forest.

The SOLC list is an active list. Review of the SOLC list can occur annually, but must occur at least every three years. Similar to the Region 2 sensitive species process, the SOLC process resulted in a list of species of insufficient information – species for which there wasn't adequate information to assign ranks for the criteria and determine if it warranted SOLC designation. Insufficient information species may be added to the SOLC list when information or data is collected such that ranks for the criteria can be assigned and a determination made.

Plant species designated as SOLC on Black Hills National Forest are listed in Table 1, with short descriptions of the current status. The majority of these species are currently known only from the Black Hills in South Dakota – some with such limited suitable habitat that it's not likely they will be found in Wyoming Black Hills.

Our forest-wide field program on Black Hills National Forest in 2006 involved beginning inventory on each species, by attempting to revisit as many occurrences documented in any source we were aware of. Many leads came from botanical survey by contractors for Black Hills National Forest between 2000 and present, but others date back to reports from surveys from botanists like Hollis Marriott and Dave Ode from the 1980s and 1990s.

[1] *Black Hills National Forest is operating under the 1982 Planning Rule since that rule was in effect when the current Forest Plan revision was issued in 1997. This Rule defines a process for designating and dealing with sensitive species and species of local concern. Although the Forest has been through Phase I (2001) and Phase II (2005) Amendments, it will still operate under the 1982 Planning Rule until the next full revision (in 2012).

By way of brief summary for 2006, we started chipping away at the "tip of the iceberg" by documenting 36 occurrences of the ten SOLC species (i.e. completed 5 page data forms for database entry, collected vouchers, collected GPS location data for GIS layer). See Table 2 for information by species. The plan is that when enough inventory information is obtained, a monitoring protocol will be developed for each to ongoing monitoring of long-term persistence of R2 species and implemented to track their long-term persistence on Black Hills National Forest (parallel sensitive plant species on Black Hills National Forest). BB

Table 1: Black Hills National Forest Plant Species of Local Concern – 2006 overview.

Species	Global rank; SD rank, WY rank	Habitat/Distribution
Adiantum capillus-veneris (southern maidenhair fern)	G5; SD-S1	The single documented Black Hills occurrence is restricted to the moist, calcareous substrates associated with warm springs at Cascade Creek (elevation 3,400 ft) in the southwestern Black Hills (South Dakota). This species [previously designated R2 sensitive] at this site has been monitored annually since 2000 and was monitored in 2006.
Carex bella (southwestern showy sedge)	G5; SD-S1	Black Hills occurrences (8 reported; 5 of those in Custer State Park) are known from granitic outcrops and bouldery areas in cool, moist, shaded white spruce or paper birch forest between 6,600 and 7,100 feet (central core Black Hills/South Dakota). Three occurrences on BHNF were documented in the Black Elk Wilderness in 2006.
Eleocharis rostellata (beaked spikerush)	G5; SD-S1, WY-S2	*Eleocharis rostellata* occurs in coastal salt marshes and in inland saline, alkaline, or strongly calcareous wetland habitats (e.g., around hot springs). The single documented Black Hills occurrence is in the year-round flows of warm spring water of Cascade Creek in the southwestern Black Hills (South Dakota) at an elevation of ca 3,400 ft. It was first documented at this location in 1966. The occurrence was monitored in 2006.
Gentiana affinis (pleated gentian)	G5; SD-S2, WY-S4	Habitat information is reported for 8 sites on the South Dakota side of the Black Hills National Forest. In the Black Hills, *Gentiana affinis* occurs primarily in moist areas (not saturated) on limestone and in open conditions, sometimes near wet meadows, fens, and stream margins. One report is from McIntosh Fen Botanical Area. Seven occurrences were documented in 2006, mainly in the central Black Hills (South Dakota).
Listera convallarioides (broadlipped twayblade)	G5; SD-S1, WY-S1	Two sites are currently known in the Black Hills on National Forest System lands (South Dakota). Elevations range from 5,120 to 6,500 feet. Individuals are growing in saturated soil conditions adjacent to springs, and located under tree overstories dominated by spruce. Both occurrences were monitored in 2006. One occurrence is in Englewood Springs Botanical Area.
Lycopodium annotinum (stiff clubmoss)	G5; SD-S1, WY-S2	There are 4 reported occurrences on Black Hills National Forest and they are associated with high moisture microhabitats between 5,100 to 6,300 ft, within remnant boreal white spruce and paper birch/beaked hazelnut communities. In 2006, 4 occurrences were documented (2 in South Dakota; 2 in Wyoming). Two of the 4 are co-located with *Lycopodium complanatum* [R2 sensitive species]. One occurrence is in Upper Sand Creek Botanical Area.
Oxyria digyna (alpine mountainsorrel)	G5; SD-S1, WY-S4	Black Hills National Forest occurrence reports (3) are from the highest elevations in the Black Hills, between 6,800 and 7,200 ft (central core Black Hills/South Dakota), within areas of course-textured soils in steep, granite outcrop areas and narrow gullies. Three occurrences were documented in 2006 in the Black Elk Wilderness (near *Carex bella* occurrences and *Viola selkirkii* [R2 sensitive species] occurrences). One occurrence is reported from Custer State Park.
Petasites sagittatus (arrowleaf sweet coltsfoot)	G5; SD-S1, WY-S2	Habitat information for *Petasites sagittatus* is reported for 14 sites on Black Hills National Forest/South Dakota (5,400 to 6,750 ft). The species is associated with cold, wet, marshy conditions and is a facultative wetland species. Spruce, aspen, and ponderosa pine are documented associated tree species. A variety of willow species occur at the majority of reported locations. Five occurrences were documented in 2006. Several sites along a ca 2-mile stretch of the North Fork of Rapid Creek reported as separate occurrences were combined into a single occurrence. One occurrence is in Black Fox Botanical Area.
Polystichum lonchitis (northern hollyfern)	G5; SD-S1, WY-S2	*Polystichum lonchitis* is disjunct in the Black Hills from western Wyoming. On Black Hills National Forest, *P. lonchitis* is associated with moist, shaded, north-facing slopes in forested ravines and gulches on limestone substrates (elevation 4,160 and 5,540 ft). Twenty records of *P. lonchitis* are reported from Black Hills National Forest (South Dakota and Wyoming). Eight occurrences were documented in 2006, including 2 in the Bearlodge/Wyoming.

Species	Global rank; SD rank, WY rank	Habitat/Distribution
Salix lucida (shining willow) (See *Salix lucida* article,next page).	*Salix l.* spp. *caudata*: G5T5; SD-SNR, WY-S3S4	*Salix lucida* ssp. *caudata*, commonly associated with streambanks, shores, wet meadows, and seeps, is at its easternmost limit in South Dakota. The taxon is considered a facultative wetland plant in South Dakota and eastern Wyoming. Two BHNF locations confirmed in 2006 are in the Bearlodge (Wyoming) at 4,800 ft (1 plant) and in the northern Black Hills (South Dakota) at 5,000 ft (2 plants). A third location (Bearlodge/Wyoming) documented by confirmed voucher has not yet been relocated. Two reported locations (central core Black Hills/South Dakota) were revisited in 2006 and *Salix* spp. individuals found were confirmed as other species. *Salix lucida* ssp. *lucida* is associated with streams and rivers in eastern North America. The taxon is at its westernmost limit in South Dakota. One occurrence reported near Deadwood in 1913 has not been relocated.
	Salix l. ssp. *lucida*: G5T5; SD-SNR	

In Pursuit of the Shining Willow (*Salix lucida*)

By: Beth Burkhart, Black Hills National Forest Botanist

Species of Local Concern (SOLC) present challenges of varying degrees in determining their status in the Black Hills. One of the more interesting efforts is our experience with *Salix lucida* ssp. *caudata* (shining willow; syn. *Salix lasiandra* var. *caudata*). Our original data searches on *Salix lucida* resulted in:

- one occurrence documented in 1913 near Deadwood/SD that has never been relocated;
- one occurrence in the central Black Hills/SD
- documented by Dr. Gary Larson at SDSU in 1993 (voucher collected and deposited at SDSU; another specimen in Black Hills NF herbarium);
- one occurrence documented in 2003 by Black Hills NF botanical contractor surveyors in the Black Elk Wilderness/SD (voucher collected); and
- two occurrences documented in 2002 on Redwater Creek in the Bearlodge Mountains/WY by BHNF botanical contract surveyors (voucher collected for each).

Above: *Salix lucida* ssp. *caudata*, by Cheryl Mayer

Cheryl Mayer, Black Hills NF botany tech, and I looked at the vouchers (with inexpert *Salix* spp. eyes) and revisited the sites in the central Black Hills/Black Elk Wilderness - and decided we needed assistance in puzzling this out! We contacted Dr. Robert Dorn to see if he would help us figure out what we had and help us get more familiar with *Salix lucida*. It was our good fortune that Bob has been interested in *Salix lucida* in the Black Hills for quite awhile and was willing to spend some time with us – reviewing voucher specimens as well as in the field.

First, Bob told us that he has researched the Deadwood occurrence and it was most likely *Salix lucida* ssp. *lucida*, the only documented occurrence from the Black Hills, where the subspecies is at its westernmost limit (global rank: G5T5, state ranks: SD- not ranked and WY-not present). So naturally, Bob has been on the hunt to relocate that occurrence and find other occurrences. Bob collected all the information he could find on the historical location and has explored around the Deadwood landscape to come to his best guess on the location where the species was documented – but has never found any plants. So that occurrence remains on

the "missing" list. But Bob has spurred us to keep our eyes open for other locations in the course of our botany work on the Black Hills!

Bob also helped us better understand *Salix lucida* ssp. *caudata* (syn. *Salix lasiandra* var. *caudata*), the subspecies at its easternmost limit in the Black Hills (global rank: G5T5, state ranks: SD-not ranked and WY-S3S4). In reviewing the voucher specimens, Bob's determination was that neither of the specimens from the central Black Hills/SD was S. *lucida* ssp. *caudata*. One was *S. scouleriana* misidentified. However, the other one was trickier. Bob wouldn't commit to a determination without seeing the plant in question. So he went back to that site on his own, and reported back that his determination was that it was *S. fragilis* (a non-native species: crack willow), but growing in a shaded situation that caused its leaves to somewhat fit characteristics of *S. lucida* ssp. *caudata*.

So now it appears that we're down from 4 locations to 2, for *Salix lucida* ssp. *caudata*! Fortunately, we revisited one of the Redwater Creek/WY occurrences with Bob that Susan Corey, Black Hills NF botanist on Bearlodge District, had relocated in 2005 - and the occurrence was present (one male plant, which had been protected with temporary fencing from livestock grazing but which experienced pruning by beaver in spring 2006). In addition, Bob shared a new location in Spearfish Canyon- Spearfish Creek/SD that he had identified from his windshield at 50 mph the summer before. This location has one large female plant and one small vegetative plant, although there is a large amount of suitable habitat in the area to be searched for more!

We also revisited the second Redwater Creek/WY occurrence with Bob, but the specific location information was inaccurate so uncertainty was introduced on that account. In addition, the general area is heavily grazed by livestock at times, so many small browsed willows were present that could not be positively identified. In summary, we didn't find any plants that we felt confident identifying as *Salix lucida* ssp. *caudata*. Bob felt the voucher specimen looked good, though, so this site will be returned to for more investigation in the future.

In addition to the protections afforded *Salix lucida* ssp. *caudata* as a Black Hills NF plant SOLC, Phase II Amendment to the Black Hills Forest Plan (signed in December 2005) provides additional direction specific to *Salix* species of concern – because it is clear that livestock prefer *Salix* spp. over other forage and have caused significant changes to *Salix* spp. distribution and abundance in the Black Hills and throughout the west. The direction is found in Standard 2505. Allowable use and/or residual levels: No authorized utilization will be allowed by domestic livestock on known occurrences of willow emphasis species (e.g. *Salix candida*, *Salix serissima*, *Salix lucida*). This means occurrences must be fenced to exclude livestock if they are found in active grazing allotments. The temporary fence at the confirmed Redwater site will be expanded to protect the single plant and a larger habitat area (although it won't likely be able to keep beavers out). The Spearfish Canyon/Spearfish Creek site currently is not in an active grazing allotment, so it will not be fenced. Both sites will be monitored annually through the Black Hills NF plant monitoring program.

That is the story to date on the recent evolution of knowledge on *Salix lucida* ssp. *caudata* (and *S. lucida* ssp. *lucida*) in the Black Hills - from 5 reports to 2 confirmed locations, but with a better handle on identification and suitable habitat to be searched. It's a good example of the state of knowledge of many plant species (in the Black Hills or anywhere) and what can be learned by focusing attention/effort on a species. Getting a better handle on species abundance and distribution for ten plant SOLC, 66 plant species of Black Hills NF insufficient information, and 13 R2 sensitive species (some of which we are still collecting baseline information on before developing monitoring protocols) will be a challenge – for two Black Hills NF plant monitoring staff! But a persistent effort will produce valuable information to feed into Black Hills NF management and botany in a broader sense. BB

Teachers Celebrate Wildflowers

The U.S. Forest Service orchestrated a firestorm of activity on its "Celebrating Wildflowers" website in 2006, with contributions by every region, national forest and national grassland in the country. This new web site is the gateway to an enormous about of botanical information (www.fs.fed.us/wildflowers/). Educational resources for teachers include lesson programs and handouts on the following:

- Just for Kids – Games, Coloring Pages and Activities
- Celebrating wildflowers through art!
- Wildflower conservation
- Pizza and plants
- Shopping! How do wildflowers contribute to what you eat!
- Plants Alive
- What is a wildflower
- Wildflower parts
- Pollinators and Pollinator Fact Sheets
- Bees as pollinators
- Pollinator Field Guides
- Wildflower Classification
- State Flowers
- Wildflower coloring pages (and a SEPARATE noxious weed set!)
- Wildflower poetry
- Region 4 Celebrating Wildflowers Learning Program

See also the pollinator link and poster announcement (p. 6, this issue) and watch for Wyoming featured in pollinator-of-the-month!

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Birderfeeder Alert

Bird-watchers, keep an eye on your birdfeeders for more than feathered friends. Jane and Robert Dorn were visited recently by robust plants from Africa, *Guizotia abyssinica* (L.f.) Cass. (Asteraceae) that escaped from allegedly sterilized bird seed. *Guizotia abyssinica* (also called noog, niger seed, nyger seed, and ramtil) is a fat- and protein-rich annual that is often grown in rotation with legumes in Ethiopia where it originated. It is favored by birds such as goldfinches. It is NOT a thistle but sometimes referred to by birdseed suppliers as thistle seed. The incident was documented with a specimen. This is one exotic species that will not persist in Wyoming, at least not in present company. *Guizotia abyssinica* is currently being researched as a prospective commercial crop in the Great Plains. BH

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See the following page for the announcement about the poster displayed below, with information on getting a copy.

Threatened and Endangered Plants of Wyoming

Threatened and Endangered Plant Poster

Hare you heard that there are Threatened and Endangered plants in Wyoming? Do you have a public talk, display, or hike to lead next year, or maybe a blank spot on the door or wall? An 18" x 34" poster featuring all four Wyoming Threatened and Endangered plants has been printed by the Bureau of Land Management in eye-catching design on heavy stock poster paper. Wyoming Native Plant Society has complementary copies to distribute at all Wyoming Native Plant Society events and copies will become available next year from all BLM field offices and U.S. Forest Service offices headquartered in Wyoming. See the image on the preceding page.

Copies are also being distributed in a collaborative effort through the National Park Service, Natural Resource Conservation Service, Nature Conservancy, Teton Science Schools, U.S. Air Force – F.E. Warren Air Force Base, U.S. Fish and Wildlife Service, William Ruckelshaus Institute for Environment and Natural Resources (UW), Wyoming Game and Fish Department and Wyoming Natural Diversity Database (UW).

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

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, including the annual meeting/field trip held each summer. To join or renew, return this form to:

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

Name: _____

Address: _____

_____

Email: _____

___ $7.50 Regular Membership
___ $15.00 Scholarship Supporting Member
($7.50 goes to the Markow Scholarship Fund)