

**NATIVE PLANT DISEASES**

Sue Geske

Nearly everyone is familiar with the shelf or hoof-shaped fungi growing on tree trunks in the woods. These wood-rotting fungi are plant pathogens. They digest the cellulose and/or lignin of the tree host causing the plant to weaken and eventually die.

Many native plants are susceptible to attack by plant pathogens. Because populations of a particular plant species are scattered throughout a vegetative habitat, and because of long-term association, widespread disease epidemics do not occur as can happen in monoculture crops. As members of the Montana Native Plant Society, many of you probably spend your free time hiking, observing the wildlife, and of course, the wild plants. This article is intended to introduce you to

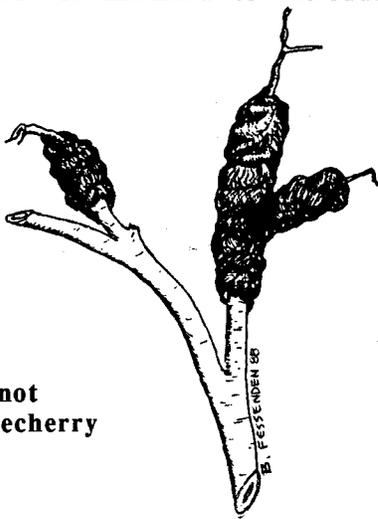
by the presence of hyphae (a cotton-like mass) on leaves, roots, crowns or flower parts. Clumps of black, orange or yellow spores may frequently be present on dicotyledonous leaves or grass stems. Occasionally, disease symptoms caused by fungi appear as spots or splotches in various shades of brown or black on leaves. These symptoms can be tricky to diagnose as due to a fungal disease, however, since bacterial infection can cause similar spotted symptoms.

One method to use, while out walking, to distinguish a bacterial from a fungal disease, is to look for a water-soaked appearance of the leaves near a lesion or other symptom. Bacterial slime may dry on the leaf surface, giving it a somewhat shiny look. If you can't detect any of these symptoms, try cutting a petiole or stem near the infection. When the cut halves are slowly pulled apart, look for a sticky ooze clinging between the two pieces.

Viruses are the only biotic disease agents which cannot be seen with a light microscope. When in the field, only symptoms will help you identify a virus-infected plant. Symptoms can be confusing and in most cases will not allow identification of the particular virus which is causing the disease. Chlorosis, or yellowing, of the leaves is most common. The chlorosis can be of various patterns, including: mosaics, streaking, rings or irregular, crooked lines.

What should you look for when hiking? Rust was prevalent on aspen or cottonwood this past autumn. It is caused by the fungus Melampsora spp. Symptoms

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**Black knot  
on chokecherry**

the typical diseases which may be encountered on your outdoor forays.

Biotic diseases are generally caused by three agents: fungi, bacteria, or viruses. Fungal diseases can sometimes be identified

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# FROM THE PRESIDENT

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**DO YOU CARE?** So far, we've received very little response to our request for input on what guidelines to establish for the Society's role in advocacy/ conservation issues. Please dig out the May 1988 mailing which discusses in detail the issues brought up at our Spring Meeting in Bozeman. Send your thoughts to Renee' Cook, MNPS Valley of the Flowers Chapter, PO Box 992, Bozeman 59771-0992 by July 31.

**A GREAT BARGAIN IS GOING ... GOING ...** But it's not gone yet! Lifetime membership in the Montana Native Plant Society is currently only \$100. The Board of Directors voted this spring to raise that to \$250, starting September 1. So raid your piggy bank and get in on a real bargain - while there's still time. Use the membership coupon on Page Eight.

**FALL MEETING PLANS.** Our statewide Fall meeting will be in mid-September, hosted by the Flathead Chapter. Exact date, times and activities will be sent to you as soon as plans are final.

**WE STILL NEED YOUR HELP:** Interest was voiced at the Spring Meeting in establishing a number of Standing Committees, and soliciting participation in them from the membership at large. They are:

**ADVOCACY AND CONSERVATION.** The advocacy issue is covered in detail in the

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**Moderator's Reports,** mailed to you following the Spring Meeting; members of the committee will work closely with the Board of Directors in setting and implementing the policies finally adopted by the Board.

**EDUCATION AND OUTREACH.** Education is an implicit part of the activities of many of the committees we're forming; this one will develop and make available both written and visual programs to educate children and adults about the plants native to the state and the aims of the Society. Outreach is envisioned as including support for new or potential MNPS chapters around the state. The committee could also be responsible for seeing that the MNPS display is put up at appropriate conventions around the state.

**NEWSLETTER.** Ideally, there will be a member of this committee in each local chapter, to serve as a conduit for information about that chapter's activities, work with the editor to generate ideas for articles and other items, and seek suitable businesses or individuals to advertise in the newsletter.

**PUBLICITY.** This committee will be responsible for preparing news releases about MNPS and its various activities for distribution to the media, both on a local and statewide level.

**LANDSCAPING/REVEGETATION.** There are both educational and research aspects to be explored by this committee; see the Moderators' Reports for specifics.

**FIELD TRIPS/COLLECTING/SURVEYS.** This is also covered in detail in the Moderators' Reports in the May mailing.

**MEMBERSHIP.** Members of the committee will contact organizations (such as conservation and nature groups, professional societies, etc.) whose members' interests might make them good potential MNPS members. They'll also work to increase membership on the chapter level.

**CAN YOU HELP MNPS IN ONE OF THESE AREAS? WILL YOU??**

- Kathy Ahlenslager



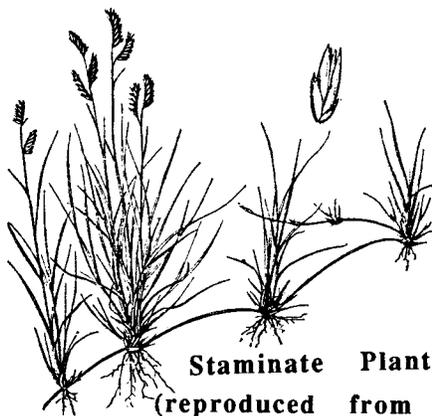
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# Native Buffalograss for Montana Lawns

Margaret Scoles

Are you interested in a native lawn grass which requires no fertilizer, mowing or watering, and has no pests? Even grasshoppers don't bother buffalograss, Buchloe dactyloides, which fills that niche well in my native landscape scheme in southeastern Montana.

Buchloe, a low growing sod-forming perennial, produces fine curly blue-green foliage. Plant height is 5-15 cm. A dioecious species, Buchloe produces relatively large seed burs (92,000 seed/kg), usually at the base of female plants, with one to four caryopses per bur. The unique seed bur, illustrated below, is a good identifying characteristic; burs may generally be found throughout the year. The grass's dioecious flowering habit makes seed harvest difficult. Many people have mistakenly stripped the more conspicuous dried anthers from male plants and scattered them for "seed." Seed dormancy, evolved over thousands of years of natural selection, inhibits germination. The quality standard for Buchloe minimum

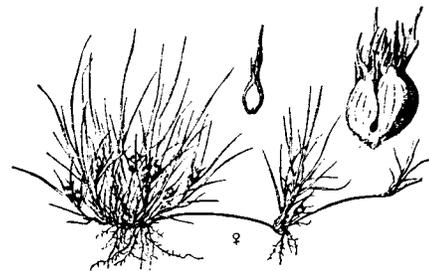


Staminate Plants  
(reproduced from Hitchcock  
& Chase Manual of the  
Grasses of the United States)

germination is 65%. Buffalograss seed is available from Gurney Seed and Nursery Company, Yankton, S.D. 57079, for \$8.95 per half pound or \$14.75 per pound, plus \$1.00 per order shipping.

Buchloe also spreads aggressively by stolons. Because it grows abundantly in our area of Powder River County, I chose to transplant sod pieces at zero cost from

native pasture. In May, 1983, I transplanted spaded clumps 6 to 12 inches apart into our lawn area. Within two years, stolons spread into a sturdy sod. Since then, I have successfully transplanted the grass into other landscaping areas. Late May or the first of June is the best time to transplant here. Drought resistant Buchloe thrives in all but very sandy soil without



Pistillate Plants - "bur" at right.

watering. In our sandy yard, with 12-13 inches of annual precipitation, I water several times each summer. The sod produces a tremendous root system to maintain its modest top growth and offers excellent erosion control.

As the West was developed, the growth habit of Buchloe protected it from overgrazing by almost all livestock. When  
... continued on page 5



## QUIZ



Some plants have a distinctive smell which aids in recognition. Do you know:

1. What introduced species has an aroma of pineapple when the foliage is crushed?
2. Name two different native genera which produce a strong "skunky" smell.
3. What invasive weed has a "mouse-nest" odor associated with the root and foliage?
4. What family produces the smell of anise?
5. What is the most fragrant native species in the state?

(Answers on page 7)



## FIELD TRIPS

FROM MID-JUNE TO LABOR DAY - The Montana Native Plant Society President, Kathy Ahlenslager, leads hikes out of Many Glacier. Call Kathy or Bob Schuster at the Many Glacier Ranger Station at 732-4493 for the hiking schedule.

SATURDAY, JULY 23 - Hike to Cobalt Lake out of Two Medicine in Glacier Park. Meet at the restaurant/boat dock at 10:15 a.m. to catch the 10:30 boat across Two Medicine Lake. Cost for boat is \$5.00 for adults. Bring lunch and water.\*

SATURDAY, JULY 23 - 10 a.m. to 3 p.m. "Herbal and Medicinal Uses of Native Plants" led by Robyn Klein. Meet at Buck's T-4, Highway 191 south of the Big Sky turnoff, and carpool to the Doe Creek area. Bring lunch and water. Call Robyn at 995-4522 for more details.

FRIDAY, JULY 29 THROUGH SUNDAY, JULY 31 - "Plant Succession Following Severe Wildfire". Backpack trip to Sand Point Creek, a tributary of the Lost Fork of the Judith River, where Wayne Phillips has been tracking vegetation recovery from the effects of a 1985 fire. Meet Friday night, 7/29, at Spring Creek Campground, 4 miles north of U.S. Hwy 12 on Forest Service Road 274, about halfway between White Sulphur springs and Harlowtown. This is a good gravel forest road, well-marked, which leaves the highway about five miles east of the community of Checkerboard. On Saturday, participants will hike in to the site of a 13,500-acre burn and examine both burned and unburned areas. With any luck, the rare orchid Goodyera repens will be in bloom; this is its only known location in the state. The group will continue to explore the area on Sunday, then hike out in the afternoon. This is one trip you've got to be in good condition to go on! Contact trip leader Wayne Phillips, Great Falls for specifics: 453-0648 (home) or 791-7743 (work).

SUNDAY, JULY 31 - Hike into Jewel Basin to Birch Lake or another favorite Jewel Basin lake. Meet at 9 a.m. at the Jewel Basin trailhead. Bring lunch and water.\*

SUNDAY, AUGUST 7 - Hike the High Line Trail out of Logan Pass to Granite Park

Chalet. Meet at Logan Pass Visitor Center at 9 a.m. Bring lunch and water.\*

SATURDAY, AUGUST 27 - Restoration and revegetation efforts at Logan Pass, Glacier Park. An easy walking half-day trip led by Rachel Potter. Hikers will help collect native plant seed for use in revegetation. Call Rachel at 892-2446 (home) or 888-5441 (work) for details.

\*Due to the heavy summer work load of many of our members, a plant expert on each trip is not guaranteed. In case of questionable nasty weather, call Flathead Chapter Vice President Pattie Brown at 837-5018 the evening before the trip.



## MEETINGS

AMERICAN PENSTEMON SOCIETY: A Northwest area meeting of the APS will convene at Eureka, Montana on July 15, and at Whitefish on July 16-17, with field trips to Ten Lakes Scenic Area and Glacier Park. For information, contact Sally Steward, Box 503, Eureka, MT 59917; phone: (406) 296-2091. APS's interest focuses on growing penstemons from seed.

MNPS chapters will resume evening meetings this fall. Those that are formally organized are listed below. Groups are forming in other areas as well - Helena and Great Falls, for instance. You need only ten paid MNPS members to start a chapter; if you'd like more information, write to Kathy Ahlenslager, Many Glacier Ranger Station, Box 396, Babb, MT 59411.

CLARK FORK CHAPTER, Thursday, September 8, 7:30 p.m. Meet in Room 307 of the Botany Bldg., University of Montana. The program tentatively scheduled is "Moss Identification."

VALLEY OF THE FLOWERS CHAPTER, Wednesday, September 14, 7:30 p.m. Meet in Room 346, Leon Johnson Hall Annex on the Montana State University campus. Tentatively scheduled is a program on

MEETINGS, continued

aquatic plants. A slide projector will be available - bring half a dozen of your best flower slides from this summer's travels. FLATHEAD CHAPTER, Wednesday, September 21, 7 p.m. Meet at the Montana Power Company in Kalispell. Business meeting at 7 p.m., followed at 8 p.m. by the program, "A Summer's Summary."



ANNOUNCEMENTS

DO YOU KNOW ANY OF OUR NATIVE EUPHORBIAS?

MNPS member Bob Pemberton is researching biological control of leafy spurge, Euphorbia esula. If you know the location of populations of our native spurge (E. robusta, E. commutata, and E. spatulata), please call him at 994-4890 or write: Dr. Bob Pemberton, Biological Control of Weed Group, USDA-ARS - Rangeland Insect Laboratory, Montana State University, Bozeman, 59717.

FALL NEWSLETTER DEADLINE

We welcome your articles, clippings, field trip reports, meeting notices, book reviews, cartoons or drawings - almost anything, in fact, that relates to our native plants or the Society. Deadline for the Fall

issue, which will be mailed the first week in October, is Monday, September 19. We especially need short items (one to three paragraphs) which can be used as fillers.

Drawings should be done in black ink with a fine-point pen, so that if we have to reduce them we don't lose detail. If you send clippings, please note the source, volume/issue number and date.

Chapters should recruit someone who can serve as newsletter liaison, to make sure that YOUR doings get reported on and to generate local articles.

Send newsletter material to Jan Nixon, PO Box 992, Bozeman, MT 59771-0992.

USDA SOIL CONSERVATION SERVICE PLANT MATERIALS CENTER in Boise has requested seed collections of the following species for testing and possible release for use in revegetation projects:

- Balsamorhiza sagittata - Arrowleaf  
balsamroot
- Stipa thurberiana - Thurber needle-  
grass
- Grayia spinosa - Spiny hopsage
- Salix spp. - Willow species

They're also interested in seed of some of the Poas. For species descriptions, collection hints and dates, quantities, etc., call Bonnie Pond, (208) 334-1610, or write: SCS State Office, Room 345, 304 North 8th St, Boise, Idaho 83702.

BUFFALOGRASS, continued from page 3

I asked a local rancher about the historic use of buffalograss in this area, he replied, "I don't know about lawns, but it grew well on the roofs of sod houses!"

The primary limitation to Buchloe is aesthetic. Its growing season, late May through September, cannot be lengthened appreciably by watering. The fine, dry foliage is susceptible to breakage during the seven dormant months and tolerates traffic poorly. Areas in which I transplanted a solid section of sod two years ago have held up much better than the

1983 planting. In that earlier planted area, stolons spread to a uniform lawn each summer; however, traffic breaks off the dormant stolons to leave bare areas between the original clumps each winter. The grass transplants readily and I have only rarely lost clumps of sod.

Buchloe grows in the short-grass prairie in the eastern third of Montana. In our area, pure patches of Buchloe are easy to find. Blue grama, Bouteloua gracilis, is a common contaminant and not easily distinguished in the vegetative stage. When in doubt, examine leaves closely.

... continued on page 6



# WHO WAS KELSEY, ANYWAY?!



Peter Lesica

Early this year, the Montana native Plant Society chose to name its newsletter "Kelséya" after a native plant found in limestone mountain ranges throughout the state. The genus Kelseya was named in honor of Francis Duncan Kelsey who first discovered the plant along the Missouri River northeast of Helena in 1888. One of Montana's first resident botanists, Francis Kelsey was born in Indiana in 1849 and spent most of his early years in Ohio. He received a Bachelor's degree from Marietta College in Ohio and attended Andover Theological Seminary in Massachusetts, then served as a Congregationalist minister in Maine and Massachusetts before moving to Montana in 1885.

Kelsey served as a minister in Helena from 1885 to 1893. From 1887 to 1890, he was also a lecturer at the College of Montana in Deer Lodge. During this time, Kelsey studied the flora and collected nearly 500 fungi and over 650 vascular plant specimens. Twenty-three of the fungal specimens and 18 of the vascular plant specimens were nomenclatural types. He discovered at least five plant species that were new to science. These include Kelsey's milkvetch (Astragalus atropubescens), small shooting star (Dodecatheon conjugens), kelseya (Kelseya

uniflora), white-margined phlox (Phlox albomarginata), and Kelsey's phlox (Phlox kelseyi). Most of these plants he discovered within a few miles of Helena. The majority of his collections were made in Lewis and Clark, Jefferson and Powell counties, but he also collected in Cascade, Deer Lodge, Gallatin, Granite, Madison, Park, Sweet Grass and Yellowstone counties. Kelsey's collecting and teaching of the local flora did much to arouse interest in botany throughout the state. He directed the assembly of a collection of Montana plant specimens for display at the 1893 World's Fair. This collection is now housed at the herbarium at Montana State University in Bozeman. The remainder of his collection (eventually totaling over 6,000 specimens) is at the herbarium of Miami University in Ohio.

Francis Kelsey left Montana in 1893 to accept the first professorship of Botany at Oberlin College in Ohio. During this time, he organized his herbarium and published a dozen professional papers, many of them dealing with his Montana experiences. In 1897, he accepted a pastorate in Toledo, Ohio, and was a lecturer in botany at the Smead School for Girls until his death in 1905.



**BUFFALOGRASS**, contin. from pg 5  
Buchloe leaves are pubescent (covered with tiny hairs), while Bouteloua leaves are smooth.

Weeds are often a problem in the establishment phase but Buchloe soon crowds them out. The low growing habit of Buchloe makes it easy to contain with purchased lawn edging, or wood or stone barriers, although some stolons will escape over them and require trimming.

I have not communicated with anyone who planted Buchloe from seed although one Biddle gardener is ordering seed this year. Published information on Buchloe is scanty. Extension Service

bulletins on the grass are not available in Montana currently, but some western states have published bulletins. I would be happy to communicate with anyone interested in buffalograss.

#### Sources:

Dorn, Robert F. **Vascular Plants of Montana**. 1984. Mountain West Publishing, Box 1471, Cheyenne, WY 82003.  
Heath, Metcalf, and Barnes. **Forages: The Science of Grassland Agriculture**, 3rd Edition. Revised, 1978. Iowa State University Press, Ames, IA.  
**Pasture and Range Plants**. 1963. Phillips Petroleum Company, Bartlesville, OK 74004.



to look for are orange-yellow pustules on the undersides of leaves. Towards fall, these pustules will form a dark, orange-brown waxy crust. The two color differences found reflect two of the rust's spore stages in its life cycle. The alternate host for this rust is larch. It is infected by rust spores in spring. Usually the rust does not inflict much damage, but it can cause premature leaf drop in the fall and can be aesthetically unpleasing if it's in your back yard. Rust diseases don't affect only trees, though. Look for characteristic orange or black pustules on balsamroot, bitterroot and grasses. You may have to look closely, but you should be able to find many plant species which serve as rust hosts.

Another type of fungal disease is that caused by "powdery mildew." This fungus produces a "bed" of cream or white-colored hyphae on the leaf surfaces of a variety of plants. Look for the characteristic cheistothecia (black, overwintering bodies) on the hyphae. Powdery mildew may reduce a plant's photosynthetic capabilities, but it is generally not much of a problem. Geranium, Geum and Arnica are a few hosts susceptible to powdery mildew infection.

A fungus which is hard to miss is black knot of chokecherry and wild plum. Apiosporia morbosa is the culprit. This

fungus is responsible for the black, hardened, elongated swellings found on the branches of chokecherries and wild plums in the state. Fungus spores are produced within the hardened mass which may then infect new spring growth. It may take one or two years before a black swelling is formed. This disease may



Rocky Mountain maple leaf with red crystalline-appearing fungus

reduce the fruit yield in your favorite stand of chokecherries.

The most obvious bacterial disease found in the state is fireblight on hawthorn (Crataegus) and mountain ash (Sorbus). Erwinia amylovora can infect through natural openings or wounds in bark, flowers or leaves. Cankers can be formed on the bark; look for oval, sunken, dark or water-soaked areas on branches. Leaves become scorched-looking and dry starting at the tips and margins. They may completely dry out, but will still cling to the branches. The disease can become prevalent after extended rainy periods in the spring.

A virus disease to look for in larkspur is a virus mosaic pattern, and ringspots in cow cockle (Lychnis alba).

Native plants and their plant pathogens have evolved together. Often, a native plant species is not adversely affected to any great extent by a disease agent, although in some cases a specific plant may succumb to the disease. On your next hiking trip, look at a different aspect of native plant ecology ... search for diseases!



## QUIZ ANSWERS

1. Pineapple weed, Matricaria matricarioides.
2. Sky pilot or Jacob's ladder, Polemonium species, and Gilia species.
3. Houndstongue, Cynoglossum officinale.
4. The carrot/parsley family, Apiaceae or Umbelliferae.
5. Only you can decide this! Everyone's "smeller" is different, and what is sweet to one is oppressive or unpleasant to another. Just remember to use your nose as well as your eyes when you're out looking at flowers.

# KELSEYA

Montana Native Plant Society  
Botany Department  
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## WILDFLOWER DIGOUT

On a cool, partly cloudy Saturday in mid-May, the Clark Fork Chapter of the Montana Native Plant Society held its first annual Wildflower Digout. In cooperation with Lolo National Forest, seven members drove to the Howard Creek area west of Lolo and dug native plants from an area scheduled to become a roadbed later in the month.

Some of the species that found new homes were trillium (Trillium ovatum), twinflower (Linnaea borealis), fairy bells (Disporum trachycarpum), prince's pine (Chimaphila menziesii),

glacier lily (Erythronium grandiflorum), kinikinnick (Arctostaphylos uva-ursi), and Solomon's plume (Smilacina racemosa). It was a great way to save a few plants from the bulldozer, and get some natives for our gardens.

## The Montana Native Plant Society

University of Montana  
Botany Department  
Missoula MT 59812

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- \$8 Individual  
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