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Montana Natural History Center
Connecting People with Nature

TO PROMOTE AND CULTIVATE THE APPRECIATION, UNDERSTANDING AND STEWARDSHIP OF NATURE THROUGH EDUCATION

Spring/Summer 2011

MONTANA Naturalist

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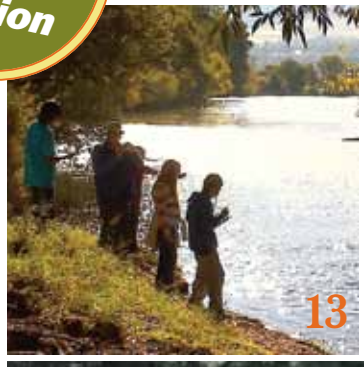
Special Pull-Out Section



Cover – Western painted turtle. Photo by Jim Streeter, taken during a paddle on the Clearwater Canoe Trail, Seeley Lake. "This one seemed to be trying to decide whether it needed to abandon its choice spot in the sun to dive into the river," he says. To see more of Jim's wildlife photos, go to www.environmentalstockimages.com.

Inside Back Cover – Yellow pond lily *(Nuphar spp.)*. Photo by Kevin Fredenberg, taken on a June morning at a pond just off the Bitterroot River near Florence. "I was photographing some ducks when I was struck by [the lily's] reflection and the setting." For more of Kevin's photos, go to www.fredenbergphotography.com.

Montana Natural History Center
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120 Hickory Street
Missoula, MT 59801
(406) 327-0405
office@MontanaNaturalist.org
www.MontanaNaturalist.org

MNHC Photo

Since always, people have strived to name things in nature – to identify, classify and thereby understand how things are related and how they work. You might think we'd be finished by now, but this process is ongoing as new information – about a plant, an animal – leads to re-classification and a different understanding of how the world evolved and is changing.

As Sneed Collard writes in his story about native gardening, getting to know the habits – and names – of individual species is the best way to learn them and teach them to others. This is true for the littlest mollusks to taxonomically challenging water lilies.

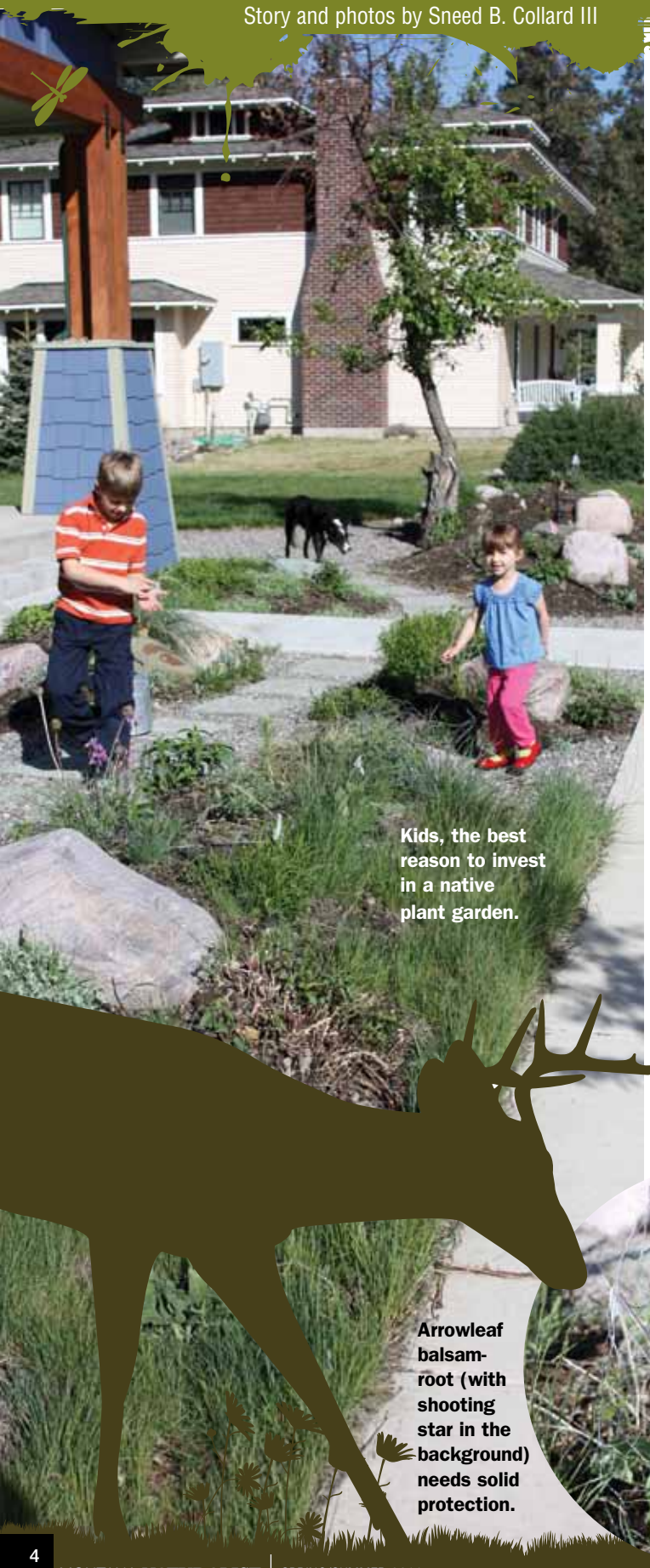
In this issue, we focus on seeking out things in nature that inspire and intrigue – from slime mold to starling swarms – letting observations guide us to a greater understanding and appreciation of the diversity of living things. This spring and summer MNHC offers many ways to get started on building your own awareness of nature. Day camps for kids, master naturalist classes, field trips and discovery days can help open your eyes and stimulate curiosity about the variety of organisms we share our region and planet with. We hope you'll send us reports of your own discoveries as well! Welcome sunshine!

Caroline Kurtz

Caroline Kurtz
Editor

Terrorists in the Garden:

Story and photos by Sneed B. Collard III



Kids, the best reason to invest in a native plant garden.

It's an early summer evening and my house is under a Code Red. Full alert. The time of our greatest vulnerability. This is the time when They come. Every few minutes I scan the surrounding landscape. It's been a few days since the last attack, but I've got a feeling that tonight They will be back.

My instincts prove uncannily accurate. Performing one last sweep of the perimeter, I suddenly freeze. There, only a few feet outside the window, I see the Enemy. I call them Al-Hoofa. The Bambi-ban. Others simply call them "deer."

I race to the front door, my Border collie at my heels, but this is something I must do alone. Something I must do to save my garden.

Native naivete

I began native plant gardening at my old house in downtown Missoula about eight years ago. It proved simple and satisfying. I bought native plants down at the Farmer's Market, stuck them in the ground and watered them. Within two years, my garden exploded with a vibrant canvas of coneflower, penstemon, blazing star and other native wildflowers. More than a dozen species of butterflies visited, along with a pair of contentious hummingbirds.

When we moved to our less-urban new house in the Rattlesnake neighborhood, I felt even more excited. Here, I had three times the garden space as our old house. Once our landscape designer, Brian Lohans, finished building out the infrastructure, my son and I eagerly drove down to Helen Atthowe's Biodesign Farms in Stevensville. We loaded up my '86 4Runner with native plants—as many as we could fit—returned home and happily put them in the ground.

As we waited for the plants to grow, I had the same kind of optimism that George W. Bush must have felt after the first days of the Iraq War. Everything looked good. What could possibly go wrong? The answer: a lot.

At my old house, I lost maybe two or three plants—total. During the next five seasons at my new house, I lost dozens and dozens of plants. Al Hoofa accounted for the greatest casualties. I've looked over lists of supposedly "deer resistant" plants, and I can tell you right now—*don't believe them.* Urban deer will eat almost everything. I've learned the hard way that deer also are *malicious*. Even if they don't want to eat something, they think nothing of yanking a tender, freshly-installed plant out by the roots and leaving it to die a quick, desiccating death.

Despite the many setbacks—and an annual call for fresh plant reinforcements—I have finally, in my garden's fifth season, achieved some measure of progress against the local garden terrorists. For you aspiring native plant warriors, I'd like to share some lessons from the front lines.

Arrowleaf balsam-root (with shooting star in the background) needs solid protection.

Deer illustration: istockphoto.com

Lessons from a Native Plant Warrior

Rambo plants

Especially in an intense deer-browsing area, it's nice to have some plants you know will survive and help establish a Green Zone. Deer will still take a swipe at some of these, but overall, here are my best performers:

SHRUBS

Silver buffaloberry *(Shepherdia argentea)*
Skunkbush sumac *(Rhus trilobata)*
Curl-leaf mountain-mahogany *(Cercocarpus ledifolius)*
Golden currant *(Ribes aureum)*
Big sagebrush *(Artemesia tridentata)*
Rubber rabbitbrush *(Chrysothamnus nauseosus)*
Oregon grape *(Mahonia repens)*


Lewis' monkeyflower


yellow monkeyflower

I should also add my list of "Shrubs to Which Deer Show No Mercy." They include: *Spiraea*, honeysuckle, mock orange, serviceberry and red ozier dogwood. These all needed to be caged to survive. I also implore you: stay away from snowberry. It's messy, few animals eat the berries and the aphids on it attract yellowjackets.

PERENNIALS

Rosy pussytoes *(Antennaria rosea)*
Beebalm *(Monarda fistulosa)*
Chocolate coneflower *(Rudbeckia hirta)*
Giant eveningstar *(Mentzelia decapetala)*
Prairie coneflower *(Ratibida columnifera)*
Hairy golden aster *(Chyrsopsis villosa)*
Woolly groundsel *(Senecio canus)*


Oregon sunshine

Obviously, this is a pretty short list, but I will say that certain other species seem to soldier on *after* they've been protected for a couple of years and have achieved Company or Battalion strength. These include mock orange, narrow-leaved purple coneflower, silver lupine, blanketflower, arrowleaf balsamroot, stonecrop, blue penstemon, American harebell, goldenrod and blue flax.

Field Note: many of the plants that do well with deer tend to be weedy and can themselves become a problem. I pull *hundreds* of beebalm seedlings every year and I absolutely wouldn't let any other mint species get established unless you want a monoculture mint garden. Ditto for yarrow and native grasses. I have a large area dominated by June grass and other grasses and, well, it was a mistake. I now have to work hard to keep grasses from invading the entire landscape.

Pick a strategy

The take-home message here is that in a deer insurgent area, you've got to pick a strategy. You can a) go with the toughest of the toughest, using the Rambo lists above, or b) use an integrated approach of Rambo plants and plants that need protection.

I go with b, simply because it's more interesting. Montana has *so* many wonderful plants, it's just not an option to leave them out of the garden, deer notwithstanding. I enjoy many different species behind fenced-in or "netted" areas around my house, including prairie smoke, purple coneflower, pasqueflower, various penstemons, thimbleberry, globemallow, monkeyflowers and many others.

I've also recently resorted to chemical warfare. On a whim last summer, I bought a bottle of Plantskydd™, an organic deer repellent. I'm now a believer. You do need to apply it regularly to your susceptible plants—and the spray bottle stinks (pun intended)—but I credit it with helping turn the tide in my battle against my neighborhood's voracious ungulates.

The question remains: is the war worth it? For anyone interested in our natural heritage, or who is simply tired of seeing the same mind-numbing landscaping plants in yard after yard, native plant gardening offers myriad rewards. Personally, I've found it the best way to *learn* our local species and teach them to my children. The colors and variety of flowers that emerge each year from my garden provide an endless source of surprise and delight.

Living in the heart of wildlife habitat, I also feel good about returning some resources to Montana's native animals. The deer find forage from my shrubs. Birds, bees and butterflies have started taking advantage of the new flower resources. In fact, I just went downstairs to check on something, and was delighted to find our first-ever American Goldfinch feeding on grass seeds in my front plots.

I guess I'm glad I planted a few grasses after all.

Sneed B. Collard III has written more than sixty books for young people including The Prairie Builders—Reconstructing America's Lost Grasslands *and* Science Warriors—The Battle Against Invasive Species. *Learn more about him and his books at www.sneedbcollardiii.com.*

Slug Alert

Be on the lookout for these "charismatic mini-fauna"

Silhouette slug photo: istockphoto © Tracy Hebden. Marbled jumping slug and Russell mantleslug ©Bill Leonard, MTNHP.

By Caroline Kurtz

Up close, slugs can be beautiful, possessing subtle pearlescent colors and cute waving "horns."

We're going on a slug hunt! Not for exotic types – those gooey garden invaders you wish you *didn't* find among your marigolds. No, I'm determined to seek out our less-noticeable, yet intriguing, native slug species.

Possibly charismatic, these fauna certainly are not mega. They don't lend themselves to stunning portraiture like wolves and bears and elk do. The largest of them – the magnum mantleslug – might grow as long as three inches, fully extended, while most others are one or two inches at most, and the pygmy slug is barely fingernail sized. Of the nine native slug species known in Montana – there could be more, but who's looking? – all are found west of the continental divide. The field slug, *Derocerus laeve*, is the only one also known to occur east of the Rocky Mountains.

Slugs require sufficiently moist conditions to survive, as they lack the external protective shells their gastropod relatives, snails, have. While slug habitat can vary, it's almost always in forested sites and/or along

Marbled Jumping-slug - *Hemphillia danielsi*

Russell Mantleslug - *Udosarx lyrata russelli*

Pygmy Slug - *Kootenaia burkei*

creeks and streams, according to Paul Hendricks, zoologist with the Montana Natural Heritage Program and author of a soon-to-be-published Guide to Land Snails and Slugs of Montana. Montana slugs are not that easy to spot, he says, they tend to look like little lumps of dirt or decaying vegetation. Very little is known about their populations: how many there are, how long they live, where they go and what they do.

Slugs – like bacteria, fungi and some insects – are decomposers, breaking down organic matter and recycling nutrients in field and forest. They munch away on plants, leaves and rotting logs. Some also eat mushrooms. In fact, some slugs may play an important role in the dispersal of fungal spores. In turn, slugs form part of the diet of other animals, like snails, beetles and salamanders, and they have developed creative ways to avoid these predators.

Take the taildroppers, for instance. According to Hendricks, these slugs can lose the ends of their tails (their "foot" actually, as it's called) as a defense mechanism, similar to the way lizards can. Others produce a colored slime when "upset." Some, like the marbled and the pale jumping slugs, "don't exactly leap, but can twist and thrash around quite vigorously," he says. In nature, this action allows them to drop off a log or a plant and immediately get away from a threat. More importantly, doing so breaks the slug's slime trail, which contains its scent, and a predator such as a carnivorous snail can no longer follow it.

The best chance to find slugs is in the spring and fall, when they're out and about eating and looking for a mate. Although slugs are hermaphroditic, containing both male and female reproductive organs, Montana species – as far as we know – do not self-fertilize. Instead, one slug needs to pair up with another individual to mutually fertilize eggs.

"It's an interesting question," says Hendricks. "Why be hermaphroditic if you don't self- fertilize? It could be related to the limited mobility of some terrestrial slugs and snails; they have dispersal abilities less than most plants. Many of the smaller species probably spend their lives within a few meters area, so opportunities for encountering another individual of the same species might be very limited. When you do meet up with another of your kind, he says, you can "make the most of it" without regard to gender.

This spring, you might get lucky and run into a concentration of slugs. Hendricks has found upwards of 30 magnum mantleslugs in an hour of looking, for instance. This May and June, I'll be out searching for these littlest of Montana's wildlife, gently turning over pieces of wood or rocks, looking under leaves. I'm curious, now that slugs are on my radar, about what exactly is going on on the forest floor.

I'm curious, now that slugs are on my radar, about what exactly is going on on the forest floor.

Magnum Mantleslug - *Magnipelta mycophaga*

Keeping an eye on slugs

The Montana Natural Heritage Program is the state's premier tracker of non-game species information. While it is the largest repository of slug data in Montana, that's not saying a lot. For instance, there are only 35 recorded observations of magnum mantleslugs since the 1950s. Since 2005, though, surveys have turned up three new native species. With more time and resources, imagine how many more might be discovered. Though you're highly unlikely to find one of these slugs in your neighborhood or backyard, you might find some in a healthy urban natural area, such as Greenough Park in Missoula. If you think you've come across one, you can contact the Natural Heritage Program at www.mtnhp.gov.

Slug slime

Slugs and snails do have "eyes" on the tips of their optical tentacles, but they mostly sense their world through taste and smell. The obvious feature that snails and slugs share is the "feeding foot," or gastropod. This foot also is what gets them places, by secreting a special mucous that allows them to glide unharmed over anything, even a knife blade. The slime also lays down a scent trail for navigation and communication.

Sheathed slug © Bryce A. Maxell, MTNHP; all other slug photos © Paul Hendricks, MTNHP.

Pale Jumping-slug - *Hemphillia camelus*

Smoky Taildropper - *Prophysaon humile*

Sheathed Slug - *Zacoleus idahoensis*

A "Moot" Question

By Robin Childers

LATE ONE AFTERNOON LAST SEPTEMBER I TROMPED INTO THE BACKYARD TO REFILL THE BIRD FEEDERS, my camera around my neck (because you never know what you might see in the backyard). A flock of European starlings chattered noisily from several spruces in a neighboring yard. Then, while I watched, they did that thing that starlings do. You know what I'm talking about. They swarmed.

The starlings rose out of the treetops as though blown into the air by a sudden gust of wind, massing into a black, kidney-shaped ball that swelled and contracted overhead. The cloud of birds circled several times then came back twittering to the trees, as if boasting about the riotous ride.

I laughed out loud, utterly amused and amazed. I turned on the video feature of my digital camera and waited. Sure enough, a few minutes later, the starlings again exploded into the evening sky and I tracked them with my lens, turning circles in the grass. As the birds settled back into the trees, I looked around self-consciously. Were any of my neighbors watching this forty-something adult spinning circles in the backyard, head tilted back, laughing maniacally? I really felt too full of wonder to be embarrassed. Then, several months later when I uploaded my accumulated photos and videos to the computer, I was struck by a new discovery.

Viewing the starling swarm on the computer's large screen, I grew suspicious. In the midst of the starlings, and sometimes hovering outside the swarm, was a slightly larger bird, invisible to me on the camera's small display. I knew immediately "who" the bigger bird was. After all, I had taken video of him almost immediately after filming the starlings, and I had numerous still shots of him stalking our bird feeders from the power line, the fence, the trees, the garden statuary. Still, our resident sharp-shinned hawk's appearance in the middle of the throng of starlings surprised me. It also raised the question: was he the reason the starlings swarmed?

Turns out this question may be of the chicken-or-the-egg variety. Information posted to Wikipedia says that these starling swarms, called *moots*, attract birds of prey, including our friend the sharp-shinned hawk. In fact, many videos of this behavior that I found on the Internet feature the presence of predators. Starling moots seem both to attract predators, but also to provide a method for evading predators. Evading or escaping predators by creating confusion, as illustrated by the starlings' swift and unified turning and twisting during a moot, is a strategy sometimes referred to as "obfuscation."

Obfuscation describes a range of animal behaviors designed to create confusion or to deceive. In the starling example, the birds create confusion for the predator by swarming and altering direction quickly, making it difficult for the sharp-shinned hawk to pick out or track a single, individual bird. Schools of fish do a similar thing when a predator approaches.

A crow hovers outside an enormous starling moot, photographed in Sacramento, California.

Photo: Courtesy © etgeek (flickr)

Some behavior of individual animals can be called obfuscation as well. A squirrel, for example. In avoiding a chasing predator, it seems to move in every direction at once. Its success relies on the gamble that the predator will turn to a single line of chase and commit its entire weight, concentration and speed to pursuit in the wrong direction.

Humans can obfuscate this way, too. You did it as a kid playing tag; you feinted to the right then darted left, beyond the grasp of your pursuer whose momentum in the wrong direction allowed you to slip away.

So, the next time you stop your car in the middle of the street to avoid hitting a squirrel, think "Obfuscate." (You might also idle a little longer. No telling which direction he'll go.) And if you notice starlings swarming on a clear autumn evening, keep your eyes peeled. You may find a good reason for this behavior right in the middle of their moot.

Robin Childers is a Fall 2010 graduate of MNHC's Montana Master Naturalist program. She makes a living as an association executive for several national professional organizations, but maintains her sanity through frequent walks in the mountains and occasional fits of writing.

Poetry Project

Students in Kevin Cashman's first-grade class at Sussex School in Missoula have been working with the Clark Fork Coalition on ways to keep the river clean and improve the quality of life for all living things in the Clark Fork/Columbia River watershed. Recently they also began to study birds that live along the Clark Fork River. Students identified birds, made field sketches, learned bird calls, wrote about them, and even made a short nature film. Enjoy some of their poems about the area's rivers and birds.

Belted Kingfisher
By Jack

Belted Kingfisher
Spiky hair and white neck
Fishing, eating, flying
Flash of yellow under the beak
Fish

Caterpillars in the Clark Fork
By Finn

Caterpillars have tiny hairs
Like the hairs sticking off your legs.
They live on trees by the river,
Eating leaves.
Their small legs are like tiny
Needles that stick to the trees.
They have thin skin like a
Worn blanket.

Flowing River
By Piper

The flowing river is like a giant snake,
Slithering through the forest floor.

The flowing river is a home for fish,
Birds, aquatic insects, beavers and water snakes.

The flowing river runs along a trail,
Leading to a secret hide-out.

Downy Woodpecker
By Simon

Downy woodpecker
White spots
Flying, eating, sleeping
A cushion inside its head
protects it
Woodpecker

The Bitterroot River
By Daisy

The Bitterroot River is
As fast as a motorcycle
And slow as a turtle.

It has lots of pretty rocks of
Different shapes, sizes and colors

The river is full of sugar sand,
Sand that is smooth and
Feels like sugar.

It's fun to swim in the river,
But sometimes it's hard to go in
All the way.

Feathered Friend
By Harriet

Western meadowlark
Spotty and noisy
Flying, singing, watching
Its eggs are hatching today!
Robin

Osprey
By Audrey

Osprey
White and brown
Diving, fishing, flying
Digs into fish
Wings

The Clark Fork River
By Win

The river is like a peace sign
Flowing along to a Pacific Ocean.
It is blue like a cloud.
It is like blue Jello –
You can go through it and
Dive into it.
The river is a long fish
With other fish inside it.

Discover Your Place

Interested in learning more about the plants and animals that live here? Want to deepen your understanding of nature and naturalist skills? Registration is open for our 2011 fall Montana Master Naturalist class, led by MNHC naturalist Alyssa McLean. This six-week course runs from September 6 through October 13. The class meets on Tuesdays and Thursdays from 4:00-7:00 p.m., and includes three full-day Saturday field trips on September 10, 24 and October 8. The fee for the course is $395; 3 college credits available. Please call 327-0405 during business hours to register.

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

get outside calendar

April 13 **Evening Lecture Series**, 7:00 p.m. **Adventure Underground: Exploring Montana Caves**. Presented by Mike McEachern of the Northern Rocky Mountain Grotto chapter of the National Speleological Society. $4 suggested donation; MNHC members free.

April 14 **miniNaturalists**, 10:00 a.m. ***NEW*** program for pre-schoolers. $1 members; $3 non-members.

April 16 **Saturday Kids Activity**, 2:00 p.m. **The Dish on Fish**. $1 members; $3 non-members.

April 20 **Volunteer Naturalist Training**, 4:00-5:00 p.m. **May Field Trip Orientation**. Learn how to teach kids about flora and fauna of western Montana during May Visiting Naturalist in the Schools field trips. No prior teaching experience necessary.

April 21 **miniNaturalists**, 10:00 a.m. ***NEW*** program for pre-schoolers. $1 members; $3 non-members.

April 28 **miniNaturalists**, 10:00 a.m. ***NEW*** program for pre-schoolers. $1 members; $3 non-members.

April 28 **Fort Missoula Garden Event**, 5:30-7:30 p.m. **Spring Spruce-Up**. Meet at the Fort Missoula Native Plant Garden. Public welcome.

April 30 **Saturday Discovery Day**, 9:00 a.m.-1:00 p.m. **Monitoring Milltown Fisheries**. Presented by biologist Rob Clark. $15 members; $20 non-members. Registration required.

April 30 **Saturday Kids Activity**, 2:00 p.m. **Incredible Insects**. $1 members; $3 non-members.

May 5 **miniNaturalists**, 10:00 a.m. ***NEW*** program for pre-schoolers. $1 members; $3 non-members.

May 6 **First Friday Gallery Event**, 5:00-8:00 p.m. **Pollinators**. Drawings by Nancy Seiler.

May 7 **Saturday Discovery Day**, 9:00 a.m.-2:00 p.m. **Sure Signs of Spring**. Hike with naturalist Hobie Hare. $20 MNHC members; $25 non-members. Registration required.

May 7 **Native Plant Workshop**, 1:00-4:00 p.m. **Native Plant Gardening for Wildlife and More**. Presented by David Schmetterling. $35 members; $40 non-members. Registration required.

May 12 **miniNaturalists**, 10:00 a.m. ***NEW*** program for pre-schoolers. $1 members; $3 non-members.

May 14 **Saturday Discovery Day**. **Spring Mushroom Walk**. Presented by Larry Evans, 1:00 p.m. $20 members; $25 non-members. Registration required.

May 19 **miniNaturalists**, 10:00 a.m. ***NEW*** program for pre-schoolers. $1 members; $3 non-members.

May 19 **Field Master Naturalist Weekend Orientation**, 5:30-6:30 p.m. These weekends are for people wishing to expand naturalist skills in one particular area. Open to Master Naturalist graduates first, then to the general public (with permission of the instructor). Classes assume a basic knowledge of the topic and will delve into more detailed work in the field. $135. Registration required.

May 21-22 **Field Master Naturalist Weekend**, 7:00 a.m.-4:00 p.m. **Flowering Plants**. Presented by Greg Peters, University of Montana botanist and science instructor, and Brian Williams, MNHC naturalist. Meet at MNHC, then go into the field (transportation provided). See above for registration and cost.

April

MNHC Hours:
Tuesday-Friday, noon - 5 p.m.
and Saturday noon - 4 p.m.
Admission Fees: $2/adults,
$1/children under 12 (maximum $6)
Free/children under 3 and MNHC members.

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		12	13 **Evening Lecture Series. Adventure Underground: Exploring Montana Caves,** 7:00 p.m.	14 **miniNaturalists,** 10:00 a.m.	15	16 **Saturday Kids Activity. The Dish on Fish,** 2:00 p.m.
17	18	19	20 **Volunteer Naturalist Training,** 4:00-5:00 p.m. **May Field Trip Orientation.**	21 **miniNaturalists,** 10:00 a.m.	22	23
		26	27	28 **miniNaturalists,** 10:00 a.m. **Fort Missoula Garden Event,** 5:30-7:30 p.m. **Spring Spruce-Up.**	29	30 **Saturday Kids Activity. Incredible Insects,** 2:00 p.m. **Saturday Discovery Day. Monitoring Milltown Fisheries,** 9:00 a.m.-1:00 p.m.

May

MNHC Photos

		3	4	5 **miniNaturalists,** 10:00 a.m.	6 **First Friday Gallery Event,** 5:00-8:00 p.m. **Pollinators.**	7 **Saturday Discovery Day. Sure Signs of Spring,** 9:00 a.m.-2:00 p.m. **Native Plant Workshop,** 1:00-4:00 p.m.
8	9			12 **miniNaturalists,** 10:00 a.m.	13	14 **Saturday Discovery Day. Spring Mushroom Walk.** 1:00 p.m.
15	16			19 **miniNaturalists,** 10:00 a.m. **Field Master Naturalist Weekend Orientation,** 5:30-6:30 p.m.	20	21 **Field Master Naturalist Weekend,** 7:00 a.m.-4:00 p.m. **Flowering Plants. Saturday Kids Activity. Flower Power!** 2:00 p.m.
22 **Field Master Naturalist Weekend,** 7:00 a.m.-4:00 p.m. **Flowering Plants.**	23	24	25	26 **miniNaturalists,** 10:00 a.m. **Fort Missoula Garden Event,** 5:30-7:30 p.m. Topic TBA.	27	28
29						

June

MNHC Photo

		1	2	3		4 **Ninemile Family Fun Run,** 8:00 a.m.-noon. **Saturday Discovery Day.** 8:00 a.m. - 4:00 p.m. **Camas Root: Native Uses & Harvesting.**
5		8	9 **Field Master Naturalist Weekend Orientation,** 5:30-6:30 p.m.	10		11 **Field Master Naturalist Weekend,** 7:00 a.m.-4:00 p.m. **Birds. Saturday Kids Activity. Nature Journaling.** 2:00 p.m.

Programs and events held at MNHC's new home - 120 Hickory Street - unless otherwise noted.

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Field Master Naturalist Weekend, 7:00 a.m.-4:00 p.m. **Birds.** 12	*June 13-17* **Frogs, Snakes and Fish, Oh My!** (Grades 1-3) **Fishing for Fun I** (Grades 1-3) **Super Tracker** (Grades 3-5) **Survivor!** (Grades 5-8) 13	14	15	**miniNaturalists**, 10:00 a.m. 16	17	**Saturday Discovery Day.** 9:00 a.m.-4:00 p.m. **Special Series I: Wild and Native Medicinal Plants Excursion.** 18
19	*June 20-24* **Creepy Crawlies** (Grades K-1) **Magnificent Mammals** (Grades 1-3) **Kid vs. Wild!** (Grades 3-5) 20	21	**Summer Master Naturalist**, 7:00 a.m.-3:00 p.m. No weekend classes. *June 22-28* 22	23	24	**Saturday Discovery Day,** 9:00 a.m.-2:00 p.m. **Special Series II: Cultivated and Wild Medicinal Plants in the Missoula Valley.** 25
Great American Backyard Campout, *June 25-26* 26	*June 27-July 1* **Jr. Survivor Camp I** (Grades 1-3) **Rip Roarin' Raptors** (Grades 3-5) **Hooked on Fishing** (Grades 5-8) 27	28	29	**miniNaturalists**, 10:00 a.m. **Fort Missoula Garden Event**, 5:30-7:30 p.m. Topic TBA. 30	**July** 1	2
3	*No Camp July 4th* 4	*July 5-8* **Trail Blazers** (Grades K-1) **Insects Galore** (Grades 1-3) **Things with Wings** (Grades 1-3) **Kid vs. Wild II** (Grades 3-5) 5				9
10	*July 11-15* **Jr. Survivor Camp II** (Grades 1-3) **Carnivore Camp** (Grades 1-3) **Go Fish** (Grades 3-5) **Earth Stewards** (Grades 5-8) 11	12				**Saturday Discovery Day,** time and cost TBA. **Gems and Geology Field Day.** 16
17	*July 18-22* **Water Skippers** (Grades K-1) **Who Pooped [Here]?** (Grades 1-3) **Space Camp** (Grades 3-5) 18	 MNHC Photos		**miniNaturalists**, 10:00 a.m. 21	22	23
24	*July 25-29* **Nature Art** (Grades 1-3) **Crafty Critters** (Grades 1-3) **Wild Wetlands** (Grades 3-5) 25			**Fort Missoula Garden Event**, 5:30-7:30 p.m. Topic TBA. 28	29	30
31	*August 1-5* **Nature Art** (Grades K-1) **Naturally Spooky!** (Grades 1-3) **Pondemonium!** (Grades 1-3) **Big on Bugs** (Grades 3-5) 1	**August** 2	3	4		
7	*August 8-12* **Goin' Buggy** (Grades 1-3) **Fishing for Fun II** (Grades 1-3) **Art and Nature Adventures** (Grades 3-5) **Into the Wild** (Grades 5-8) 8	9	10	**miniNaturalists**, 10:00 a.m. 11	12	13

Summer Science Discovery Camps
See Imprints for details, page 16.

Look for these program symbols in *Montana Naturalist* and on our website at www.MontanaNaturalist.org.

- **Adult Program**
- **Youth Program**
- **Volunteer Opportunity**

get outside calendar

May 21 **Saturday Kids Activity**, 2:00 p.m. **Flower Power!** $1 members; $3 non-members.

May 26 **miniNaturalists**, 10:00 a.m. ***NEW*** program for pre-schoolers. $1 members; $3 non-members.

May 26 **Fort Missoula Garden Event**, 5:30-7:30 p.m. Topic TBA. Meet at the Fort Missoula Native Plant Garden. Public welcome.

June 4 **Saturday Discovery Day**, 8:00 a.m.-4:00 p.m. **Camas Root: Native Uses and Harvesting.** Presented by Tim Ryan, Salish-Kootenai Confederated Tribe. $35 members; $45 non-members. Registration required.

June 9 **Field Master Naturalist Weekend Orientation**, 5:30-6:30 p.m. See May 19 entry for details.

June 11-12 **Field Master Naturalist Weekend**, 7:00 a.m.-4:00 p.m. **Birds.** Presented by MNHC naturalists Brian Williams and Charles Miller. Meet at MNHC, then go into the field (transportation provided).

June 11 **Saturday Kids Activity**, 2:00 p.m. **Nature Journaling.** $1 members; $3 non-members.

June 16 **miniNaturalists *Outside***, 10:00 a.m. ***NEW*** pre-school program. Meet at the Fort Missoula Native Plant Garden.

June 18 **Saturday Discovery Day**, 9:00 a.m.-4:00 p.m. **Special Series I: Wild and Native Medicinal Plants Excursion.** Presented by clinical herbalist Britta Bloedorn. Cost $35 members; $40 non-members. (Sign up for both classes in advance and save $10. $50 members; $60 non-members.) Registration required.

June 22-28 **Summer Master Naturalist**, 7:00 a.m.-3:00 p.m. **FULL.**

June 25 **Saturday Discovery Day**, 9:00 a.m.-2:00 p.m. **Special Series II: Cultivated and Wild Medicinal Plants in the Missoula Valley.** Presented by clinical herbalist Britta Bloedorn. $25 members; $30 non-members. (Sign up for both classes in advance and save $10. $50 members; $60 non-members.) Registration required.

June 25-26 **Great American Backyard Campout.** Sponsored by the National Wildlife Federation and Missoula Children & Nature. Children must be accompanied by an adult; activities are planned for ages 6 and up. Call 396-9562 for details.

June 30 **miniNaturalists *Outside***, 10:00 a.m. ***NEW*** pre-school program. Meet at the Fort Missoula Native Plant Garden.

June 30 **Fort Missoula Garden Event**, 5:30-7:30 p.m. Topic TBA. Meet at the Fort Missoula Native Plant Garden. Public welcome.

July 14 **miniNaturalists *Outside***, 10:00 a.m. ***NEW*** pre-school program. Meet at the Fort Missoula Native Plant Garden.

July 16 **Saturday Discovery Day**, time and cost TBA. **Gems and Geology Field Day.** Presented by geologist Wayne Farley. Registration required.

July 28 **miniNaturalists *Outside***, 10:00 a.m. ***NEW*** pre-school program. Meet at the Fort Missoula Native Plant Garden.

July 28 **Fort Missoula Garden Event**, 5:30-7:30 p.m. Topic TBA. Meet at the Fort Missoula Native Plant Garden. Public welcome.

August 11 **miniNaturalists *Outside***. 10:00 a.m. ***NEW*** pre-school program. Meet at the Fort Missoula Native Plant Garden.

August 25 **Fort Missoula Garden Event**, 5:30-7:30 p.m. Topic TBA. Meet at the Fort Missoula Native Plant Garden. Public welcome.

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

Naturalist Notes

During the past months, Montana Master Naturalists have kept us abreast of some of their more unusual observations.

A Mormon cricket, photographed on a trip to Yellowstone National Park in late summer. This one appeared sluggish and fat, and turned out to be laying eggs in the ground. Note its ovipositor, often mistaken for a stinger, beneath its abdomen.

Mormon crickets are large, well over two inches long, with females generally larger than males. They live throughout western North America in rangelands dominated by sagebrush and forbs (woody plants), and can be significant agricultural pests, especially during swarm years. Their wings do not work well for flight and they mostly get around by hopping or crawling. Despite their name, the Mormon cricket is actually a shieldbacked katydid, not a true cricket. The nickname comes from a story that the first Mormon settlement in Utah was saved from famine by California gulls eating hordes of the insect, which had been destroying their wheat crops.

No, not The Blob, but a slime mold, species unknown. This one, along with numerous others, was found growing under pine trees in the Rattlesnake Recreation Area in the fall. They ranged from six to 12 or more inches across and were relatively formless. This one was poked to see what was inside. Slime molds are not really molds or fungi, but something else. The common name refers to the part of their life cycle where they can appear as gelatinous "slime." They are found all over the world and feed on microorganisms that live in any type of dead plant material. Most are smaller than a few centimeters, but some can cover several square meters. They can be all kinds of colors and shapes.

A great grey owl made a surprising appearance on a power line in the Target Range area of Missoula in late February. Sometimes called the great grey ghost, these owls hunt in the daytime, and this one seemed very tolerant of the small crowd of curious passersby. Great grey owls are smaller than they appear, as fluffy feathers, a long tail and large head obscure a body lighter than most other large owls.

(Information above obtained from naturalist reports, Wikipedia and related websites.)

Cricket and slime mold photos: Ellen Knight

Owl photo: Robin Childers

2010 CAB Participants

CAB photo: Boone & Crockett Club

Summer Field Course for Educators

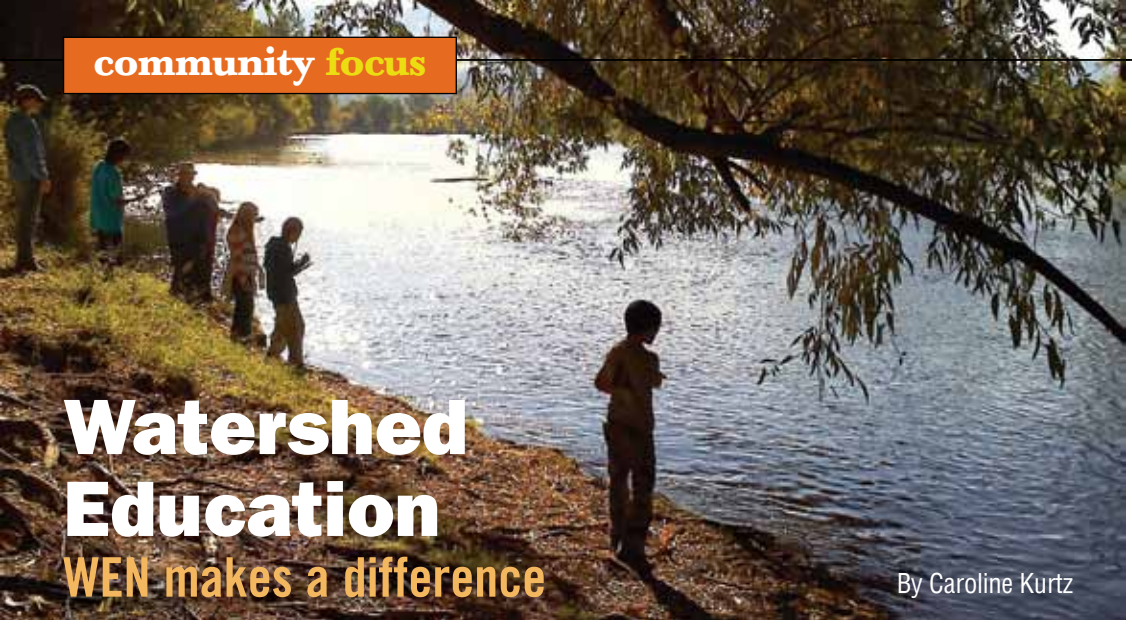
July 14-22

Conservation Across Boundaries Montana, a partnership between the Boone & Crockett Club and the Montana Natural History Center, offers educators a chance to see how conservation issues are tightly linked to the biology, geology, history and culture of our landscape. Science teachers, or those working in concert with a science teacher, can experience and learn about the unique habitats, wildlife and ecology of different regions from a systems perspective. The course takes place both at MNHC and the B&C Club's spectacular Teddy Roosevelt Memorial Ranch, on the Rocky Mountain Front northeast of Great Falls. Applications for CAB MT are due by May 16. For information on cost, available credit and application form, go to www.booneandcrockett.org

Ninemile Family Fun Run - June 4

8:00 a.m.-noon. The Ninemile Ranger District is hosting this event at the Grand Menard Picnic area, with Smokey Bear, Buffy the Mule and activities led by MNHC and Fish, Wildlife & Parks. Pre-register by May 27; call (406) 626-5201 or stop by MNHC for a form.

www.smokeybear.com



Watershed Education

WEN makes a difference

By Caroline Kurtz

Photos courtesy of Watershed Education Network

Years ago, I took a course at the University of Montana called Community Watershed Education. The idea was to teach people about the Clark Fork Watershed and it's health, so that we could go into local schools and give programs about it to fifth graders. But beyond that was the vision and the understanding that water is one of our most precious resources – both locally and globally – and that citizens need to know where their water comes from, how watersheds work, why they are important, and how human activities impact watershed health. Early on, organizers realized the best way to get this message out was through active participation in stream monitoring.

The course I took was part of the beginning of the Watershed Education Network. Originally, WEN was nurtured by two women – Deb Fassnacht and Wendy (Moore) Sturgis – who scrounged tirelessly for grants and worked to develop partnerships with UM, MNHC and elsewhere. Slowly but surely they forged a network of scientists, teachers, students and community members. Now in its 15th year, WEN has introduced thousands of people to the unique properties of streams and rivers of western Montana, all the while collecting important baseline data. With the removal of the Milltown Dam, they have added a groundwater dimension to their programs, conducting well-monitoring at certain sites in association with surface water monitoring.

> "I try to get across to kids that they can do real science... that can be used to inform the public about the health of the Bitterroot River."

Nowadays, WEN operates out of an office in the Swift Building, close to the Kim Williams Trail along the Clark Fork River in Missoula. A small army of volunteers, often led by AmeriCorps interns, plus a few staff carry out a year-round schedule of stream-monitoring with schools and citizen scientists. "We try to provide our school programs for as little cost as possible," says Fassnacht, WEN's executive director. "We have contracts now with some public agencies for water monitoring, but we're always happy for community support."

A major part of WEN's mission is to nurture the next generation of watershed stewards, which they do by going into classrooms to give background lessons and then running hands-on monitoring field trips.

Matthew "Moose" McNulty has been bringing students from C.S. Porter Middle School on WEN programs for 10 years. "As a teacher," he says, "I want to instill a strong sense of personal, long-lasting connection to this wonderful place we call Missoula."

"I try to get across to kids that they can do real science, not some artificially contrived text book experiment, but actual data collection, that can be used to inform the public about the health of the Bitterroot River."

Likewise, Teresa Toller, who teaches 8th grade biology at Washington Middle School, says that kids get many things of out their experiences. "They learn about stewardship of a natural resource, community service, environmental impacts of human actions, the history of the Clark Fork River before settlement, and they get to have role models assist them in the field."

WEN projects leave a lasting impression, she says. "Former students always ask if I still do Pattee Creek water quality testing in my classes. What more could a teacher ask for!"

To learn more about WEN, become a volunteer with school or other monitoring programs, or to learn how to do stream monitoring yourself, call 541-9387 or go to www.montanawatershed.org. WEN's Mayfly Fling fundraiser takes place May 1 from 4-8 p.m. at Ten Spoon Vineyard and Winery. Come enjoy music, food, raffle prizes and family activities.

On a chilly spring Saturday, a half-dozen University volunteers are making a regular check of Rattlesnake Creek. Some are measuring the cross section of the stream to gauge its volume, others are sampling the amount of dissolved oxygen and other chemicals in the water. On a folding table, a couple of plastic tubs hold bits and pieces of plant matter kicked up into nets from the stream bed.

Heads bend close, hands spoon tiny aquatic invertebrates into ice-cube trays for identification. "Ooh, what's this? I have no idea, but it's something," says Alaina Strehlow, a wildlife biology student and Campus Corps volunteer leader.

There are not many aquatic organisms Strehlow can't identify, as she carefully sorts big, fat cranefly grubs from several types of tiny mayfly larvae. A scorpion-looking, carnivorous golden stonefly nymph goes next to a green caddisfly larva. The number and diversity of bugs found, including some that are very sensitive to poor conditions, are strong measures of the overall health of the stream.

"I joined (WEN's) Stream Team because it's a wonderful way to spend an afternoon – out on the river, doing science and hanging out with good people," she says. "I think the most important thing for people to realize is that we have very clean and healthy watersheds in Montana. But they are still a vulnerable resource that we shouldn't take for granted. That's what WEN is all about: taking people to their backyard stream and teaching them about how healthy it is and why. Then they come to value it much more."

By Whitney Bergum
Photos by Eugene Beckes

Pelicans!

Summertime! The sun is bright and the Missouri River has never looked more refreshing. Hiking along a well-worn trail, I see two American white pelicans soaring to an unknown destination. Their grace and beauty are breathtaking. Farther down river, a few of the great white birds bob in the current. They float very near each other, heads dipping in and out of the cool green water, preening in the sun. Against their snow white feathers and coal black wing tips, their giant orange bills are a captivating sight; it's obvious why they are so effective at fishing.

One pelican hears something, gets spooked and lifts its hefty body from the river, its powerful wing beats making it appear to be moving in slow motion. None of the others follow, and it drops back into the water a few feet in front of the rest of the flock. I watch them disappear around a bend.

A little later I find them again, lounging on rocks in the middle of the river. They are a gorgeous sight and I realize how lucky I am to happen upon them. I won't be seeing them in a few months.

On land, white pelicans are ungainly, pterodactyl-like with their nine-foot wingspan, large heads and bills, and stubby tails. In the air, they are graceful, powerful fliers. On water, they are buoyant swimmers, looking from a distance like giant floating marshmallows. Unlike their cousins, the brown pelicans, year-round residents of coastal North American beaches and harbors, white pelicans are much shier. They mostly winter near warm coastal waters, but they breed only at remote inland lakes and rivers.

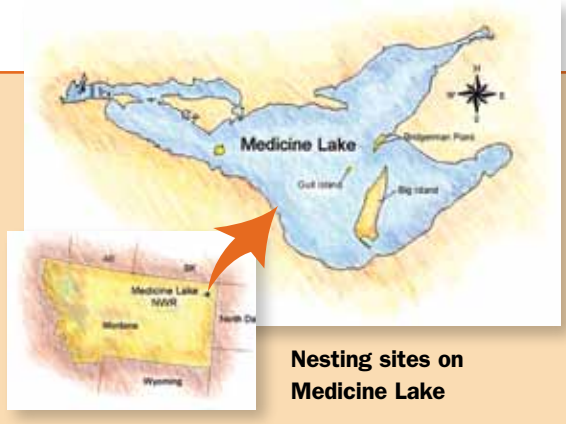
The Scene at Medicine Lake NWR

American white pelicans arrive here in mid-April, lay and incubate eggs during late-April and May, and care for young from June through August. Young pelicans begin testing their wings in August and autumn migration takes place from mid-September through mid-October.

The colony, one of the largest in North America, has been in existence since the 1930s and now supports about 4,000-5,000 breeding pairs. In general, white pelicans nest on flat, open ground on islands or peninsulas, where they are isolated from predators like coyotes, foxes or other mammals.

Both adults incubate eggs and tend the young. Because they nest on the ground, it's worth it to find a safe place and then commute for food. Adults fly as far as 60 to 175 miles one way to bring back groceries for their young.

Because pelicans can ride thermal air currents up high, this travel isn't as big an energy expense as it at first might seem. Pelicans from Medicine Lake forage on the Yellowstone River by Glendive and Terry, and over into North Dakota on the Missouri River reservoirs.



Nesting sites on Medicine Lake

White pelicans are excellent anglers and often go fishing in groups. Unlike brown pelicans that dive bomb their prey,

Between August and October each year, American white pelicans make exceptional journeys from breeding colonies in Montana to various wintering grounds. Pelicans that nest at Canyon Ferry Reservoir in Lewis and Clark County or at Arod Lakes in Teton County, for example, fly along one of two migration routes, choosing either the so-called Pacific flyway or the Intermountain flyway. Pelicans that use the Intermountain route travel south through Idaho and down to the Salton Sea in southern California. Some keep going to the west coast of Mexico. Others birds prefer to fly west along the Pacific flyway, which follows the coast from Oregon down to Mexico.

On the other hand, in the far northeast corner of the state, pelicans that spend the summer at Bowdoin and Medicine Lake National Wildlife Refuges use the Central and Mississippi flyways. Both of these migration routes lead through the central United States, along the Mississippi River to the south. Most of these pelicans spend the winter near the Gulf of Mexico, along the Texas and Louisiana coasts, and into Mexico. One bird, banded at Medicine Lake NWR, even made it all the way to Nicaragua.

These bi-annual journeys are long and exhausting. It is no mean feat to fly 3,000 or more miles, and the pelicans face many hazards. They risk potentially fatal injuries from hail storms, gunshot wounds, entanglements with and collisions with power lines or the poles supporting them. Pelicans also risk exposure to harmful insecticides used in agricultural fields along their flyway routes. Many die of unknown causes.

White pelicans don't breed until they are a few years old, so these seen in the Mission Valley in western Montana may be non-breeding birds, or failed breeders that have moved to good fishing grounds away from the colony. Possibly they are on en-route to or from breeding grounds.

One of the greatest causes of pelican death is disease. Type C avian botulism, a paralytic disease caused by the birds' ingesting certain bacteria, is one of the deadliest. In 1996, type C avian botulism was rampant in the Salton Sea and more than 700 American white pelicans died. Well over 11,000 pelicans have died there from the bacteria since 1980. The West Nile virus, which is transmitted by mosquitoes and causes brain swelling in birds and other animals, killed more than 9,000 pelicans at that site in 2002 and 2003. In addition, some 5,000 birds reportedly died from Newcastle disease, a virus that causes lethargy and profuse diarrhea, followed by collapse of the infected bird.

It's curious to think that the pelicans we see floating on the rivers and soaring through the open skies of Montana have seen more of our continent than many people have. Every year, they spend extensive time and energy traveling between wintering and breeding grounds, and every year they run the gauntlet of injury, disease and death. Yet despite these risks, the birds still migrate and will continue to do so. For me, enjoying the sight of pelicans foraging for fish on a hot summer day, is to be reminded of what has been and what is to come, and the endless, attuned movements of animals and the seasons.

Whitney Bergum will graduate this May with a degree in Ecology and Organismal Biology and a minor in Anthropology. She likes to spend her free time outdoors, and aspires to one day work in wildlife rehabilitation.

these swim in a line or arc through shallow water, herding fish in front where they can be scooped up by the pouchful. Pelicans can hold as much as three gallons of water in their bills at a time; they filter it out the sides while holding on to any fish trapped inside. Although some fishermen have been concerned that white pelicans deplete sport fisheries near their breeding grounds, observations of food remains show the birds' eating primarily non-game species, like carp, fathead minnow, suckers, northern pike, goldeye, sturgeon and adult and larval tiger salamanders.

Once hatched, juvenile white pelicans spend two or three weeks in the nest before banding into more mobile gangs, called pods. If a predator comes into the colony, the youngsters jump into big piles, or crèches, each trying to hide underneath the others for safety. Before they learn to fly, young pelicans can put on as much as 20 pounds, several more than the heaviest adults weigh. But they slim down by the time they are airworthy.

Historically, pelican conservation management at the refuge, as elsewhere in the U.S., has focused on protecting the breeding colony, which was necessary to stop population losses due to disturbances to breeding pairs. Now, with these colonies on the upswing, conservationists must consider activities away from the colony, where foraging areas have become degraded or where pelicans have come into conflict with humans, particularly at aquaculture sites during the non-breeding season.

For more information about American white pelicans, and especially the colony at Medicine Lake NWR, see the June 2006 issue of National Geographic Magazine, or go online to http://ngm.nationalgeographic.com/2006/06/pelican-grace/white-text.html.

Let's Go Outside!

Fun with Nature Day Camps

MNHC Photo

Summer is too brief to waste a moment! Dive into discovery with our Summer Science Day Camps for kids entering kindergarten through 8th grade. These weeklong camps engage children in the study of nature through field trips, arts and crafts, and scientific exploration. Teens can gain experience with our Leaders-in-Training program. ***Camp themes and content are geared toward students who will be entering listed grade categories this fall, allowing instructors to plan activities that work best for each level.***

Camps run Mondays through Fridays, 9 a.m.-4 p.m., with free before and after-care from 8-9 a.m. and 4-5 p.m. Half-day camps run from 9 a.m.-1 p.m. Registration is confirmed when a $50 non-refundable deposit per child, per camp is received. Most camps begin and end at MNHC and include field trips to surrounding natural areas. Half-day camps meet at the Missoula International School. Cost for camps is $175/MNHC members; $220/non-members. Half-day camps are $75/MNHC members; $120/non-members. ***Financial assistance for camps is available, please inquire.*** Annual MNHC membership is $50 per family.

Grades K-1 *Half-Day Camps!*

Creepy Crawlies
June 20-24
Learn about cool crawly critters, including wiggly worms, squirmy slugs and awesome insects. We'll talk about their life cycles, the amazing changes they undergo and their part in the food web. Outside, we'll use nets and bug boxes; inside, we'll make an insectarium to observe our discoveries!

Trail Blazers
July 5-8
An adventure begins when you walk out the door! Search for animal signs, find insects, watch for birds and peek at plants. Using naturalist tools, explore natural areas by following your curiosity and adventurous spirit!

Water Skippers
July 18-22
Explore wonders of the watery world through stories, creative play and visits to riverside habitat. Learn about plants and animals that like watery homes by poking around in Rattlesnake Creek. We'll make a habitat in our classroom to observe some of our aquatic friends!

Nature Art
August 1-5
Nature is full of color! Explore the world outside while experimenting with colored pencils, water colors, clay and collage to create works of art. We'll host an art show at the end of the week to show off our discoveries and creations.

Grades 1-3

Frogs, Snakes and Fish, Oh My!
June 13-17
A week of adventure and discovery exploring the lives of amphibians and reptiles! We'll learn about Montana's frogs, snakes and turtles, use nets to collect and observe aquatic creatures, explore food chain connections and discover other fun facts about aquatic habitats.

Fishing for Fun I
June 13-17
Learn about stream ecology, Montana fish and how to catch the big one! We'll visit local streams and ponds to explore the food web and aquatic habitats, create our own tackle boxes, and use waders, nets and fishing poles to reel in adventure! *Same program as Fishing for Fun II.*

Magnificent Mammals
June 20-24
Montana's magnificent mammals will amaze you as you explore different habitats from forests to prairies. 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 Montana's largest mammal!

Jr. Survivor Camp I
June 27-July 1
Want to learn useful outdoor skills? Spend the week learning about shelter building, how to stay safe and not get lost, how to use a compass, basic map reading skills and bear awareness. We'll also investigate some animal adaptations for survival and how some human inventions mimic these! *Same program as Jr. Survivor Camp II.*

Insects Galore
July 5-8 (No Camp July 4th)
Crawl behind an ant! Hop with a grasshopper! We'll 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 of life around us.

Things with Wings
July 5-8 (No Camp July 4th)
From ravens to raptors and hummingbirds to herons, we'll investigate the bird world to learn about beaks and feet, feathers and wings, nests and eggs, songs and food through exploration, stories, art and by using binoculars.

Jr. Survivor Camp II
July 11-15
Want to learn useful outdoor skills? Spend the week learning about shelter building, how to stay safe and not get lost, how to use a compass, basic map reading skills and bear awareness. We'll also investigate some animal adaptations for survival and how some human inventions mimic these! *Same program as Jr. Survivor Camp I.*

Carnivore Camp
July 11-15
Predators of all kinds make their living eating other creatures, while these have developed adaptations to stay alive! Learn about the relationship between predators and prey, study skulls, pick through owl pellets, and discover some amazing adaptations that predators and prey have to survive.

Who Pooped Here?
July 18-22
Learn how to read signs that animals and insects leave behind. Identify tracks and different animal homes, and find out how to use clues left by animals to tell their stories. We'll create our own plaster animal tracks, tracking guides and special camp t-shirts!

Crafty Critters
July 25-29
Use crayons, paint, sculpture and even elements from nature to create your own works of art. Explore different habitats, like forests and grasslands, and experiment with different techniques, like drawing, watercolor and printmaking, as we create nature-inspired work. We'll host an art show at the end of the week to display our creations!

Naturally Spooky!
August 1-5
Spend a week learning about different plants and animals in Montana that most people try to avoid. We'll learn about the natural habitats of "creepy" animals like bats, snakes and stink bugs – and figure out what they really eat, hear stories and discover the truth that makes them…not so scary!

Pondemonium!
August 1-5
Explore life in ponds and wetlands from waddling waterfowl to tiny tadpoles. Spend the week investigating ponds and wetlands nearby, and learning about the importance of wetlands and the animals that use them. We'll create an indoor pond as a laboratory for learning!

Goin' Buggy
August 8-12
The world of invertebrates is full of amazing creatures. Hunt for insects and other invertebrates using nets, hand lenses and microscopes to learn more about what makes them unique. We'll make our own bug nets to keep, set traps to lure insects in and go on a special trip to the University of Montana to see the electron microscope in action.

Fishing for Fun II
August 8-12
Learn about stream ecology, Montana fish and how to catch the big one! We'll visit local streams and ponds to explore the food web and aquatic habitats, make our own tackle boxes, and use waders, nets and fishing poles to reel in adventure! *Same program as Fishing for Fun I.*

Grades 3-5

Super Tracker
June 13-17
Learn how to identify animal tracks and signs, investigate with tools used by professionals for studying animals and learn basic skills for outdoor exploration. Practice tracking skills in the field, create plaster tracks of your favorite Montana mammals, make a tracking book and test your super tracker skills!

Kid vs. Wild! I
June 20-24
Do you have what it takes to make it in the wild? Spend the week learning some techniques for basic survival, including fire and shelter building, orienteering, mapping, first aid, Leave No Trace, bear awareness and even how to predict the weather! We'll also meet our local search and rescue team. *Same program as Kid vs. Wild II.*

Rip Roarin' Raptors
June 27-July 1
Raptors are an amazing group of birds with adaptations specifically for capturing prey. Study eagles, hawks, falcons, owls and osprey to learn about how they do what they do, and where different raptors can be found. We'll also study pellets to see what they eat, and use binoculars to observe them in the field.

Kid vs. Wild! II
July 5-8 (No Camp July 4th)
Do you have what it takes to make it in the wild? Spend the week learning some techniques for basic survival, including fire and shelter building, orienteering, mapping, first aid, Leave No Trace, bear awareness and even how to predict the weather! We'll also meet our local search and rescue team! *Same program as Kid vs. Wild I.*

Go Fish!
July 11-15
Explore local ponds and rivers from top to bottom. Learn about stream ecology, Montana fish and practice casting technique. We'll explore the food web and aquatic habitats, make our own tackle boxes, learn how to fish with spinning rods, and use waders and nets to reel in adventure!

Space Camp
July 18-22
Join us as we launch a journey into the galaxy and beyond! We'll learn about stars, constellations, planets, black holes, phases of the moon, properties of energy and light, and amazing space missions. We'll also try building a comet using dry ice!

Wild Wetlands
July 25-29
Get your feet wet exploring 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 discover why wetlands are important places for plants, animals and people!

Big on Bugs
August 1-5
Who dominates the sky? Who patrols the forest floor? Insects make up the largest group of animals on the earth! Learn about their basic structure, their amazing adaptations and what they need to survive. We'll use nets, create insectariums and observe insects in their natural habitat.

Art and Nature Adventures
August 8-12
Inspiration often comes from the natural world, so what better way to celebrate it than through art? Explore plants and animals outside using different techniques, including sketching, painting, printmaking, sculpture and found natural objects. We'll host an art show at the end of the week to display our creations!

Grades 5-8

Survivor!
June 13-17
Learn techniques for basic outdoor survival, including how to start a fire without matches, how to construct a shelter that will keep you warm, how to filter your own water, make a fishing pole, predict weather, make your own string and perform basic first aid. We'll also make compasses, learn about bear awareness, and meet the search and rescue team and hear their tips for survival!

Hooked on Fishing
June 27-July 1
Already an avid angler? Never tried fishing but want to learn? Spend the week learning about fishing in Montana, from stream ecology to stewardship. We'll explore aquatic habitats with waders and nets, practice our fly casting technique, and learn some fish ID to help us understand more about local streams and ponds.

Earth Stewards
July 11-15
Interested in learning about how nature and technology can come together? This week we'll learn about the fields of Biomimicry and "green" design. See some examples of great inventions, create a solar powered motor boat, and use ideas from Biomimicry to come up with your own invention using recycled materials. This camp was developed in cooperation with The Biomimicry Institute.

Into the Wild
August 8-12
Interested in a little adventure this summer? Come hike some fantastic trails, use naturalist tools like field guides, maps and compasses, hear adventure stories about famous naturalists, learn how to set up a tent and a safe backcountry camp, and kayak on a nearby lake. We'll learn about plants and animals common to our region as we get out and explore.

Teens!

Leaders-in-Training Program
All Summer
Teens aged 14-17 may volunteer for a Leader-in-Training position and gain experience in child care and teaching by helping summer camp instructors with programs. Contact MNHC at 327-0405 for applications or more information.

Yellow pond lily *(Nuphar spp.)*, also called spatterdock, is a native water lily that grows in lakes, ponds and slow-moving rivers. Its thick leaves are round or heart-shaped, and up to a foot wide. The leaves attach to long stalks, which extend through the water into bottom mud. Stalks, in turn, are attached to a type of underground stem with roots, called a rhizome. In the fall, leaves and flowers turn brown and quickly die, but the rhizomes endure to grow again in the spring.

Yellow pond lilies provide great cover for wildlife, especially fish, aquatic insects, snakes, turtles, frogs, crayfish and salamanders. Frogs, insects and salamanders use the leaves and stalks to anchor their egg masses. Beavers and muskrats eat the rhizomes, and beavers also eat the leaves. Wood ducks, mallards and Canada geese eat the seeds, and dragonflies and bees find convenient resting places atop the floating "lily pads."

Photo: Kevin Fredenberg, www.fredenbergphotography.com

Montana Natural History Center
Connecting People with Nature

120 Hickory Street
Missoula, MT 59801
www.MontanaNaturalist.org

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Montana Natural History Center is an equal opportunity service provider.
Montana Natural History Center trips are permitted on the Lolo National Forest (Clause VII.B).

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

☐ Basic Membership: $50 ☐ Student Membership: $25

☐ Explorers Club Membership: $1,000

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

☐ I am enclosing payment by check.

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Address _____

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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. 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

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etc
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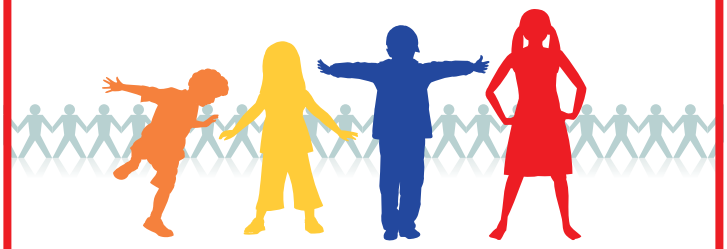

A Conference for K-8 Faculty, Staff and Administrators
August 2-5, 2011, Missoula, MT

The 2011 ETC for rural teachers and administrators will focus on using technology tools in the classroom to build relationships with students, peers, mentors, the community and the world.

See complete schedule, details, learn more about our Keynote Speaker, Wesley Fryer, and Register Today at:

Blackfoot.com/etc

Questions? Call 541-5020 or email etcinfo@blackfoot.com

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