Spring 2004

MONTANA Naturalist

A publication of the
MONTANA
Natural History Center

Wildflowers: Montana's colorful treasures

Nurturing young naturalists

Get outside with summer camps and programs

see Calendar, page 8

TO UNDERSTAND, APPRECIATE AND CONSERVE NATURAL SYSTEMS THROUGH EDUCATION IN THE NORTHERN ROCKY MOUNTAIN REGION

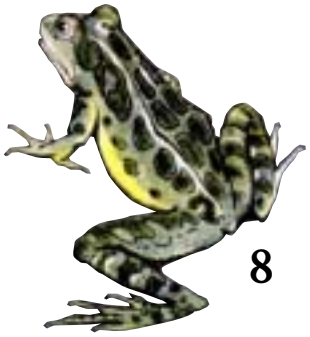
Spring 2004

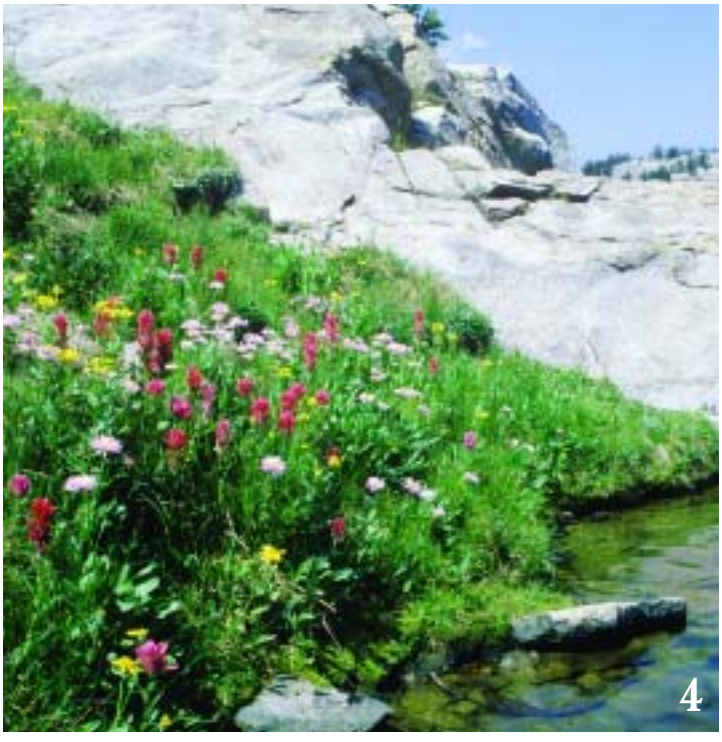
MONTANA Naturalist

Feature

Departments

Special Pull-Out Section





Cover photo – Photo of Parry's Townsendia, otherwise known as the giant aster, by Pam Voth, an independent photographer and sound recordist based in Missoula. You can reach her at pamvoth@hotmail.com.

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MNHC Photo

I have been told the only certainties in life are death and taxes. I feel compelled to add change to that list. Seasons change, weather changes, the landscape looks different with changing light, even people change over time. It might seem paradoxical to catalog change as one of life's constants, but it is truer than anything else I've known.

The Montana Natural History Center is currently experiencing change and you are holding a manifestation of it in your hands. *Montana Naturalist* represents a change for the better. Rather than multiple publications, we have determined that one suits our needs better. *Montana Naturalist* is a distillation of the best elements from each of our former publications and is a wiser use of our limited resources.

Making this change is just one step toward becoming a more visible, sustainable and meaningful organization that educates people about the greatness of Montana's natural history. Our move to a new, larger and more accessible home *(see story on page 12)* is another step in this progression. And driving it all are the many talented and dedicated individuals on our board and staff who are committed to taking the Montana Natural History Center to its next level of development.

Please enjoy this issue of *Montana Naturalist*, share it with your friends and let us know what you think. We also welcome ideas about naturalists and natural history topics to feature in future issues, and are happy to consider essays or photos for publication. Send any correspondence to *Montana Naturalist*, MNHC, Building T-2, Missoula, MT, 59804. You can also find a page that describes our submission policy on our website at www.thenaturecenter.org.

The Montana Natural History Center is embracing change. Join us and become an active part of it!

Brad Robinson
Executive Director

Spring Bea

Montana's Native Wildflowers

How welcome are the first bright blooms of spring, poking their heads through vestiges of snow and ice. Not only do they represent the return of green, and therefore food, to the world, they can provide clues to many things of interest in the out of doors.

According to the authors of the Peterson Field Guide of Rocky Mountain Wildflowers, "wildflowers can inform a climber of his approximate altitude on a mountain and the basic type of rock under his feet; they can tell a naturalist when elk calves are dropping, when Canada geese eggs are hatching, or when young horned owls will leave the nest. A knowledge of flowers aids one to fuller enjoyment of our mountains, their streams and forests."

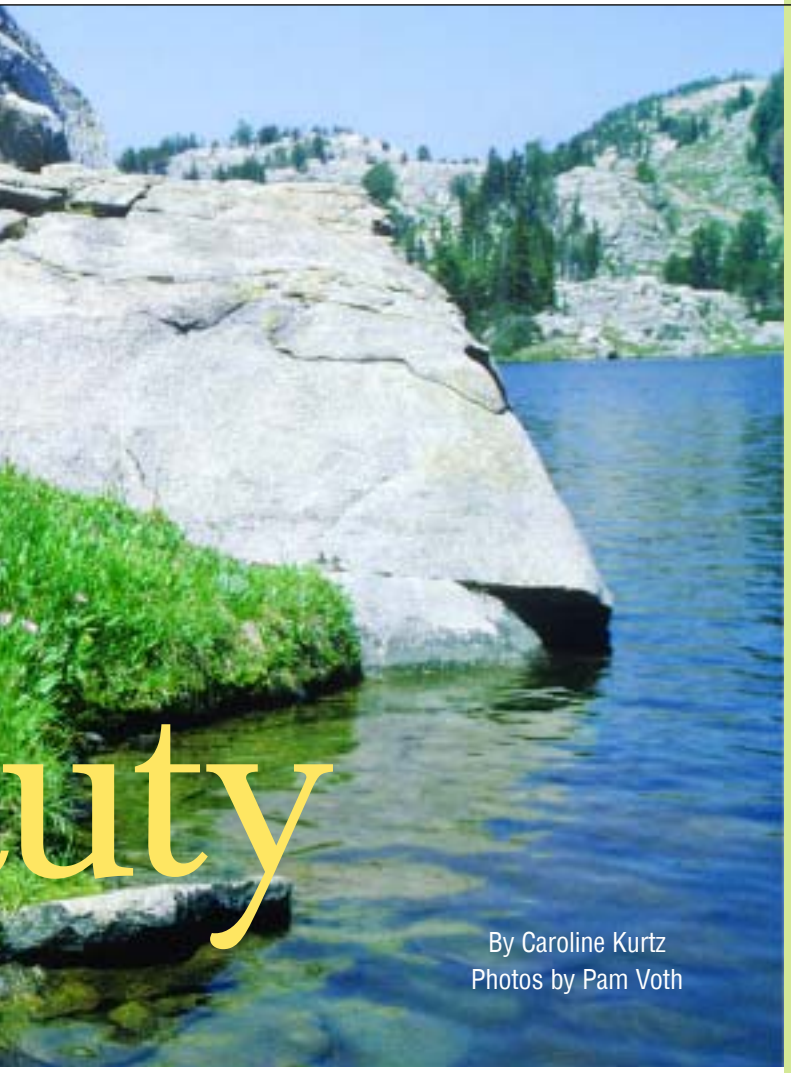
Wildflowers grow in all types of habitats in Montana – from dry valley floors and windswept prairies to high alpine meadows and shady forests. There are about 2,500 different kinds of flowering plants in the state. Even the most common have interesting stories, as Beverly Magley describes in Montana Wildflowers. For instance, prepare properly and yarrow can relieve itching, increase sweating and relieve a fever. Cook kinnickinnick berries slowly and they will pop just like popcorn. Boil the bark of Oregon grape to make a bright yellow dye.

> "Earth laughs in flower" – Ralph Waldo Emerson

Native wildflowers are integral members of plant communities across Montana. Because of the short growing season many species have evolved a short life cycle and can grow, blossom and produce seeds in just a few weeks. Plants that must survive the hot sun, high winds and long periods of no rain on the prairie often have a waxy or hairy surface to help them preserve their moisture. Others only open their blossoms in early morning or cool evenings. In the subalpine regions where winds can blow hard or on hot dry slopes you'll find many flowers growing close to the ground for protection. Some plants like balsamroot grow deep roots to tap into moisture pulled in by tall trees. Others, like lupine, are nitrogen fixers that replenish nutrients in the soil.

Wildflowers are some of the first plants to regenerate a forest after fire. Fireweed can help enrich a burned area so other plants can grow later. It blooms from the bottom up, so you may see seedpods, flowers and buds all on the same plant. Parachute-like hairs on the seeds help carry them long distances. Other plants, like beargrass or

Far Left: The colored bracts of Indian paintbrush can range from magenta or crimson to orange or yellow. Left: Harebell seeds easily but can take over in a garden. Right: The leaves of beargrass, a member of the lily family, are evergreen but the plant does not flower every year.



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By Caroline Kurtz
Photos by Pam Voth

glacier lily, have large underground stems from which they can regrow after their top parts have burnt off.

The sweet nectar of wildflowers entices bees, flies, moths, ants, beetles, butterflies, hummingbirds and even bats to pollinate their blossoms, which then produce seeds. In addition to propagating the plants, the seeds provide food and the flowers themselves provide shelter for many other creatures.

The biggest pleasure we get from wildflowers may be in their wide diversity of forms and colors. Each is an ingenious method of attracting pollinators, developing and dispersing seed and surviving the conditions they have evolved with over millennia.

Discovering wildflowers is like finding scattered treasure – you just want to keep looking for more. But please, leave it for others to enjoy as well!

Legendary Flower

The people were starving after a long and difficult winter, according to a Native American legend. An old woman cried bitter tears for her family's fate, but a spirit bird took pity on her and sent the nourishing bitterroot flower to grow where each of her tears fell.

The bitterroot was a welcome early spring food source for indigenous people, and later for the explorers and trappers who traveled through. In the early spring, small rosettes of narrow, succulent leaves appear close to the ground but are gone by the time the flowers open. Before blossoming, the roots are tender and nutritious, since the stored starch has not yet been used by the developing flower. Bitterroot is bitter, as its common name implies, but this taste largely disappears when the root is cooked. Its outer covering peels off easily, leaving a white fleshy core that can be boiled, baked or ground to form meal.

The bitterroot's scientific name, *Lewisia rediviva*, is in honor of Captain Meriwether Lewis, who first collected the plant in the Bitterroot Valley of western Montana in 1806. The species name *rediviva* refers to the plant's ability to return to vigor after the root has been dried for weeks or even months. The Bitterroot River, Valley and Mountains were named after this plant.

Bitterroot can be found in dry, rocky soils of valleys, foothills, stony slopes, ridges and mountain summits to about 8,000 feet. They are found from Montana to British Columbia, and southward to California and Colorado, and are especially abundant in western Montana. There are six species in the Rocky Mountain area. Bitterroot flower from late April through June into July. Leaves appear as soon as snow melts and wither before flowering. According to the Peterson Field Guide, pheasants and mallards are incubating their eggs when bitterroot buds first appear.

Left: The flowers of shooting star look like they turned inside out on a windy day. Right: Native Americans used arrowleaf balsamroot to treat swelling and insect bites. Far Right: Members of the bean family, lupine can be found from dry valley floors to subalpine meadows and streamsides. Some lupines concentrate poisonous alkaloids in their seeds.

Courtesy Mary Clay & USFWS

Shake Your Tailfeathers

Sharpies perform at Medicine Lake Wildlife Refuge

By Elizabeth Madden

Spring on the prairies of northeast Montana is always a long time coming each year. Along with meadowlarks and prairie crocuses, one of the first harbingers of this much-anticipated season is the "coo-cooing" of the sharp-tailed grouse on their dancing grounds. Our hearts soar when we hear it!

The grouse, too, are eager, often beginning their spring ritual when the prairie is still dotted with remnant snow banks and nights are frigid. Like clock-work, they return every April to traditional dancing grounds, called leks. They choose knolls or other sites with short grass and 360-degree views in order to watch for predators, and they use these same spots year after year. Each morning at the crack of dawn, the male grouse move into their established territories within the lek. With white tails pointed skyward and wings outstretched, they stomp their feet at a frantic pace and rattle their tail feathers, creating a drumming noise. Between dances, they make gurgling noises by expelling air from the purple sacs located on their necks. On a calm morning, their commotion can be heard from more than a mile away. What are they up to, anyway? Are they just happy spring is here? Despite their apparent frivolity, their goal is a serious one: to attract the attention of female sharp-tails and win the opportunity to mate.

Biologists throughout Montana conduct counts of male sharp-tails on dancing grounds each spring, gathering data that serve as a long-term index to their population status. Although some leks can be viewed and counted from vehicles with spotting scopes, many are off the beaten path and require some hiking – for example, those in the remote Medicine Lake sandhills. Getting close enough to survey these leks involves the old-fashioned elbow-and-knee "sneak" through the grass, using subtle rises in topography as cover. If your sneak is successful, you are meters away from this fascinating spectacle of nature. You count the number of males dancing, and also note any females that are visiting the ground. They tend to wander slowly around the lek, appearing aloof and bored, although they are faced with an important decision: which male will provide the best genetic contribution to their offspring?

The surest sign that a female is present on a lek is the ensuing frenzy of dancing. The males do everything short of standing on their heads to woo this prospective mate. Texts describing their elaborate rituals read like an athletics training manual, defining face-offs, stand-offs, forward rushes, parallel runs, foot-stomping and freezes. The grouse's vocalizations are as complex, featuring cackles, coos, chilks, corks, gobbles and whines. Even their costumes are garish, with the males sporting bright yellow eye combs and violet throat sacs on each side of their neck.

Research has shown that a small number of males do most of the mating, and they tend to hold the central territories on the lek. After considering her options, each female eventually chooses a mate and signals him by exhibiting her white shoulder spots and squatting with her wings slightly out-stretched. Mating occurs quickly, often with neighboring males trying to disrupt the process by knocking the male off the female. If the pairing is successful, the hen will lay her first egg within three days in a nest tucked into the prairie somewhere within a mile of the lek.

A morning spent as witness to the sharp-tails' courtship ritual is one of those experiences all Montanans should have on their life "to-do" list. An easier way than "putting on the sneak" is to use a viewing blind, such as the one available on a dancing ground at Medicine Lake National Wildlife Refuge, located in northeastern Montana, 22 miles south of Plentywood. For information on reserving and using the blind, and to watch a one-minute video clip of grouse dancing, visit http://medicinelake.fws.gov, or call 406-789-2305 for assistance.

Beth Madden is a Wildlife Biologist for the U.S. Fish and Wildlife Service at Medicine Lake Wildlife Refuge.

Sharp-tail grouse are found throughout the prairies of eastern and central Montana. Other species of grouse in Montana include ruffed, spruce and blue grouse in the forests of western Montana; sage grouse in the central sagebrush habitat; and the white-tailed ptarmigan, found in the high elevations of Glacier National Park.

Courtesy Nature's Enhancement

Grow Native

Bringing the wild to your backyard

By Anita Maxwell

Montana has an unpredictable climate, rocky soil, temperature extremes, high winds and a short growing season. Too much of a challenge for the Montana gardener? Of course not! Many local gardeners have turned to native plants for both their resilience and their beauty.

Why Grow Native?

Natives are adapted to Montana's extreme conditions. Not only are they better suited to our unique conditions, natives provide important habitat for wildlife. Birds, bugs and mammals of all sizes depend on native plants for food and shelter.

Why not grow native when the average American lawn consumes almost 170,000 gallons of water each summer to maintain a relatively lifeless expanse. Native plants require significantly less water, while adding interest and color to your landscape.

Remember good plants begin with good soil. Much of your backyard has been disturbed at one time so consider pulling those weeds and adding mulch to give your new plants an advantage.

5 Natives for your Montana garden

1. **Bee balm** *(Monarda fistulosa)*
   Height: 1 to 3 feet, Spread: 2 feet, blooms in July, full sun to partial shade, needs some irrigation, favorite of hummingbirds

2. **Blanket Flower** *(Gaillardia aristata)*
   Height: 1 to 3 feet, blooms early summer through fall, full sun, prefers good drainage, fast growing, easy to grow from seed and hardy, attractive to butterflies

3. **Blue grama grass** *(Bouteloua gracilis)*
   Height: 10-20 inches, drought tolerant, bunch-sodforming grass, full sun, begins to green up in late May

4. **Chokecherry** *(Prunus virginiana)*
   Height: 20 feet, Spread: 10-25 feet, shade tolerant, fruits provide a good food source for birds and butterflies

5. **Yarrow** *(Achillea millefolium)*
   Height: 1 to 3 feet, Spread: 1 foot, full sun to partial shade, blooms June to October, attractive to butterflies, usually avoided by deer, adaptable to poor soils

Native Plant Resources for Your Backyard

Lawyer Nursery, Plains

Montana Native Plant Society, local chapters often have plant sales

Nature's Enhancement, Stevensville

Stop in at your local nursery to check out their selection of natives!

No more mowing! Natives provide a dynamic and interesting front yard.

get outside calendar

TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
				WildWalk and WildFest kick off the 27th Annual International Wildlife Film Festival. Parade begins at 11 am. For a full schedule visit www.wildlifefilms.org.
April 25	26	*Wolf cubs are born* 27	28	10th Annual Clark Fork Watershed Festival for 6th grade students 29 30	May 1
2	3	 4 5	Courtesy Pam Voth 6	7	**Saturday Discovery Day –** Return to Black Mountain, A Season of Renewal. Join local experts for a close-up look at fire's effects on the landscape and wildlife. 8
9	10	Fort Missoula Native Prairie, 6 pm Learn about hummingbird and butterfly plants & common native wildflowers and grasses that thrive. Meet at the Nature Adventure Garden at Fort Missoula. 11	12	13	*Balsamroot flowers* 14	**Astronomy Series:** Galaxies and Galactic Structures, 9:30 pm Presented by John Mandler, retired nuclear physicist 15
16	*Adult dragonflies escape from their exoskeleton* 17	18	19	20	**Bitterroot Birding Festival** (Stevensville) *runs through 23rd* Celebrate the return of migratory birds to the Bitterroot Valley! This festival is a community celebration with a variety of activities for all ages, including field trips, workshops, presentations, exhibits, artwork, and children's activities. Learn more at www.leemetcalf.fws.gov. 21 22
Happy 96th Birthday to the National Bison Range in Moiese! Free admission. 23	24	25	26	*Cutthroat lay eggs* 27	28	29
 6 7	June 1	2	3	 4 5 Courtesy NPS	**Saturday Discovery Day –** Great Bear Foundation's Bear Basics Bear Basics Field Workshop covers the natural history, behavior & conservation of bears. Join us to learn how to set up a campsite in bear country, hike safely, and handle encounters. 12
Courtesy USFWS	8	9	10	*Snows melt, rivers rise* 11	

2004 SUMMER SCIENCE DAY CAMPS

Come explore the natural world with the Montana Natural History Center. Field trips, arts and explorations will have your kids making scientific discoveries! Hours: Monday - Friday, 8 a.m. to 5 p.m. Cost includes camp t-shirt: $135/members, $185/non-members (includes Family membership) Ages: 7-11, unless otherwise noted

Bats to Bears *June 14-18*
Montana's magnificent mammals will amaze you as you discover their characteristics. Learn what makes a mammal a mammal as you study your local furry friends and survey nearby small mammal populations. Examine study skins and skulls and explore the habitats of your favorite critters!
14 15 16 17 18

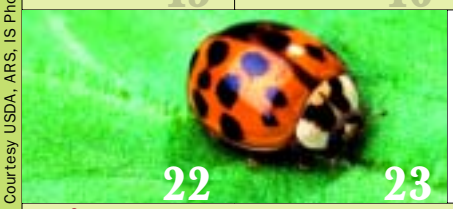
Astronomy Series: Earth's Nearest Star, the Sun, 10:00 pm How does the sun affect us on Earth? 19

Eco-mystery (Girls, ages 11-14) *June 21–25*
Something's gone wrong in our ecosystem and we have 5 days to figure out what it is! Become an environmental detective and help solve the mystery while learning about water, soil, animals, weather and more. You will make hypotheses and run actual tests to determine who or what is damaging our ecosystem and then decide what to do about it.
21 22

Frogs, Fish, and Fun *June 21–25*
Sound a bit fishy? Join us for a week of amphibious adventures as we dive into a "wet and wild" exploration of rivers and streams. Learn about Montana's frogs and other aquatic creatures. Discover the connections within food chains, collect aquatic insects and learn other fun facts about aquatic habitats.
23 24 25

Moose Tracks and Mice Trails *June 28 – July 2*
Learn how to read the signs that animals and insects leave behind. Identify tracks, learn about animal homes, figure out "who" was nibbling at that bush. Become an expert at reading the clues in the natural world. Sharpen your observation skills as we discover a world full of animal signs.
28 29 30

Events take place at the Montana Natural History Center at Fort Missoula unless otherwise noted.

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
ELDERHOSTEL **On the Trail with Lewis & Clark: A Montana Natural History Journey** *June 27 - July 2* Experience the wilderness encountered by the Lewis and Clark expedition. Explore historical sites as expedition journals guide our study of the plants and animals Lewis and Clark encountered and named. Discover Montana's natural heritage, then and now!				**July** 1	2	3
 4	5	*Huckleberries ripen* 6	7	8	9	**Saturday Discovery Day –** Raptors of the Rockies 10
11	**Bird Brains** *July 12-16* This week will "fly by" as we learn about our feathered friends. Become a young ornithologist by identifying local birds and exploring the perils of migration. Learn about birds from the inside out as we study bird anatomy, discover how and what different birds eat and build bird feeders! 12	13	14	15	16	17
18	**Float with Lewis & Clark Trail Adventures:Natural History & Geology of The Missouri River White Cliffs** *July 19-22* A canoe expedition through the Missouri River White Cliffs with explorations of the geology and natural history. Paddling about 12 miles per day will allow time for exploration and hiking. Learn about the forces that shaped the landscape and discover flora and fauna that remain remarkably similar to that encountered by the Lewis and Clark expedition. Price $885 + BLM use fee (3%) 19	20	21	**Wade into Wetlands** *July 19-23* Why are wetlands so important? We'll explore local wetlands and investigate the amazing water cycle. Paddle upriver with us to collect aquatic insects, learn about the health of our wetlands and create a "pond aquarium". 22	23	*Alpine flowers bloom* 24
25	**Predator & Prey** *July 26-30* From predator and prey species to plant-animal interactions, observe the secrets of your favorite animals and plants. Find out who eats who (everybody's somebody's lunch!). Study the fascinating world of carnivorous plants and build your own terrarium to take home. 26	27	**Teen Adventure Camp** *July 26 - 30* We take a watershed approach to learning geology and ecology. The week will begin with a hike high into the Bitterroot Mountains, where we'll see first hand the amazing geology of the area. Follow the water's course, down through the canyons, while monitoring for stream and forest health. We'll spend some time floating the leisurely sections, and finish with a white-water raft trip through the Alberton Gorge. Open to students age 13-17. Instructor is Matt Erickson, who has 8 years experience bringing students safely into the backcountry. 28	29	30	31
ELDERHOSTEL **On the Trail with Lewis & Clark: A Natural History Journey** *August 1-6* Experience the wilderness encountered by the Lewis and Clark expedition. Explore historical sites as expedition journals guide our study of the plants and animals Lewis and Clark encountered and named. Discover Montana's natural heritage, then and now!						
August 1	2	3	4	5	6	**Saturday Discovery Day –** Butterfly Basics– Let naturalist Will Kerling introduce you to the wonders of butterflies. A slide show will be followed by a field trip. 14
Swallows gather to migrate south 8	**Nature Detectives** *August 9-13* Solve mysteries from clues left behind by Montana's wildlife. Student detectives will make their own "nature detective kit". With spy glass and bug net in hand, explore local habitats and use the tools of the trade to make exciting discoveries. 9	10	11	12	**Lewis & Clark Trail Adventure** *August 13* Lolo Trail Naturalist trip 13	
15	**Nature Art** *August 16 - 20* Inspiration often comes from the natural world. What better way to celebrate our natural wonders than through art. Explore different styles, experiment with natural mediums and observe nature in a new light. 16	17	18	19	20	**ELDERHOSTEL FOR SENIORS 55+** **Elderhostel, a non-profit organization, engages seniors (55 and older) in active learning adventures offered around the world. Week-long programs include presentations and field trips led by local experts. Learn more at www.elderhostel.org. Elderhostel is open to the community at a special price. To register, call MNHC at 327-0405.**
 22	23	24	25	*Black bears wean cubs* 26		
ELDERHOSTEL **On the Trail with Lewis & Clark: A Natural History Journey** *August 29-Sept 3* Experience the wilderness encountered by the Lewis and Clark expedition. Explore historical sites as expedition journals guide our study of the plants and animals Lewis and Clark encountered and named. Discover Montana's natural heritage, then and now!						
29	30	31				

Courtesy USFWS

Courtesy USDA, ARS, IS Photo Unit

Visit www.TheNatureCenter.org for directions to MNHC. To register or for more information, call MNHC at 327-0405.

Courtesy Madeline Mazurski

Nearby Nature

Wild gardens, city spaces

Gardens can truly be showplaces for a community commitment to wild places. Missoula has two such gardens that incorporate native plants into their design – the Waterwise Garden (4th Street, east of the Missoulian) and the Nature Adventure Garden (Fort Missoula, directly north of the water tower). As the name implies, the Waterwise Garden is a model of xeriscaping, a practice which minimizes water usage through careful selection of native or "waterwise" plants and materials.

Across town, adventure and nature have formed an easy alliance at the Nature Adventure Garden. A project of the Montana Natural History Center and the Appleseed Foundation, the garden sprouted from the imaginations of children involved in an after-school club. Nooks and crannies for critters and children alike took shape amid aspens and chokecherries.

Volunteers nurtured the new garden for four years. Today, volunteers and other community members give their time to Prairie Keepers, a collaborative group who sponsors a series of service learning classes. Missoula County's Weed District and the Division of Biological Sciences at The University of Montana partner with the Montana Natural History Center to offer educational presentations put into practice through volunteer efforts. Whether rescuing plants at new developments or maintaining local demonstration gardens, Prairie Keepers brings a touch of the wild into our city spaces. Visit www.umt.edu/sentinel/prairiekeepers2004 for a complete listing of the Prairie Keepers series.

Teachers! Interested in using gardens as an outdoor classroom? Contact MNHC for the Native Plant Educational Trunk, Waterwise Garden curriculum and other resources.

Memories from the Trail

The investment in a standard plant press is well worth the results. Creating your own plant press is a simple process, using minimal tools. Your home-supply store will cut two equal sheets of plywood to serve as covers. Be sure to have the pieces cut large enough to arrange leaves intact (8"x10"). Cut at least 6 cardboard pieces to the same size using a box cutter. When you're done with your morning paper, use the newspaper as blotter sheets. Plants should be laid between 2 sheets of white paper to prevent the transfer of news ink. Add pressure and hold your press together using a belt or by drilling holes in each corner for a long bolt to run through. Tighten securely with a lug nut. To keep that brilliant color that caught your eye in the field, replace wet blotter sheets daily.

MNHC Photo

Stewardship Note: if you do collect flowers from your travels in the wild, please pick only common plants (1:20 is a good ratio). Photography and journaling allow for close study and leave plants in the wild. Another alternative is to grow natives in your own backyard.

Source: Montana Native Plant Society's *Plant Collection Guidelines for Teachers*

Guides for the Naturalist

Central Rocky Mountain Wildflowers

Author: H. Wayne Phillips

Stunning photos accompany a detailed description suitable for novices and experts alike. Phillips supplements the botanical with the historical, giving the reader insight into medicinal uses of native plants. If you're headed north to the Canadian Rockies, pack along Phillip's companion guide, *Northern Rocky Mountain Wildflowers*.

For Kids!

Montana Wildflowers: A Beginner's Field Guide to the State's Most Common Flowers

Author: Beverly Magley

People of all ages are naturally drawn to the vibrant colors of wildflowers. This handy field guide captures the rich hues as well as the rich natural history of the flowers you're most likely to encounter on the trail. Divided by habitat type, this field guide is a great resource for your budding naturalist.

Rocky Mountain Natural History: Grand Teton to Jasper

Author: Daniel Mathews

Mathews dedicates this guide to the four-legged, the standing, the crawling, the swimming, the sitting and the flying. Each is spotlighted in turn, providing profiles of every living organism in the Rockies from the often-overlooked fungi to the larger-than-life grizzly. Abiotic effects such as the Ice Age Floods are addressed as well, offering a comprehensive look at the Rocky Mountain landscape.

Courtesy Peter Lesica

Utricularia Up Close

A carnivore turns to gardening

By Peter Lesica

I often lead field trips to wetlands. One of the high points of these trips is finding a bladderwort (*Utricularia spp.*). Bladderworts are Montana's most common carnivorous plants. These aquatic plants produce pinhead-size traps on their leaves that capture small crustaceans or other invertebrates. At least that's been the common knowledge and what I've always told people. However, some recent research is going to make me change my story.

More than one-third of all species of carnivorous plants on earth are bladderworts, and species of *Utricularia* occur from the tropics into the arctic. Some species of these rootless plants grow in mud or even as epiphytes in rainforest trees, but most, like Montana's three species, are aquatic. They all produce bladder-like traps with doors that open and close. Touching the hairs around the door causes it to open and suck in whatever is just outside. The traps are capable of capturing small animals and absorbing nutrients from them. But there's more to the story; it seems that bladderworts may be more gardener than carnivore.

Several years ago researchers at the University of Wisconsin made a confusing discovery. They found that *Utricularia macrorhiza* (the same as our most common species) grown in water with a high density of invertebrates (potential prey) did not respond by producing more traps. However, they did produce more traps when the water was higher in nutrients. Apparently bladderworts produce traps for a reason other than just capturing prey, a reason related to the fertility of their surroundings.

Recently Jennifer Richards at Florida International University made some observations that may help explain the Wisconsin findings. Richards examined 1,400 traps from *Utricularia purpurea* in the Everglades. She found that 63% had something in them. Of these only 8% contained dead prey items, but all contained algae, diatoms or other photosynthetic organisms. I have made the same observation here in Montana. All the old bladders have green stuff in them, but it's devilishly hard to show people a trap with a dead bug in it.

Richards proposes that bladderwort bladders act not so much as traps but as tiny microcosms, absorbing the waste products produced by their photosynthetic and bacterial occupants. This hypothesis may also explain the Wisconsin finding that bladderworts produce more traps in nutrient-rich water but not in prey-rich water. Algae grow better in nutrient-rich water, so a bladderwort's captive algae gardens will be more productive. In addition the bladders may also absorb nutrients directly from the water. This is an unusual strategy to compensate for a lack of nutrient-absorbing roots, but it is not unique.

More research needs to be done to prove that algal waste products are contributing to bladderwort nutrition. Still, it seems likely that bladderworts are really omnivores, obtaining more of what they need from gardening than from carnivory. It's just another case of "whatever works."

Peter Lesica is a botanist and member of the Montana Native Plant Society. He frequently writes and speaks about native plant research and conservation. This article first appeared in the Winter/Spring 2001 issue of Kelseya, *the newsletter of the Montana Native Plant Society.*

Advancing the Mission

The Montana Native Plant Society was chartered for the purpose of preserving, conserving and studying the native plants and plant communities of Montana, and to educate the public about the value of our native flora. The education committee of MNPS' Clark Fork Chapter developed the Native Plant Trunk, a curriculum and collection of study materials available from the Montana Natural History Center for rental by upper-elementary, middle and high-school classrooms. In addition, the two organizations created and maintain the Nature Adventure Playground at Fort Missoula, used by MNHC field trips and summer camps and the public to learn about native plant identification and cultivation.

For more information on programs and activities of the Native Plant Society, or to join a local chapter, write to MNPS Membership, P. O. Box 8783, Missoula, MT, 59807, or visit www.umt.edu/mnps.

A New Home for MNHC

Who would have thought a former brewery building would contain so many suitable features for a modern, hands-on natural history discovery center? The cavernous space, plumbing infrastructure, even a cold-storage vault – plus its choice location – convinced the Board and staff of the Montana Natural History Center that the old warehouse at 120 Hickory Street would make a perfect new home.

MNHC purchased the building earlier this year and work has begun on Phase I of the build-out. The expected move-in date is September. Until then, upcoming programs, Summer Science Camps and Saturday Discovery Days will continue uninterrupted from the Fort Missoula location.

"The Hickory Street building gives us more than 7,000 square feet of space to start with," according to MNHC Director Brad Robinson. "We envision the new center as a base camp, where local and out-of-town visitors can come to learn about and orient themselves to the natural history of the region through exhibits and interpretive programs. From this base camp we can launch explorations into the field – from summer camps for kids *(see schedule in our Get Outside Guide)* to guided field trips to Elderhostel to citizen research projects."

For more than a decade MNHC has specialized in providing hands-on educational experiences about Montana's ecosystems, primarily through school-based programs, teacher workshops and public walks and talks. "With the new building we will have the opportunity to develop interactive exhibits and programming using the extensive natural history collections of The University of Montana, as well as our own," Robinson says.

One exhibit, he adds, will certainly be about the region's most important landscape-transforming event of the last 10,000 years – Glacial Lake Missoula.

MNHC Photo

The new building will eventually will contain a classroom/auditorium, wet lab, library and other resources for community use. And the new location is easily accessible from the riverfront trail and just next door to McCormick Park.

"This move is a big dream," says Robinson, "but one that we're ready to make a reality with the community's help."

MNHC Photo

A Montana Treasure

Weydemeyer collection finds a home at MNHC

Thanks to the efforts of his family and friends, the natural history collections and library of Winton Weydemeyer (1903-1993), one of Montana's foremost conservation advocates, have found a home at MNHC.

According to Darris Flanagan, who grew up down the road from the Weydemeyer family in Fortine, "Winton was a Republican and a conservationist to the highest degree."

He kept lifelong notes on wildlife, especially deer and birds, and made conscientious efforts to document local geology and butterflies. He also was an avid photographer and his book, Picture Taking in Glacier Park, is a pictorial of black and white photos encompassing scenery, wildlife and people from the late 1920s until the mid-1980s. Most of his photographic collection, documenting the landscape and agricultural life of northwestern Montana, are being deposited with the Montana Historical Society in Helena and MNHC.

A rancher and tree farmer in the Tobacco Valley, Weydemeyer is perhaps most widely remembered as an outspoken early advocate of wilderness in Montana and was a founding member of both the Montana Wilderness Association and the Montana Conservation Council in the 1950s. He also was state senator during the 1951 and 1953 legislative sessions. The MWA is proposing congressional designation for the Winton Weydemeyer Wilderness within his beloved Whitefish Range.

Special thanks to Darris Flanagan and Dale Burk for making the donation of this collection to MNHC possible.

Making the Connection

Visiting naturalists in the schools

When Charles Miller walks into Mary Maier's combined fourth/fifth grade class at Lowell Elementary School, he barely has time to say hello before the questions start flying. How can you tell male and female bald eagles apart? Why do cows always stick their tongues up their noses? How do elk calves learn the way between their summer and winter ranges?

Miller spends about seven days a month fielding such posers and many more during visits to 10 or 12 classrooms in Missoula as one of the Montana Natural History Center's Visiting Naturalists. He's learning to relate students' wide-ranging queries to underlying scientific principles, such as instinctive versus learned behavior.

The Visiting Naturalist program links individuals who have an interest in natural history with teachers and students as a way to complement and extend the elementary school science curriculum. Each month, Miller introduces new, seasonally-related ecology concepts and activities to his pupils. Together they investigate what's going on in their own school yard, and make two day-long field trips – one in the winter and one in the spring – to learn first-hand about the scientific method and some of the local flora and fauna.

"It's an ideal way to tie into the public schools," says Maier, who teaches science at Lowell. "We really appreciate how this brings experiential science and discovery right into the school. The overall design of the program focuses on how kids need to learn and suits our curriculum standards to a 'T'," she says. "It's all about inquiry."

All four fourth/fifth grade classes at Lowell participate in the Visiting Naturalist program. For most public schools, and especially one such as Lowell, which serves many of the community's lowest income children, it is prohibitively expensive to provide field trips for students. The Visiting Naturalist program, funded by grants and private donors, fills this gap.

Recently, Lowell students spent a day at Fort Missoula on their winter ecology field trip. "The weather was horrible," Maier remembers. "But the kids got engaged and forgot all about how miserable they were. They got to study animal tracks, pine beetles and birds. You can't get all that in a classroom."

One of the best aspects of the Visiting Naturalist program, Miller and Maier agree, is developing a relationship with students over time. "It's not a one-time thing," Miller says. "The students get used to you and you can do more each visit."

Maier also sees the value of involving diverse and talented community members in the classroom.

"It's a dynamite program. I wouldn't want to lose it," she says.

MNHC Photo

Mavis Lorenz leads Hawthorne Elementary fourth graders on a winter ecology field trip.

Volunteer Naturalists Do It All

Volunteer naturalists bring a variety of experiences to their work with the Montana Natural History Center. Some have been docents at major natural history museums in other cities. Some have developed areas of expertise from personal interest, such as in aquatic insects or birds or native plants. One is an avid sportswoman with knowledge of animals gained from decades of hunting all over North America. Another trains pilots and has an extensive understanding of weather. Yet another has a background in nature art.

"I've learned a lot from shadowing these people," says Hank Harrington, a former professor whose own road to becoming a volunteer naturalist started with the history of natural history. "What's fun for me now is learning more of the specific details about the environment and organisms that will interest people of all ages."

Harrington leads a group of about a dozen people who help staff MNHC's educational programs. Some volunteers particularly enjoy working with schoolchildren in the Visiting Naturalist program because it gets them out into the field *(see related story)*, he says. Some prefer the more informal setting of the Saturday Discovery Day programs or other community events. Others are available to give tours of the zoological collections at the University of Montana.

"You sure don't need to be an expert on natural history" to be a volunteer naturalist, says Harrington. The volunteers and MNHC staff organize regular training sessions with experts, make periodic trips to other museums and interpretive centers and hold field seminars on various topics, such as winter ecology or mammals.

From a career teaching adults, Harrington has been most impressed with how much fun it is to work with small children.

"They are so spontaneous, interested in anything and everything. They have no filters to knowledge," he says.

"As our new building comes on line," Harrington adds, "we will have a greater and greater need for a large and reliable group of docents who can work on-site with collections and interpret exhibits for all ages."

The only requirements to become a volunteer naturalist, Harrington says, are curiosity and enthusiasm about the natural world.

If you are interested in becoming a volunteer naturalist, contact Gabrielle Sivitz at 327-0405.

"Most of my flying squirrel sightings have been brief nighttime encounters—a ghostly shadow drifting through the dark pines as my headlights swept past, a swinging bird feeder hastily abandoned when I flicked the yard light on. But one summer a flying squirrel came to stay and captivated me with his nightly waking ritual…"

From a Field Note by Kim Erway Birck, MNHC Volunteer Naturalist.

G. Sidiz '04

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