

# MONTANA Naturalist

Spring/Summer 2008



**Open Space**

**Biomimicry**

**Notes from  
Field Camp**



**Montana Natural History Center**  
Your Base Camp for Discovery

Your Complete  
Guide to MNHC  
**Summer Camps**

see Get Outside Guide,  
page 9



# MONTANA Naturalist

## Features

- 4 Open Space**  
*Liz Williams writes about ecological values of public open space lands*
- 6 Biomimicry**  
*What we can learn from nature's R&D*
- 13 Oreamnos americanus**  
*Charles Finn ruminates on the nature of mountain goats*

## Departments

- 3 Tidings**
- 8 Community Focus**  
*Memories of the National Bison Range*
- 9 Get Outside Guide**  
*Be a Junior Ranger, test your name knowledge, what's in a naturalist's toolbox? Plus, summer camps galore and other outdoor learning events*
- 14 Far Afield**  
*A summer among prairie dogs at the Charles M. Russell National Wildlife Refuge*
- 16 Imprints**  
*Summer Science Discovery Camps; In Memoriam*
- 18 Magpie Market**
- 19 Reflections**  
*The Art of Botanical Illustration*

**Cover photo** – Eugene Beckes captured this moment between mama and kid mountain goat last summer while he was hiking along the Highline Trail in Glacier National Park. “Even though these clearly are wild animals,” he writes, “they are quite used to humans and I estimate the distance from my lens to them was only about 20 feet. They were very cooperative subjects.”

*No material appearing in Montana Naturalist may be reproduced in part or in whole without the written consent of the publisher.  
 All contents © 2008 The Montana Natural History Center.*



4



6



8



9



16



14



**Montana Natural History Center**  
Your Base Camp for Discovery

120 Hickory Street  
Missoula, MT 59801  
(406) 327-0405  
info@MontanaNaturalist.org  
www.MontanaNaturalist.org

**Executive Director**  
Arnie Olsen

**Education Director**  
Lisa Bickell

**Community  
Programs Coordinator**  
Jessie Sherburne

**Naturalist &  
Watershed Festival Coordinator**  
Brian Williams

**Membership &  
Database Coordinator**  
Kathryn Socie

**Field Notes Coordinator &  
Montana Naturalist Editor**  
Caroline Kurtz

**Administrative Assistant**  
Jenny Gray

**Interns**  
Ariel Atkins  
Samantha Epstein  
Leah Grunske  
Jessica Jones

**Summer Camp Instructors**  
Ashley Bekx  
Danielle Blanc  
Rose Graves  
Leah Grunzke  
Megan Mahoney  
Ilsa Seib

**Board of Directors**  
Hank Fischer, *President*  
Marilyn Marler, *Vice President*  
Alan Okagaki, *Treasurer*  
Ellen Knight, *Secretary*  
April Christofferson  
Melynda Goldberg  
Marcia Hogan  
Ian Marquand  
Betty Oleson  
Rick Oncken  
Megan Parker  
Susan Roy  
Nancy Stoverud  
Glenna Tawney  
Steve Woodruff

**Montana Naturalist  
Art Director**  
Eileen Chontos

**L**ong anticipated spring is finally underway, turning recreational thoughts from ski trails to biking, hiking, floating and garden time. The greening hills beckon us with burgeoning life. Isn't it wonderful that it takes so little to get out there? To avail ourselves of the miles and miles of trails through **public open space lands**, practically right at our doorsteps. While you're out enjoying the outdoors this spring and summer, keep in mind what open space provides us here in western Montana in the way of natural history resources. With high levels of use and not much funding for maintenance and restoration, what can we do to ensure that these lands stay ecologically healthy for the benefit of wild communities and us?

To start with, you might take advantage of the numerous **volunteer opportunities** that MNHC, the Native Plant Society, the University of Montana, Missoula Parks and Rec and local weed districts are offering to help with weed control, native plant restoration and trail maintenance. It's a fun way to learn about plant and animals communities, gain a deeper appreciation of local open space lands, meet new people and make new friends. For the horticulturally-minded, check out the goings on at the Native Prairie at Fort Missoula, or participate in the design and installation of a new native landscape at MNHC. Meanwhile, Saturday Kids Activities, Saturday Discovery Day field trips and Evening Lectures continue at MNHC through May. **Weekly summer camps for kids** in Kindergarten through middle school begin in June. See the Calendar and Imprints sections for details. We hope to see you – either here or on the trail!

*Caroline Kurtz*

**Caroline Kurtz**  
Editor

## tidings



**Bitterroot River weed pull party**

MNHC Photo



## Volunteer Opportunities

MNHC, Montana Native Plant Society, the University of Montana and Missoula Parks and Recreation invite you to the following events. For information on the volunteer events listed below, contact Marilyn Marler at 243-6642 or email Marilyn.marler@umontana.edu, except where noted.

**April 19 Mt. Sentinel's 10th annual Earth Day Weed Pull and Prairie Restoration work party**, 8:00 a.m. Pull knapweed, scatter wildflower seeds and cover illegal trails. Meet at the bottom of the M trail.

**April 25 Washington School 8th Graders Weed Pull Extravaganza!** Supervise a group of 6 - 8 kids pulling weeds from the banks of the Clark Fork River in Missoula. Requires a firm RSVP weeks in advance. Fun and rewarding!

**April 26 Bancroft Duck Pond Planting Party**, 8:30 a.m. - 3:00 p.m. Plant willows, dogwoods and more in this urban wetland oasis. For more information, contact Graham at royboy1@bresnan.net.

**May 17 Annual Native Plant Society Plant Sale at the Missoula Farmer's Market**, 8:30 a.m. - noon. Selling over 30 native species, including bitterroot. Come early for the best selection.

**May 20 Dyers Woad Pull #1**, 6:30p.m. Help control weeds on Mt. Sentinel while enjoying the view and beautiful grasslands. Wear sturdy shoes and bring rain gear. Meet at the bottom of the M Trail.

**June 3 Dyers Woad Pull #2**, 6:30p.m. Meet at the bottom of the M Trail.

**June 10 John Toole Park Weed Pull**, 6:30 p.m. Help continue to restore the native grasslands of old Missoula Valley. Bring a tool for weeding and meet in John Toole Park, off the Kim Williams Trail. For more info, call John at 542-2640.

**June 12 Mt. Jumbo Wildflower Walk**, 7:00 - 8:30p.m. Explore native plant communities in the saddle of Mt. Jumbo with Morgan Valliant, city conservation land manager. Be prepared for a light hike and hundreds of wildflowers. Meet at the Lincoln Hills Trailhead parking lot, 1/4 mile beyond the black top on Lincoln Hills. For more info, call MNHC at 327-0405, or email mvalliant@ci.missoula.mt.us.

**June 17 Dyers Woad Pull #3**, 6:30 p.m. Meet at bottom of the M Trail.

**June 24 Seed Collecting Work Party at Fort Missoula Native Prairie**, 7:00 p.m. Bryce Christiaens of Native Ideals Wildflower Seed Company in Arlee will teach you how to effectively and ethically collect seeds of many species.

**July 12 Bitterroot River Floatin' Weed Pull Party** Join the Ravalli County Weed District for a day of pulling invasive plants from along the Bitterroot River. Transportation needs to be coordinated. For more info, call Lindsey at 777-5842.

**July 22 Seed Collecting Work Party at Fort Missoula Native Prairie**, 7:00 p.m. Bryce Christiaens of Native Ideals Wildflower Seed Company in Arlee will teach you how to effectively and ethically collect seeds of many species.

**August 5 Weed Eatin' Weevils**, 7:00 p.m. Join Ravalli County Weed District and Darby high-school students for a discussion of knapweed root weevils. Take home your own batch of weed eaters. Meet at MNHC. For more info, call 327-0405.



# Open Space

By Elizabeth Williams

View of Mt. Jumbo from Mt. Sentinel



Missoula phlox

Photo by Peter Lesica

## What you can find

At the **Tower Street** conservation area along the Clark Fork River you can see a variety of bird species, including osprey, red-tailed hawks, bald eagles, great horned owls, bank swallows, gray catbirds and flocks of bohemian waxwings. On the water, look for common mergansers and great blue herons, and for river otters fishing. Among the tree and shrub species are cottonwoods, willows and cattails. The **North Hills** conservation property including Waterworks Hill, supports a unique cushion-plant community with such species as the rare white Missoula phlox, royal blue lupine, sunshine yellow dog's tooth groundsel and pink douglasia. These wildflowers, adapted to harsh, alpine environments, are found here because the near-constant wind that sweeps through Hellgate canyon and from the west creates harsh growing conditions along the ridgeline and reduces water availability in the already shallow, rocky soil. This spring, look for these unique wildflowers just off the main trail (but look only; remember that this is a fragile, rare-plant community). Commonly seen birds include western bluebirds, western meadowlarks, savannah and vesper sparrows. If you watch carefully, you might also glimpse a family of red foxes that frequents the area.

AS HUMANS WE THINK WE HAVE VERY SOPHISTICATED WAYS OF DOING THINGS but, says Paul Alaback, a professor of forest ecology at the University of Montana, much of our behavior really is easily predictable.

Where we choose to put our homes, for instance. “We like a mild climate, a long growing season and fertile soil. We like to build in the valleys, where we don't have to cut down trees. We like to be near rivers. What people don't always realize is that where we choose to put our homes is often in the most biologically diverse areas,” he says.

According to Alaback, 80% of plant species in Montana can be found in the Missoula and Bitterroot Valleys. Some species, like Missoula phlox, aren't found anywhere else.

“Biologically,” says Alaback, “these intermountain grasslands are very important, and they are not protected federally in any significant way. Throughout the Rockies, all the way down to Colorado and New Mexico,

it's the open space lands that cities and counties have set up that are protecting these landscapes. They're turning out to be really significant to regional conservation.”

From Missoula to Gallatin County, to Park City, Utah, to Boulder and Fort Collins, Colorado, municipalities throughout the west are using open space programs to reign in sprawl, provide recreational opportunities and preserve the ecological and scenic values that draw people to the west in the first place. Missoula's open space program was started in 1987, and the city passed its first major open space bond measure in 1995. These funds were used to purchase the major “cornerstone” properties of Mount Jumbo, Mount Sentinel and the North Hills. The most recent Open Space bond measure passed in 2006, giving another \$5 million each to the city and county for open space acquisition. The city's most recent purchases have brought the total municipal acreage to almost 4,000. But besides great hiking trails close to home, what other values do our open space lands provide?

## Missoula view from Mt. Jumbo trail



Photo by Jacquelyn Corday

## Spelling it out

In the beginning, says Jackie Corday, Missoula's open space program manager, “people thought, ‘well, duh, of course open space is valuable,’ but they didn't articulate why.” When given the task of revising the 1995 Missoula Urban Area Open Space Plan – a blueprint for “moving the city into the next stage of open space protection” – she did just that.

Specifically, the updated plan lists “ecosystem services” often provided by open, undeveloped land. These refer to natural functions, like flood control and air and water quality protection, the value of which aren't

Photo by Jacquelyn Corday



always accounted for when assessing the value of open space. Corday made sure to list these “services” alongside the more recognizable values of open space, such as its role in protecting critical winter habitat for ungulates, riparian habitat for dozens of bird and mammal species and spawning habitat for native fish. She also included the recreational and educational values, enhanced property values, “restorative and psychological” benefits, historical values and agricultural preservation opportunities that open space provides.

Finally, she says, “Having open space also shapes our growth tremendously, and I think it provides an important sense of place. Even someone who never sets foot on open space property can look out his or her kitchen window to Mount Jumbo, and that’s pretty unique.”

Dean Paschall, a division manager for Boulder’s Department of Open Space and Mountain Parks, would agree. “Intentionally or not,” he says, “we’ve surrounded [Boulder] with open space lands. So instead of dealing with unmitigated sprawl, we’re surrounded by high-quality natural systems” that support a high diversity of native flora and fauna.

How does Boulder balance the recreational pressures on public lands, which receive six million visits per year, with protecting the ecosystems that support such diversity? The answer lies in research and careful management. Of the more than 140 miles of trails in the Boulder open space system, more than 90% have some type of seasonal or use restriction. Trails are regularly closed to protect nesting habitat for bald eagles and other raptors and to protect migratory corridors for large mammals.

“I think that people are okay with the restrictions because there’s a lot of public

involvement. We have over 800 regular volunteers, who do everything from raptor surveys to bat monitoring. We have a volunteer naturalist program, and we often have one to two hundred people show up for community weed pulls. I think that our open space really defines quality of life here for a lot of people.”

### Citizen support

Morgan Valliant, conservation director for Missoula Parks and Recreation, applauds Missoula citizens for their support of the open space bond measures. But he sees a larger role for stewardship on existing open space lands. “In the 90’s,” he says, “there was a big drive to buy up a lot of land to save it from being developed. And we’ve done that.

“What we need now is a publically-supported comprehensive plan to unify the management of all our conservation lands. We know where the pristine areas are and where invasive weeds are and how to manage them? But we can’t afford to do much actual restoration. Once we outline some priorities, it will be easier to make decisions and use our resources efficiently.”

Valliant sees a niche for a volunteer-based conservation organization in Missoula to help realize some of the city’s open space stewardship goals.

Paul Alaback couldn’t agree more. “It’s a win-win. The more the community gets involved, the more we begin to realize how special these places are. And with growing concern over carbon footprints, it’s important to offer people a close, regular connection with nature. 🐦

—Liz Williams currently is finishing her master’s thesis on the history of land conservation in Marin County, California.

Photo courtesy of Missoula Parks and Rec. Dept.

## What are Missoula’s open space lands?

**M**issoula’s open space properties fall into four major categories:

**Conservation land** includes Waterworks Hill and the Moon-Randolph Homestead in the North Hills, Mount Jumbo and Mount Sentinel, as well as the Tower Street conservation area, a 200-acre riparian corridor along the Clark Fork River. Conservation lands are intended to protect the unique habitat types found in the Missoula valley, including ponderosa pine, Douglas-fir savannah, Douglas-fir forests, foothills grasslands, woody draws, riparian areas and wetlands. **Trails** provide opportunities for non-motorized travel in Missoula. They include the riverfront trail system as well as the Milwaukee Railroad Trail and the Bitterroot Branch Trail. **Parks** are intended primarily for recreation and include a number of neighborhood green spaces, some with particular ecological value. The Bancroft Pond at Southwest Higgins and Bancroft supports a stand of black cottonwoods and a number of waterfowl. **Agricultural lands** are intended to preserve prime agricultural soils and to protect farmland from development. The Whitaker property, a 1,000-acre conservation easement in the South Hills, was protected in a joint effort by two landowner families, the Missoula Open Space program, using 2006 open space bond monies, and the Five Valleys Land Trust.

### For more information:

Missoula City Parks and Recreation Open Space  
[www.ci.missoula.mt.us/parksrec/openspace.htm](http://www.ci.missoula.mt.us/parksrec/openspace.htm)

Montana Birding and Nature Trail  
[www.montanabirdingtrail.org](http://www.montanabirdingtrail.org)

Kelly Island



# Biomimicry

## Tapping into Four Billion Years of Nature's R&D

By Sam Stier

**L**ook around and you will instantly notice that it is not a black and white world. Blue skies, green trees, yellow birds – we live in a world exploding with color but rarely think about how this color is created. Whereas natural colorants break down and are recycled by the environment, synthetic colorants are designed to behave in the opposite way, to be permanent and stable over time. But the materials and processes used in synthetic pigments can accumulate in the environment and in people, resulting in ecological and health problems.

There is an entirely different way to create color, however; the way many organisms in nature create it – not with pigment, but by using biological structures to interact with light in unique ways. Color as a result of biological structures is what gives swallowtail butterflies their extraordinary yellow iridescence, for example. Their wings contain layers of transparent material that act like prisms, separating white light into its rainbow of different wavelengths, reflecting some and cancelling out others. Following nature's lead,

people now are emulating how butterflies and other organisms accomplish structural color to create everything from cell phone displays to cosmetics, without the use of harmful synthetic pigments.

Helping people understand the potential benefits to society of biologically-inspired sustainable design is the goal of the Biomimicry Institute, a three-year-old organization based in Missoula. The institute was founded by Janine Benyus,

author of "Biomimicry: Innovation Inspired by Nature," and is headed by Bryony Schwan.

Biomimicry is an approach to technological innovation that draws ideas from nature to solve the greatest environmental challenges of our time. Energy

efficient buildings inspired by termite mounds, resistance-free antibiotics inspired by red seaweed, and non-toxic adhesives inspired by geckos are examples of biomimicry transforming the world as we know it. The

**RIGHT: A glue-free, yet sticky, tape modeled on the dry physical adhesion of the tiny bristles on gecko feet would allow for products that could be disassembled and recycled without adhesive contamination.**

Photo by Naseer Ommer

**OPPOSITE: Squeaky clean earthworm; the intense hue of a blue morpho butterfly comes from prismatic separation of colors by wing membranes.**

Photos by Domagoj Kurmaic; Steph Mathews







can turn on and off 10,000 times faster than LCD cells. Perhaps most importantly, structural color is a novel way of creating brilliant color without resorting to heavy metal-based color pigments.

**Earthworms.** Earthworms are teaching us how to make more energy-efficient agricultural equipment. Have you ever noticed how earthworms crawling out of the ground look like they've just been hosed clean? It turns out that soil friction generates an electrical field in the skin of earthworms, and this electrical field attracts positively-charged water molecules out of the surrounding soil toward the worm's surface, a process known as "electro-osmosis." In other words, the



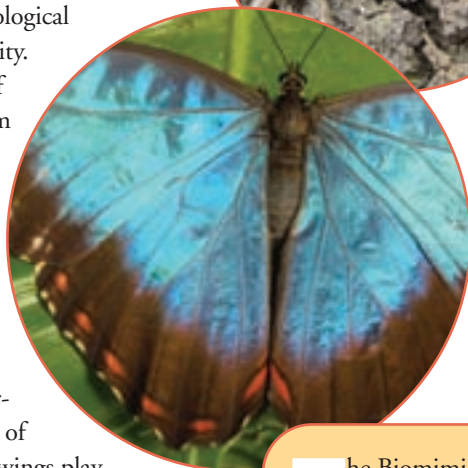
movement of earthworms triggers the environment to automatically lubricate them. Tests applying electrical currents to bulldozer blades have demonstrated reductions in soil resistance of up to 32 percent over conventional blades, representing a massive potential energy savings for agricultural activities.

premise underpinning biomimicry as a green innovation tool is that nature has nearly four billion years of research and development under her belt, embodied in millions of species, and has already sustainably solved a vast array of the technological challenges facing humanity.


Here's a sampling of what's being learned from organisms like those we can find in western Montana:

### Butterflies.

Researchers at MIT and Qualcomm Company have learned from butterflies an entirely new way of creating color. Butterfly wings play with light waves through constructive interference. Researchers have mimicked this method and Qualcomm is starting to create displays with it – beginning with cell phones, but with potential application to all monitors. "Structural color" cell phone displays use only six percent of the battery power versus 50 percent for LCDs, they show brilliant color in bright daylight instead of turning black, and each color cell



**Water Bears.** Microscopic animals called water bears hold clues about how to transport vaccines to remote areas without spoiling. Nearly half of all vaccines do not reach patients because of spoiling, particularly in regions with poor transportation networks and little refrigeration (such as much of Africa). Water bears (*Tardigrada spp.*) are changing that. They can go into a dormant state for hundreds of years and then, with the addition of water, spring back to life. They accomplish this through their biochemistry, which replaces their body fluids with a smooth form of solidified sugar that keeps their cell structure intact upon drying and rehydration. Researchers are now mimicking this process and a company called Biostability is developing the technology to preserve vaccines so as to no longer require preservation through refrigeration or toxic chemicals.

Biomimicry turns the assumption that nature and technology are antithetical inside out, and results in technologies that can improve performance while reducing environmental impacts. At the same time, biomimicry encourages a cultural shift in the way we view nature – no longer as a resource to exploit, but an informational resource to learn from. 

— Sam Stier is the Biomimicry Institute's K-12 education director.

**T**he Biomimicry Institute focuses on education, interdisciplinary training and the conservation of biodiversity. Institute staff develop K-12 curricula and educational content for schools, museums, zoos, television and films; help colleges and universities create biomimicry programs; train biology and engineering professionals to work on teams to address human design challenges; and raise funds through the Innovation for Conservation program to help protect native habitat.

MNHC and the Biomimicry Institute are beginning a collaboration to bring biomimicry concepts and examples to elementary-school children through the Visiting Naturalist in the Schools program. To find out more, visit [www.MontanaNaturalist.org](http://www.MontanaNaturalist.org) or [www.biomimicryinstitute.org](http://www.biomimicryinstitute.org), or call 327-0405.

# Bison Range Memories

Story and Photos  
by James Main



**FROM TOP: arrowleaf balsamroot and Mission Mountains; bison and calves; June-blooming bitterroot; pronghorn face-off.**



The Bison Range is part of the National Wildlife Refuge system. In May, the Bison Range celebrates its 100th birthday. For more information or directions on how to get there, call (406)644-2211 or go to [www.fws.gov/bisonrange](http://www.fws.gov/bisonrange).

I was six years old when I visited the National Bison Range for the first time. I was with my parents and older brother David. That was 35 years ago. I still go numerous times every year, and every time it's a new experience for me and whoever I go with.

Growing up, we used to stop in the day use picnic area for supper. There were always whitetail and mule deer around. I fondly remember playing in the sandbox with a small buck. As I played he jumped up and down. When it was time to eat we went to the picnic table together. The deer all seemed so tame. They're still around, but much shier now as refuge staff discourage feeding wildlife for the protection of the animals and people alike. Instead, the nearby ponds are a great place to watch turtles, songbirds and other creatures, and you can stroll along trails through cottonwoods and juniper to Mission Creek. Once I saw a raccoon; another time a mink.

From the picnic area, stop at the Visitors Center. Here are informative displays on the bison, its history and habitat. Find out from the helpful staff what sorts of wildlife people have seen that day.

Then it's off to explore. I recommend taking the Red Sleep Mountain Drive. It's 19 miles on a one-way gravel road. Take your time. I spend at least four hours, as I'm always finding something to watch and photograph, and my eyes have gotten sharper as a result. There are some big rocks that sometimes fool me into thinking they are buffalo or a bear; sometimes they are. Springtime is my favorite time to visit the Bison Range to look for lots of baby wildlife and the many species of wildflowers in bloom.

A great place to stop and stretch is the Bitterroot Trail. The half-mile round trip leads you through a pine forest to a rocky point. In mid-June, just off the trail, you can see numerous Bitterroot flowers in various stages of bloom. In September, you can hear the bull elk bugle. I have seen elk, deer, bears, bighorn sheep and buffalo from here. One time, my best friend Mike and I met up with seven bull buffalo that appeared one by one along the trail. Slowly and carefully, we finally made it back to the car!

Another favorite spot is the Highpoint Trail. This leads to the highest spot on the range at 4,800 feet. Whenever I've taken it I've seen bighorn sheep. There's a great view of the Mission Mountains from here, too. On your way down the mountain, go slow and enjoy the spectacle. In the summer, bighorn rams often are up high and close to the road.

As you approach Antelope Ridge and Alexander Basin, watch for pronghorn, western meadowlarks and of course, buffalo. If you see a mother pronghorn, wait patiently – she might have twins with her.

Then comes my favorite part of the range – the drive along Mission Creek. This area is full of wildlife. Just last year I took my friend Nat. He was 8 and had been calling attention to numerous rocks, thinking they were something else. Then he yells, "there's a bear in the river." I remind him to make sure it is a real animal before he has me stop. He says he sees one. Sure enough, he's right. We stop and watch the bear swim across, then get out and shake himself. It was Nat's first time at the Bison Range and we saw a lot that day, including elk and deer feeding along and in the creek. Evening time is the best, when animals are more active and come to the creek to drink and feed.

The Bison Range is a great place to spend an afternoon and evening – for grownups and kids alike. Make sure to bring binoculars and a camera. Bottom line: don't rush; enjoy this fantastic natural resource.







New Junior Rangers receive badges from YNP Formal Education Program Manager Bob Fuhrmann.

# Family Vacationing in Yellowstone

By April Christofferson

**P**lanning a family vacation to Yellowstone this summer? Don't forget to check out the Junior Ranger Program. It's a great way to engage your kids in the wonders of Yellowstone – from its wildlife, to its history, to its abundant geothermal features – and heighten their appreciation for the natural world in general.

As Yellowstone Ranger Michael Leach points out, it also helps grownups get more out of their visit. "It gives the entire family a focus for their activities, and the kids' enthusiasm is contagious," he says.

Yellowstone's Junior Ranger Program is designed for children ages five to 12. Drop in at any visitor center when you first arrive to pick up the 12-page Activity Paper (the \$3 fee helps support the program). Requirements to become a Junior Ranger include attending one Ranger program (campfire talks at the Mammoth Campground outdoor amphitheater are especially popular, as are the bear talks given just outside the Albright Visitor Center), hiking on a park trail, and completing a required number of age-appropriate activities described in the Activity Paper. Activities can range from

tracing your trip through Yellowstone on a map (drawing animals, landscapes and geothermal features you've seen along the way), to writing a journal page, to finding an animal track and trying to determine what animal made it. Parents liken it to a scavenger hunt. Once the requirements are completed, children return to any visitor center to review their work with a ranger, after which they are awarded the official Yellowstone Junior Ranger patch.

Some rangers, including Leach, take great pleasure in making the patch presentation something of a production. "Sometimes the visitor center will be packed. I'll make an announcement on the loudspeaker that we have a new Junior Ranger, and the whole place shuts down to watch this little kid get his or her patch. Then there's this big round of applause. It really moves the kids – makes them proud, and even more important, they become inspired to take a new interest in the natural world. I always tell them it's their job, as the next generation, to make sure that places like Yellowstone are protected for their kids. They take it very seriously."



Photos courtesy of NPS

## What's in a Name?

**T**axonomists are people who try to sort out relationships among living things, put them in categories and name them accordingly. Scientific names usually have their roots in Latin or Greek. With animals, sometimes the genus and species names are the same (tautonyms), but this practice is not allowed in botany. Can you figure out which scientific names go with which animals and why? Draw a line from the scientific name to the matching animal.

**Mephitis mephitis**



wolverine

Photo courtesy of YNP

**Vulpes vulpes**



bank swallow

Kristi Dubois

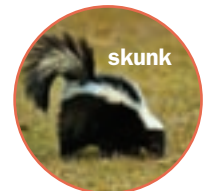
**Xanthocephalus xanthocephalus**



red fox

Photo courtesy of YNP

**Riparia riparia**



skunk

Geoff Kuchera, istockphoto.com

**Gulo gulo**



yellow-headed blackbird

James C. Leupold, USFWS

Special Pull-Out Section: pull out and post these pages for handy reference.

**April 7-May 5 Botanical Illustration in Graphite with Nancy Seiler**, Mondays, 6:30-9:00 p.m. Create a classic botanical illustration in graphite in this 5-class introductory course. You'll learn how to "build" your drawing by breaking it down into manageable layers of sketching, refining, shading and composition. You'll also learn how to set up your workspace, look at light, perspective, texture and detail. History of botanical illustration and some simple botany also covered. (This class is the prerequisite for Botanical Illustration in Color.) Class limited to 12; call 327-0405 to register. \$125 (\$25 non-refundable deposit.)

**April 16 Evening Lecture Series. Conservation Amid Conflict: Wildlife Conservation in Pakistan**, 7:00 p.m. \$3 suggested donation.

**April 26 Saturday Kids Activity. Beaver Boogie!**, 2:00 p.m. Learn fantastic facts about this amazing semi-aquatic rodent. We will learn about beavers' special adaptations and then take a walk to look for signs of beaver activity.

**April 30 Evening Lecture Series. Fishers: The Rare Porcupine-hunting Specialists**, 7:00 p.m. Mike Schwartz.

**May 2 First Friday Botanical Illustration Student Show Opening**, 5:00-8:00 p.m. Students from Nancy Seiler's botanical illustration classes show their original work in graphite, watercolor and colored pencil. On display all May, regular MNHC hours. Works for sale.

**May 4-June 1 Native Plant Garden Workshop**, Sundays, 2:00-4:00 p.m. Four hands-on classes led by professionals. Learn how to create a native plant garden by installing one at MNHC. From planning and site prep to planting and long-term maintenance. Space is limited; call 327-0405 to register. OPI credits available. \$70/\$60 MNHC members; \$20/individual session.

**May 14 Evening Lecture Series. Soundscapes and Stories from the Lewis and Clark Trail**, 7:00 p.m. Ritchie Doyle.

**May 17 Saturday Kids Activity. Big on Bugs!**, 2:00 p.m. What is the difference between a damselfly and a dragonfly? Why are insects important? Become an insect expert! We will learn how to identify common insects and take a walk to collect (and release) insects.

**May 17 Saturday Discovery Day. Evening Bat Walk with Kristi DuBois**, 7:00 p.m. Call 327-0405 to register.

**May 24 Saturday Discovery Day. Edible and Medicinal Plant Walk**, 2:00-4:30 p.m. With Elaine Sheff, owner of Meadowsweet Herbs. Call 327-0405 to register.

**June 2-30 Botanical Illustration in Colored Pencil with Nancy Seiler**, Mondays, 6:30-9:00 p.m. Learn how to create a classic botanical illustration in colored pencil. You'll practice different techniques, such as blending and layering colors, under-painting, preserving highlights and applying darks, textures, and defining your piece. You'll work on a few small pieces to practice techniques and also complete a final colored pencil illustration. (Botanical Illustration in Graphite a prerequisite.) Class size limited; call 327-0405 to register. \$125 (\$25 non-refundable deposit.)

**June 9-13 Pond Life (Grades 1-3)**. See Imprints for details.

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<b>MNHC Hours: Tuesday-Friday, noon - 5 p.m. and Saturday noon - 4 p.m.</b> <b>Admission Fees: \$1/adults, \$.50/children 4-12, free/children 3 and under and MNHC members.</b>			<b>Evening Lecture Series. Conservation Amid Conflict: Wildlife Conservation in Pakistan</b> , 7:00 p.m. 16	<h1>April</h1> 17	18	 <b>Mt. Sentinel's 10th Annual Earth Day Weed Pull and Prairie Restoration</b> , 10:00 a.m. 19
20	<i>April 7- May 5</i> <b>Botanical Illustration in Graphite with Nancy Seiler</b> , Mondays, 6:30-9:00 p.m.	21	<i>Earthworms surface</i>	22	 <b>Washington School 8th Graders Weed Pull Extravaganza!</b>	<b>Saturday Kids Activity. Beaver Boogie!</b> , 2:00 p.m.  <b>Bancroft Duck Pond Planting Party</b> , 8:30 a.m.-3:00 p.m.
27			<b>Evening Lecture Series. Fishers: The Rare Porcupine-hunting Specialists</b> , 7:00 p.m. 30	<h1>May</h1>		<b>First Friday Botanical Illustration Art Show Opening</b> , 5:00-8:00 p.m.
<i>May 4- June 1</i> <b>Native Plant Garden Workshop</b> Sundays, 2:00-4:00 p.m.	4		7	1	2	3
<i>Black morels poke through melting snow</i>	11	12	<b>Evening Lecture Series. Soundscapes and Stories from the Lewis and Clark Trail</b> , 7:00 p.m.	14	15	16
		 <b>Dyers Woad Pull #1</b> , 6:30p.m.	20	21	22	23
18	19	20	21	22	23	24
			<i>Western tanagers arrive</i>			31
25	26	27	28			7
1	<i>June 2 - June 30</i> <b>Botanical Illustration in Colored Pencil with Nancy Seiler</b> , Mondays, 6:30-9:00 p.m.	2	 <b>Dyers Woad Pull #2</b> , 6:30p.m.	3	4	
	 <b>Summer Day Camps June 9 - 13 Pond Life (Grades 1-3) Nature Detectives (Grades 3-5)</b>	8	 <b>John Toole Park Weed Pull</b> , 6:30 p.m.	10	 <b>Mt. Jumbo Wildflower Walk</b> , 7:00-8:30p.m.	<i>wild rose blooms</i>
8	9	10	11	12	13	14



SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	 <b>Summer Day Camps</b> <i>June 16 - 20</i> <b>Frogs and Fun</b> (Grades 1-3) <b>Moose Tracks and Mice Trails</b> (Grades 1-3) <b>Nature of Flight</b> (Grades 3-5)	 <b>Dyers Wood Pull #3</b> , 6:30 p.m.				 <b>Saturday Discovery Day.</b> Loon Watching, 7:30 a.m.-4:00 p.m. (approx.)
15	16	17			20	21
	 <b>Summer Day Camps</b> <i>June 23 - 27</i> <b>Half-Day Camp! Movin' and Groovin' with Animals</b> (Grades K-1) <b>Feathered Friends</b> (Grades 1-3) <b>Wade into Wetlands</b> (Grades 3-5)	 <b>Seed Collecting Work Party at Fort Missoula Native Prairie</b> , 7:00 p.m.			<i>Spiderlings born</i>	
22	23	24			27	28
	 <b>Summer Day Camps</b> <i>June 30 - July 3</i> <b>Special 4-day camp! Nature Art</b> (Grades 1-3) <b>Special 4-day camp! Survivor!</b> (Grades 3-5)	<b>July</b>				
29	30	1	2	3	4	5
	 <b>Summer Day Camps</b> <i>July 7 - 11</i> <b>Half-Day Camp! Water Skippers</b> (Grades K-1) <b>Wild Woodlands</b> (Grades 1-3) <b>Birds of Prey</b> (Grades 3-5)		<i>Berries begin to ripen</i>			 <b>Bitterroot River Floatin' Weed Pull Party</b>
6	7	8	9	10	11	12
	 <b>Summer Day Camps</b> <i>July 14 - 18</i> <b>Wildlife Wizardry</b> (Grades 1-3) <b>Junior Nature Detectives</b> (Grades 1-3) <b>Predators and Prey</b> (Grades 3-5)					
13	14	15	16	17		
	 <b>Summer Day Camps</b> <i>July 21 - 25</i> <b>Garden Safari</b> (Grades 1-3) <b>Beetles and Butterflies</b> (Grades 3-5) <b>Adventures in Science</b> (Grades 6-8)	 <b>Seed Collecting Work Party at Fort Missoula Native Prairie</b> , 7:00 p.m.				
20	21	22	23	24		
	 <b>Summer Day Camps</b> <i>July 28 - August 1</i> <b>Half-Day Camp! My Big Backyard</b> (Grades K-1) <b>Bats to Bears</b> (Grades 1-3) <b>Naturalist Explorers</b> (Grades 3-5)				<b>August</b>	
27	28	29	30	31	1	2
	 <b>Summer Day Camps</b> <i>August 4 - 8</i> <b>Folklore, Fantasy and Fables</b> (Grades 1-3) <b>Naturally Spooky!</b> (Grades 1-3) <b>Super Tracker</b> (Grades 3-5)					
3	4			7	8	9
	 <b>Summer Day Camps</b> <i>August 11 - 15</i> <b>Bugs to Slugs</b> (Grades 1-3) <b>Art and Nature Adventures</b> (Grades 3-5) <b>Map Your World</b> (Grades 6-8)				 <b>Weed Eating Weevils</b> , 7:00 p.m.	<i>Perseid meteor showers mid-month</i>
10	11			14	15	16

June 9-13 **Nature Detectives** (Grades 3-5). See Imprints for details.  
 June 16-20 **Frogs and Fun** (Grades 1-3). See Imprints for details.  
 June 16-20 **Moose Tracks and Mice Trails** (Grades 1-3). See Imprints for details.  
 June 16-20 **Nature of Flight** (Grades 3-5). See Imprints for details.  
 June 21 **Saturday Discovery Day.** Loon Watching, 7:30 a.m.-4:00 p.m. (approx.) Field trip to Seeley Lake. Call 327-0405 to register.  
 June 23-27 **Half-Day Camp! Movin' and Groovin' with Animals** (Grades K-1). See Imprints for details.  
 June 23-27 **Feathered Friends** (Grades 1-3). See Imprints for details.  
 June 23-27 **Wade into Wetlands** (Grades 3-5). See Imprints for details.  
 June 30-July 3 **Special 4-day camp! Nature Art** (Grades 1-3). See Imprints for details.  
 June 30-July 3 **Special 4-day camp! Survivor!** (Grades 3-5). See Imprints for details.  
 July 7-11 **Half-Day Camp! Water Skippers** (Grades K-1). See Imprints for details.  
 July 7-11 **Wild Woodlands** (Grades 1-3). See Imprints for details.  
 July 7-11 **Birds of Prey** (Grades 3-5). See Imprints for details.  
 July 14-18 **Wildlife Wizardry** (Grades 1-3). See Imprints for details.  
 July 14-18 **Junior Nature Detectives** (Grades 1-3). See Imprints for details.  
 July 14-18 **Predators and Prey** (Grades 3-5). See Imprints for details.  
 July 21-25 **Garden Safari** (Grades 1-3). See Imprints for details.  
 July 21-25 **Beetles and Butterflies** (Grades 3-5). See Imprints for details.  
 July 21-25 **Adventures in Science** (Grades 6-8). See Imprints for details.  
 July 28-August 1 **Half-Day Camp! My Big Backyard** (Grades K-1). See Imprints for details.  
 July 28-August 1 **Bats to Bears** (Grades 1-3). See Imprints for details.  
 July 28-August 1 **Naturalist Explorers** (Grades 3-5). See Imprints for details.  
 August 4-8 **Folklore, Fantasy and Fables** (Grades 1-3). See Imprints for details.  
 August 4-8 **Naturally Spooky!** (Grades 1-3). See Imprints for details.  
 August 4-8 **Super Tracker** (Grades 3-5). See Imprints for details.  
 August 11-15 **Bugs to Slugs** (Grades 1-3). See Imprints for details.  
 August 11-15 **Art and Nature Adventures** (Grades 3-5). See Imprints for details.  
 August 11-15 **Map Your World** (Grades 6-8). See Imprints for details.

Look for these program symbols in *Montana Naturalist* and on our website at [www.MontanaNaturalist.org](http://www.MontanaNaturalist.org).

-  Summer Science Day Camps
-  Saturday Discovery Days
-  Volunteer Opportunity

Unlike most other owls, pygmy owls hunt during the day.



Photo by Eugene Beckes

## Naturalist Notes

By Eugene Beckes

**January 16** About to drive to Missoula to run errands when I saw the pygmy owl perched in this bush. Pygmy owls are known to be very relaxed about human proximity and this one proved the notion. I got as close as ten feet from the bird, who never flinched. Finally decided to leave the little predator to its hunting. The bird was very alert, looking around more or less constantly. [My friend] has seen the owl for the last several days, but then she feeds chickadees, nuthatches, finches and others, and pygmy owls feed on small birds (as well as mice, voles and some insects). So it's not surprising that this bird would be attracted to the "bird feeding station" and its environs. By the way, the pygmy owl is not much bigger than the little birds it catches and eats, about seven inches long. Since I love the little birds I photograph on a regular basis, I hope this owl is mostly feeding on mice and voles, but I don't get to make the rules. Everything has to eat.

**February 14** Decided to sit outside and wait for the first winter wren to come to roost. I used to bow hunt; I am a champion of sitting and not moving, not a muscle, except for the necessary blood-pumping, breathing ones. My binoculars were strapped around my neck, but hung unused. I just stared at the nest, not moving, not seeing a single bird of any kind. I heard a squirrel scolding twice. All the other birds had gone to roost, I supposed. I thought about how little I know of the creatures that live all around me. Today I saw three species of chickadee, red-breasted nuthatches, a Stellar's jay, Oregon juncos and a flicker. Where are they now? Secreted away, somewhere. Winter is tough, but so many of these little feathered creatures make it through. How do they do it?

## Did you know...

...warm spring weather causes snow to melt and run off the mountains. Montana is the only state where water runs to the Pacific, Atlantic and Hudson Bay. The point is called triple divide peak in Glacier National Park.



Illustration by E.R. Jenne

## Fun To Do



Photo collage by Becky Brucker

## Practice Your Naturalist Skills

**W**hat are the skills of a naturalist? Listening, looking, smelling, touching even tasting (but check with a grownup first) – using all your senses to notice what is going on in the world around you. Try this: find a spot in your backyard, in a park, by the river, in a forest or anywhere. Sit quietly with your eyes closed for a few minutes. What do you hear? Now open your eyes and focus on something close up – a rotting log, a bush, a flower, for example. Spend several minutes just looking at every part of your subject. What did you notice that you didn't see right away? You might want to pack a few simple items to help you explore further.

### A naturalist's toolbox:

- |  |   |
|--|---|
| <input type="checkbox"/> Field guides  | <input type="checkbox"/> Tweezers                     |
| <input type="checkbox"/> Notebook  | <input type="checkbox"/> Hand lens or loupe           |
| <input type="checkbox"/> Pens/pencils  | <input type="checkbox"/> Portable plant press         |
| <input type="checkbox"/> Binoculars  | <input type="checkbox"/> First aid kit (just in case) |
| <input type="checkbox"/> Camera  | <input type="checkbox"/> Butterfly or insect net      |
| <input type="checkbox"/> Containers (empty film canisters, plastic bags, jars) | <input type="checkbox"/> Water bottle                 |
|  | <input type="checkbox"/> Sunscreen                    |



# {*Oreamnos americanus*}

By Charles Finn

Photo by G. Keith Douce, University of Georgia, Bugwood.org

**A**t 7,000 feet on an autumn afternoon, I sit on a rock outcrop watching a pair of mountain goats navigate the ledges below Little Saint Josephs Peak four miles south of Florence. Nanny and child, they have appeared unexpectedly on the opposite side of a rocky bowl only a few hundred feet below me. Like cloud and cloud wrack they drift uphill, stopping often to nose their shoe box faces into the wind. With the sun high in the west, and ignoring or not equipped with vertigo, they crowd out onto narrow shelves, staring out of black button eyes into their beautiful and indifferent world.

November signals the start of the rutting season for mountain goats. Because of this I'm not surprised when four billies round a corner another 1,000 feet above. The sexes spend most of the year apart, nannies herding groups of young called nursery bands, while the males observe the passing seasons in solitude, or sometimes in groups of two to four. During the hours I observe them, I see no contact between the groups, but I can't imagine the randy males are unaware of the female below, and vice-versa.


Through binoculars I watch how all six step over the broken stones with enviable ease. Like all ungulates, the hooves of a mountain goat are cloven, but in a goat's case with rough-textured pads that extend past the rim, making them highly specialized for this rocky, slippery terrain. Their toes can also spread for better weight distribution, then close like pinchers around rocky projections, providing extra traction. Despite these adaptations falls are not unheard of. Both mountain lions and wolves can ambush the unwary mountain goat, and winter avalanches will sweep goats from mountainsides with little regard for their famed sure-footedness. I see no missteps, but over my left shoulder a raven calls my attention to a golden eagle carouseling on a thermal high above. Eagles, I know,

Like cloud and  
cloud wrack  
they drift uphill,  
stopping often to  
nose their shoe box  
faces into the wind.

have been known to knock kids from cliffs much like this one, but I witness nothing so dramatic today.

Instead, the two groups browse, nap and look with coal dark eyes into the spaces beyond. With their characteristic beards sideways in the wind it gives them an appearance of sagely wisdom and old age. Age in mountain goats is determined by concentric rings that grow on their horns; hollow, black, stiletto-like daggers that point over their shoulders. These muscular, disproportionately large shoulders are what propel the goats up the steep slopes, while their snow-white coats, (ending abruptly at the knees, giving them the appearance of wearing a mountaineer's gaiters), is what warms and camouflages them through the extended months of an alpine winter.

Except for the musk oxen, a mountain goat's pelage is the thickest and longest of the North American ungulates. Long coarse guard hairs, hollow like a polar bear's, absorb the sun's rays. Sunlight passes through the guard hairs to the goat's skin which absorbs the radiation as heat. Similar to the glass of a greenhouse this prevents heat from being radiated back to the air, while a dense layer of shorter interwoven underfur shelters the animal from the extreme winds encountered at these heady elevations.

Maybe it's the goats' seeming disregard for the elevation. Maybe it's their casual attitude around gravity. Either way, when I lift my eyes the scenery on all sides spins me, its stark beauty and fierce isolation creating a longing I cannot name. Here, so close to the sky, I would like to say the goats' steadiness has transferred to me. It is not so. With a queasy stomach I have been forced to sit down, the goats' presence engendering and completing the landscape in a way I hadn't expected. 

— Charles Finn is a writer and woodworker. He lives in Stevensville with his wife, Joyce Mphande-Finn, and his cat, 42.



# A Summer with Prairie Dogs

By T. Travis Brown

June 1, 2006

Arrived in the Black-footed Ferret Recovery Field Camp today after waiting for muddy “gumbo” on the roads to dry for a day. I’m here to monitor black-footed ferrets that have been reintroduced to local prairie dog towns. Black-footed ferrets were once the rarest mammal in the world. In fact, they were thought to be extinct until rediscovered in Meeteetse, Wyoming in 1981. My job is to live here, in a trailer in the middle of a prairie dog town, and monitor the success of ferrets here, adding to a dataset that will allow us to understand enough about ferrets to ensure their survival. David Jachowski, my boss for the summer, and his father Dick showed me around a small area of the UL Bend and Charles M. Russell National Wildlife Refuges today. These refuges in Missouri Breaks country cover a million plus acres, so I will have a lot of room to explore this summer.



*Me, releasing a ferret kit during roundup*

Photos by T. Travis Brown

June 2

David and I went spotlighting for the first time last night. We drove around in an old refuge truck that has a huge light mounted on top of the cab with a handle extending down through a rubber-sealed hole in the roof. We drove about seven m.p.h., slowly rotating the light in a 180° arc in order to check the whole area for the gleaming, green eyes of a ferret sticking its head out of a prairie dog burrow. I saw my first black-footed ferret tonight, a male named 420M. He is one of two old males that I am to encounter throughout the summer, and is probably the father of half of the kits born this summer. I feel extremely lucky because not many people have ever gotten to see one of these amazingly specialized little prairie carnivores.



*Lightening strike – 90 in the Breaks this summer*



*Black footed ferret, peeking out of p.d. den*

Photo by T. Travis Brown

June 16

I have been living alone for a few days down here; David and Dick have left to get research rolling in South Dakota for the summer. I spotlight through the night and then sleep until my trailer gets up to about 100 degrees at noon. That leaves me several hours in the afternoon to explore and watch local wildlife.

Prairie dogs really are interesting critters to watch. Their towns are made up of many family groups, called coteries. A coterie usually includes several females, their pups and a mature male. They mow down all the plants around their burrows so that they can see anything that approaches. Prairie dogs even prune back sagebrush and greasewood in order to slowly expand the prairie dog town (improving grazing in the process). They spend most of the day eating, interacting with each other and alarm calling at predators.

The prairie dogs generally are not too startled by me as long as I stay in my “territory” – the area between my trailer, an old log shed and the outhouse – but as soon as I leave to explore I have several hundred hyperactive little rodents barking at me. Their pipsqueak barks can be quite unnerving in that number, and it is impossible to sneak anywhere. The upside is that I always know when to look up at a prairie falcon, golden eagle, coyote or badger crossing by.

Nights have not been too exciting yet. Female ferrets are holed-up in their burrows with newborn litters of kits. I see the two adult male ferrets occasionally. Most of the time, I just see them peeking out of a burrow, but occasionally I catch them as they run across open ground to a new prairie dog den. Ferrets move into a new burrow at night while the prairie dogs are sleeping. They will feed on the prairie dogs for several days, and live in one of the chambers until they need to move to another unsuspecting prairie dog’s burrow system. Ferrets occasionally eat mice, voles or other critters, but their existence as a species depends almost entirely on the presence of huge expanses of prairie dog towns.



*Large prairie dog town, UL Bend NWR*

Photo by T. Travis Brown



## June 21

Tonight I observed something that very few people have ever seen. For the past few nights, I have located a female ferret named 442F. The first night I saw her she carried a vole for about 30 yards before disappearing for the night into a burrow. I was thrilled to observe this much ferret behavior since most of ferrets' lives are carried out underground. When I saw her a few nights later she was carrying something in her mouth again. Although ferret bodies fit perfectly underground, they have a fairly jerky, bounding gait during over-land travel. Whatever was in her mouth was bouncing off the ground and the side of her head as she moved. Then I realized that I was witnessing a mother ferret move her kits to a new burrow! I put a red lens (less obtrusive at night) on the spotlight, and watched as she moved two kits to a new burrow. Ferret mothers often move their kits when a burrow becomes soiled and/or she makes a kill in another burrow. I was just lucky enough witness this secretive and seemingly traumatic move.



*Woodhouse's toad lives in prairie dog burrows*

Photo by Kristi Dubois

## July 19

Several nights ago I watched a spectacular lightning show. The next morning I awoke to the smell of smoke. There were at least three huge plumes billowing up from distant areas of the Breaks. I radioed-in about the fires, but refuge personnel already knew about them (I guess they woke up before noon). It seems that several fires were burning on the south side of the river.

Tonight, after a trip to town, I was delayed by a flat tire and did not return to camp until after dark. It was exhilarating and eerie to drive down into the flats next to the river. The hill across the river glowed through a layer of mist and smoke that had blown in with a storm from the south. Lightning flashed all around from yet another dry thunderstorm, and the layer of smoke that settled onto this low ground made me wonder if camp would be on fire when I arrived.

0,000 acres burned  
mer

## August 9

It has been extremely dry. I've been wondering how so many prairie dogs can live in one place. There seems to be nothing green for miles. Then I started to realize that the ground around most of the towns looks like it has been tilled with a garden tiller. The dogs are digging up roots to gain important moisture and calories.

One prairie dog in particular has become very bold lately. She is a grizzled, old female that David named Gertrude during his last visit. She walks around nearby while I'm reading and has become quite curious. Today she actually came up and sniffed my toe as I was reading. I grabbed my camera, hoping to get a picture of her if she did it again. Sure enough, she came back near my feet again, but just as I was about to take a picture she bit my toe! Now I read and write with my feet up, but she has taken to dragging my sandals away!

## October 8

The prairie dogs sent up a huge alarm today while I was eating breakfast. I looked up just in time to see two golden eagles landing on some critter on a nearby hill. No sooner had they landed than they were scared off by a coyote. Later, a badger trotted within 10 feet of me in camp. The prairie dog town truly is a productive place!

This productivity is even more evident at night. The list of critters that I've seen coming and going includes great plains toads, Woodhouse's toads, bull snakes, prairie rattlesnakes, deer mice, bushy-tailed wood rats, black-footed ferrets, badgers, long-tailed weasels, burrowing owls and black-tailed prairie dogs. Those are just the species that use the burrows. Multitudes of other plants and animals, such as mountain plovers, depend on this ecosystem for their existence.



*American badger, digs out burrows for rodent meal*

## October 17

There were five female ferrets and two male ferrets when I came to UL Bend in June. Over the summer, I located four groups of kits. Two females and at least one group of kits disappeared early in the summer, but I got to watch three sets of kits (nine kits total) being raised. Each mother and her kits moved from one burrow system to another in an increasingly loose group until they were widely separated and on their own. Through the work of David and many other biologists, we have learned that even in an area with as many prairie dogs as the Charles M. Russell National Wildlife Refuge, ferrets are struggling. Between sylvatic plague, fragmentation of prairie dog towns by human encroachment, and prairie dog poisoning programs, black-footed ferrets still have a precarious future. Ferrets need extremely large areas of densely-populated prairie dog town if they are to survive.

Last night I helped out with my last night of spotlighting. Refuge biologists are conducting the fall "ferret roundup" to tag the kits produced this summer, vaccinate them against canine distemper and plague, and gather important biological information. A driving snow made spotlighting futile. We quit for the night, and I drove out of camp to start another job monitoring chronic wasting disease in deer and elk. My summer in the prairie dog town taught me a lot about the short grass prairie and many of its inhabitants. Like a couple of other biologists out there, I have found that UL Bend is one of my favorite places on earth. 🦃

— Travis Brown currently works as a biologist for an environmental consulting company in North Carolina. He spends his free time working on photography and writing.

Photo by Kristi Dubois



## Summer Learning and Fun with MNHC Day Camps



**T**his summer choose from more outdoor science discovery camps than ever before, for children entering kindergarten through 8th grade. Teens check out our Leaders-in-Training program (see listing below)!

MNHC offers weeklong day camps that engage children in the study of the natural world through field trips, arts and crafts, and scientific exploration. Camps run Monday through Friday, 9 a.m.-4 p.m., with before and after-camp care available from 8-9 a.m. and 4-5 p.m. Half-day camps run from 9 a.m.-12:30 p.m. Costs for camps are \$150/MNHC members, \$190/non-members. Half-day camps are \$60/MNHC members, \$100/non-members. Four-day camps (during July 4th week) are \$120/MNHC members, \$150/non-members. For more information or to register for a camp, call 327-0405. Registration forms also are available at [www.MontanaNaturalist.org](http://www.MontanaNaturalist.org).

### Grades K-1

#### **Movin' and Groovin' with Animals** *Half-Day Camp!* June 23-27

We'll learn about animals by mimicking their movements and sounds. Identify animal sounds, sing along to songs about nature, practice movement and dances inspired by animal displays, and create our own musical instruments to mimic what we hear outside.

#### **Water Skippers** *Half-Day Camp!* July 7-11

Explore the wonders of aquatic habitats. Learn about the plants and animals that like watery homes through stories, crafts and by going on nature "explorations." We'll also make a place in our classroom to observe some of our aquatic friends!

#### **My Big Backyard** *Half-Day Camp!* July 28-August 1

Spend the week looking for animal signs, searching for insects, watching for birds and peeking at plants. Using tools of naturalists we'll explore natural areas in and around Missoula, following our curiosity and adventurous spirit!

### Grades 1-3

#### **Pond Life** June 9-13

Explore life in ponds and wetlands from waddling waterfowl to crawling caddisflies. We'll use nets to catch aquatic insects, search for animal tracks and signs, and we'll create an indoor pond in a fish tank as a laboratory for learning!

#### **Frogs and Fun** June 16-20

Amphibious adventures await during this exploration of wetlands, rivers and streams. Learn about Montana's frogs, use nets to collect and observe aquatic creatures, explore food chain connections, discover fun facts about aquatic habitats and go on frog finding expeditions.

#### **Moose Tracks and Mice Trails** June 16-20

Learn how to read signs that animals and insects leave behind! Identify tracks and different animal homes, and how to use clues left by animals to tell their stories. We'll also create our own plaster animal tracks and tracking guides to keep.

#### **Feathered Friends** June 23-27

From ravens to raptors, hummingbirds to herons we investigate the bird world to learn about their beaks and feet, feathers and wings, nests and eggs, songs and food through outdoor exploration, stories and art.

### Special 4-day camp!

#### **Nature Art** June 30-July 3

Use crayons, paint, sculpture and elements from nature to create your own works of art! Learn about habitats from forests to grasslands as we explore modes of expression, from drawing to watercolor to printmaking. Cap the week with an art exhibit to show off your creations!

#### **Wild Woodlands** July 7-11

Explore forests around Missoula, from Pattee Canyon to Blue Mountain and beyond, searching for the treasures that make these places special. Learn to catch and study insects, observe birds with binoculars, identify common trees and flowers, read stories and create some of our own!

#### **Wildlife Wizardry** July 14-18

Animals do some surprising things – like change color with the seasons, move without feet and freeze nearly solid during the winter! Explore unique animal adaptations through field observations and experiments, games, stories and art projects. We'll take daily field trips to explore different habitats to learn why animals have such wild adaptations!

#### **Junior Nature Detectives** July 14-18

Solve mysteries from clues left behind by Montana's wildlife. Make your own nature detective kit, study animal skulls, learn to identify animal tracks and signs, and explore local natural areas to learn more about wild animals of Montana.

#### **Garden Safari** July 21-25

From vegetables to flowers to the insects that crawl underneath, gardens are full of discoveries. Learn how plants grow, how we can grow our own plants for food, set up some plant experiments, learn what animals plants need for survival. We'll save some time to make plant crafts and prepare healthy snacks from our harvest!

#### **Bats to Bears** July 28-August 1

Learn what makes a mammal a mammal as you examine study skins and skulls, read stories, play games, explore the habitats of your favorite critters, and take a trip to the Bison Range to see some of Montana's largest mammals!



### **Folklore, Fantasy and Fables** August 4-8

Stories can teach us a lot about the nature around us. Begin each day with a story that will guide our explorations and imaginations. Learn about the importance of animals in different cultures and use nets, hand lenses and your own creativity to discover what stories nature holds!

### **Naturally Spooky!** August 4-8

From snakes to bats to stink bugs, explore the animals in Montana that most people try to avoid! Learn all about their natural habitats, what they really eat, and hear stories and folklore about why people are afraid of these animals. Discover the truth that makes them...not so scary!

### **Bugs to Slugs** August 11-15

Crawl behind an ant! Hop with a grasshopper! Slide with a slug! Spend the week looking for incredible invertebrates, using nets, hand lenses and microscopes to discover who they are, where they live, what they do, and how they add to the diversity around us.

### **Grades 3-5**

#### **Nature Detectives** June 9-13

Uncover secrets about some wild animals. Learn animal tracking techniques, how to identify a bird by its song, use nets to catch and study insects, and study animal skulls. We'll even get to see some of the tools real biologists use to study wildlife!

#### **Nature of Flight** June 16-20

Explore the world of flight from insects to birds to mammals that fly. Learn how wing shape and size affects flight and make your own models. Learn about the science of flight and the adaptations that make flying possible.

#### **Wade into Wetlands** June 23-27

Dip into local wetlands. Use waders, nets and hand lenses to observe the aquatic insects, reptiles, amphibians or fish we might find. Learn to identify a few wetland birds and why wetlands are important places for plants, animals and people!

### **Special 4-day camp!**

#### **Survivor!** June 30-July 3

Do you have what it takes to make it in the wild? Learn some techniques for basic survival, including fire and shelter building, orienteering, animal track identification and even how to predict the weather! We'll also go over safety tips for how to stay safe – and not get lost – while exploring!

#### **Birds of Prey** July 7-11

Raptors are an amazing group of birds with adaptations specifically for capturing prey. Study eagles, hawks, falcons, owls, osprey and others to learn about these adaptations and where different raptors can be found. Study pellets to see what they eat and use binoculars to observe them in the field.

#### **Predators and Prey** July 14-18

From prehistoric times to the present, animals have depended on each other for survival. Predators hunt other animals for food, yet populations of predators and prey stay roughly in balance. Explore different predators and their prey, from meat-eating dinosaurs to modern-day wolves and mountain lions.

#### **Beetles and Butterflies** July 21-25

Insects make up the largest group of animals on the earth! Who dominates the sky? Who patrols the forest floor? Learn about the basic structure of creepy crawlies that inhabit our region, their amazing adaptations and what they need to survive. Use insect nets, create insectariums and observe insects in their natural habitats.

#### **Naturalist Explorers** July 28-August 1

Hit the trail as modern-day explorers. Learn to use compasses and maps, read field guides, practice basic survival skills, and carry naturalist tools to guide our journey through local forests, wetlands and river beds. We'll also learn about tools used by real naturalist in the field and hear their stories of working in the most amazing parts of Montana!

### **Super Tracker** August 4-8

Learn to identify animal tracks and signs, become acquainted with the tools used by professionals for studying animals, and learn basic skills for exploration in the outdoors. Practice your tracking skills in the field, create plaster tracks of your favorite Montana mammals, make your own tracking books and test your own super tracker skills!

### **Art and Nature Adventures** August 11-15

What better way to celebrate our natural wonders than through art. Explore the plants and animals outside using different modes of expression, including sketching, painting, printmaking, sculpture and natural materials. Host an art opening at the end of the week to show off your creations!

### **Grades 6-8**

#### **Adventures in Science** July 21-25

Spend a week learning what scientists really do. Practice techniques for studying wildlife, learn from and observe real biologists in the field, see inside labs and learn how to do lots of simple experiments as we see how adventurous science really can be.

#### **Map Your World** August 11-15

Improve your basic map reading skills, create your own maps, practice using a compass and map on an orienteering course to figure out where you are. Learn some introductory skills for using Global Positioning Systems (GPS) and try your hand at geocaching!

### **Teens**

#### **Leaders-in-Training Program** ALL SUMMER

Teens 14-17 may volunteer for a Leader-in-Training position and gain experience in child care and summer camp instruction by assisting camp instructors with programs. Students must commit to two days of training at the start of the summer, and must participate in at least one full week of camp as a junior instructor. Contact MNHC for application instructions or more information, [www.MontanaNaturalist.org](http://www.MontanaNaturalist.org) or call 327-0405.

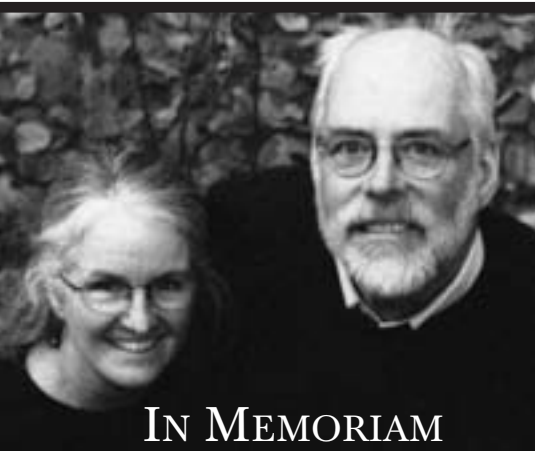


Photo courtesy of Emily Harrington

## **IN MEMORIAM**

The Montana Natural History Center and the whole Missoula community lost dear friends in January. Nancy and Hank Harrington were long-time supporters of MNHC in very valuable ways.

Years ago, when MNHC was just starting to offer some nature education programs, the bookkeeping was done “by hand,” in pencil, on paper. As our programs grew and there were more employees and more organizational

needs, it became apparent that this form of bookkeeping was far from sufficient. Too much sweating over the adequacy and accuracy of the information. Nancy, who was a CPA with Boyle Deveny and Meyer, had helped us from the beginning as our accountant. As we grew, she helped assure us that we did indeed get the concepts, the set-up and the numbers right, and that we understood how the numbers could work for us. This was pretty standard CPA work, but Nancy always went the extra mile with us, just what we needed. More than that, she had a sense of humor and humanity that made visits to the accountant actually fun. Nancy continued as our accountant and financial advisor until the mid-2000's.

Hank was a teacher. And although he'd long been a Professor of English at the University of Montana, he loved natural history. He served on our board 2003-2005 and was a great proponent of “Field Notes,” our long-running collaboration with Montana Public Radio. When Hank began to retire from academia, he decided to do even more for MNHC and became a volunteer with the

Visiting Naturalist in the Schools program. Each month he would come to be trained in the material to be presented to the 4th graders, and then he would faithfully go to the school and give the hour-long program – for the entire school year. Hank was especially supportive of Lowell School, and the kids and teachers loved him in the classroom and in the field. It was fun to observe Hank, with his broad-brimmed hat and professorial demeanor, really engaged with those nine and 10-year-olds. His enthusiasm and encouragement were absolutely contagious.

These two people, so full of life and love and dedication to community, will be deeply missed. May we all be so fortunate to face life with the sense of adventure and participation that they did.

— *Contributed by Ellen Knight*

*[The staff and board of MNHC wish to honor the Harringtons for their association with the center and for their inspiration as lovers of learning and the outdoors with a future memorial in our planned outdoor native landscaping. Persons interested in being part of this effort, please contact MNHC at 327-0405.]*



**Learn. Explore. Play. Helena Knows Kids!**



Fun, hands-on exhibits, a variety of classes and programs, plus...a fantastic gift shop!

**Exploration Works!**  
A Collaborative Museum of Science & Culture at the Great Northern Town Center

995 Carousel Way | 406.457.1800  
Great Northern Town Center  
www.explorationworks.org



**Outdoor Kidfitter Co.**  
keeping children active  
a children's outdoor store

Hours: M-F 10-6  
Sat & Sun 10-4

411 N. Last Chance Gulch  
Downtown Helena | 406.443.3202  
www.outdoorkidfitters.com

on the walking mall!

**MISSOULA MOON**

Hours: M-F 10-5:30  
Saturday 10-4

**WONDERFUL TOYS**

25 S. Last Chance Gulch  
Downtown Helena | 406.442.1594

**The Learning Tree**



...where learning and fun go hand in hand.

Southgate Mall, Missoula  
**543-0101**  
www.learningtreemontana.com

TOYS • CHILDREN'S BOOKS • TEACHER'S RESOURCES

Bring this ad in for 10% off your next purchase.

**NEW FLOORS AND TRIM RESTORING MONTANA'S OLD GROWTH.**

- Flooring
- Trim
- Windows

**treadlight™**

WWW.NORTHSLOPEWOOD.COM

*Bring the outdoors inside*



**BURLEY'S NATURAL HOME SUPPLY**

flooring • finishes • insulation  
paints • sealants • roofing  
housewares • garden

215 E. Main • Missoula  
406-541-6110

WWW.BURLEYSNATURALHOMESUPPLY.COM

**Indulge**

**COLD STONE**  
CREAMERY

Across Reserve from Costco

3275 N. Reserve  
(406) 549.5595

 **Jayco**

**Rangitsch Bros. LLC**

Family owned for over 50 years.

Western Montana's Largest  
RV Sales, Service and Parts Store.

www.rangitschbrosrv.com

2801 W. BROADWAY  
(406) 728-4040 • 1-800-823-2221


**YEAR OF THE FIRES**  
The Story of the Great Fires of 1910

**Stephen J. Pyne**  
With a foreword by John N. Maclean

This is the gripping tale of the fires of summer of 1910, when blazes scorched millions of acres in the northern Rockies.

368 pgs., 6 x 9, pbk \$16.00,  
978-0-87842-544-0

**Mountain Press Publishing Company**  
406-728-1900 • 800-234-5308



**GOOD FOOD STORE**

1000 S. 3rd St. West | Missoula | 406.541.FOOD

**MONTANA MADE**

**Hunter Bay**  
COFFEE

Shade-Grown – Fair Trade  
100% ORGANIC Coffees

www.hunterbay.com • 800-805-2263

**DIAMOND IMAGING**  
INCORPORATED

**brother**  
Brother Authorized Service Center



**For all your Printer and Small Copier needs, always call us first!**

- Inkjets
- Toner
- Repair
- Supplies
- Advice
- New and Used Printers!

(406)-542-7760  
Toll Free 800-458-7760

Diamond Imaging Inc.  
2801 South Russell  
Missoula, MT 59801





*“As a professional gardener I thought I had an intimate relationship with flowering plants. In the first graphite class the teacher suggested that before we started drawing we just look at our subject for five minutes. That five minutes flew into eight, and only then did I realize how much I take the intricate beauty of these familiar plants for granted. Drawing what I see – really looking at them – I came to know them.”*

**Lori Parr-Campbell**

*Botanical Illustration in Graphite with Nancy Seiler*

© 2007, Lori Parr-Campbell  
Colored Pencil

# Yes!

I want to become a member and support the Montana Natural History Center. *All memberships are annual.*

- ☐ Basic Membership: \$50    ☐ Senior (Age 65+)/Student Membership: \$35  
☐ Business Membership: \$250    ☐ Explorers Club Membership: \$1,000

*All gifts are tax deductible to the full extent of the law.*

☐ I am enclosing payment by check.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone \_\_\_\_\_

☐ I would like to pay with credit card (circle one): AMEX VISA Mastercard

Account Number \_\_\_\_\_ Exp. Date \_\_\_\_\_

Signature \_\_\_\_\_

☐ Sign me up for the monthly email newsletter.

Email address: \_\_\_\_\_

☐ I want to volunteer! Send me a volunteer application.

☐ I would like more information on making a planned gift or gift of stock.

*Make us your base camp for discovery with a visit to our website – [www.MontanaNaturalist.org](http://www.MontanaNaturalist.org). Become a member on-line, explore our programs and discover where the Montana Natural History Center can take you!*

**Fill out and mail to Montana Natural History Center, 120 Hickory Street, Missoula, MT 59801 or Fax: 406.327.0421**

## Basic Membership Benefits

Annual subscription to *Montana Naturalist*  
Free visitor center admission  
Discounts on all programs  
Invitations to special programs  
Access to the Ralph L. Allen Environmental Education Library

## Business Membership Benefits

Advertising discounts in *Montana Naturalist*  
A supporters link on our website  
Free meeting space (subject to availability)  
Invitations to special programs  
Recognition in our visitor center and in *Montana Naturalist*



**I**f you have enjoyed the articles and photos in *Montana Naturalist*, won't you please help us continue to celebrate Montana's natural history by becoming a voluntary subscriber? Your donation will go directly to support the costs of producing this magazine.

Please send donations to:  
***Montana Naturalist,***  
c/o Montana Natural History Center  
120 Hickory St.  
Missoula, MT 59801.

*Thank you!*



**Montana Natural History Center**  
*Your Base Camp for Discovery*

120 Hickory Street  
Missoula, MT 59801  
[www.MontanaNaturalist.org](http://www.MontanaNaturalist.org)

NON-PROFIT  
ORGANIZATION  
US POSTAGE  
**PAID**  
PERMIT 569  
MISSOULA, MT