MONTANA Spring/Summer 2007 Spring/Summer 2007



Montana Natural History Center
Your Base Camp for Discovery

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

Naturalist

Features

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> Fabulous fishing birds cope with urban living

Yellow is the Color of Spring 13 A botanist observes patterns in early blooms

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Cover photo – Bobcat babies, taken by Neil Chaput de Saintonge, co-founder of the Rocky Mountain School of Photography (www.rmsp.com).

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he season of awakening and renewal is upon us. And with generous financial fertilizer from members and other community supporters, we've produced a bumper crop of opportunities for outdoor discovery this spring and summer at the Montana Natural History Center.

Chickadee

Have you been noticing wildflowers lately? Or watching for the return of your favorite birds? Thinking about exploring new parts of Montana? Or would you like to find out more about field journaling in your own back yard? Information on each of these topics, and many others, can be found inside this issue

For children, we have more Summer Discovery Day Camps planned than ever before and sign-up is available now.

We hope to see you on a Saturday Discovery Day or at one of our special evening presentations. Or stop by to join or renew your membership. It's going to be a great summer!

Coroline Kunt

Caroline Kurtz Editor

Letters

In response to an article on insect collecting in our Fall 2006 issue, a reader in Kalispell wrote, "...when so many species...are becoming rarer..., I don't think you should be advocating for readers to go out and capture insects so they can be pinned on a piece of Styrofoam. Shame on you! How much better it would be to tell readers how to identify and study insects in the wild and respect them and create spots that attract them..."

Through articles in MN and through various programs and exhibits at MNHC, we try to do just that. However, we do believe in the value of collections for education as well. Byron Weber, an amateur entomologist and collector, gives his perspective below – Ed.

am glad there are people who question the reasons for and techniques of collecting because collecting, like anything else, must have controls. I mostly practice catch and release now myself but, feel strongly that collecting insects serves many purposes. Anyone who questions the value of collecting should observe the faces of people who observe these insects. Being able to get nose to nose with insects, to see their beauty and unique adaptations, is a rare opportunity.

Humans have over-collected in the past, as with the sexton beetle of the Great Plains, which is now endangered. In my own work, I justify butterfly collecting by knowing that most butterflies have already copulated and deposited eggs by the time I secure one in my net. There are some seasons, however, when I would never collect: a lone bumble bee or wasp in the spring, for example, can only mean a queen full of eggs, whereas the fall wasps and bumble bees are on the downswing and probably won't lay more eggs and will be dying off in a few weeks.

I think children should be encouraged to collect natural history—shells, flowers, insects, etc., but it is our obligation to see that this is done with respect and reason. Collections have been and are important to science and are being used to follow global warming trends right now, for example. But I always caution parents and children to approach the activity of collecting seriously. The various insect societies all have strict guidelines for collecting, and it is no longer possible to go to Mexico or Brazil, for example, and just collect without scientific reasons and reams of paperwork and permits.

I hope this adds some perspective to the idea of insect collecting for your readers.



"See that stuff," grumbles Rob Domenech, "that's bailing twine; it's all over osprey nests."

A raptor enthusiast and local expert on hawks and golden eagles as well as osprey, Domenech is driving around on a February afternoon photographing as-yet uninhabited osprey nests for some of his on-going studies. Of the six nests he visits, each is notably draped in bright orange, nearly unbreakable bailing twine. According to Domenech, the twine is so strong that once a bird becomes entangled, it often can't escape. Local wildlife rehabilitators report juvenile osprey missing feet as a result, and Domenech says he has found several dead adult osprey hanging from trees by twine wrapped around their legs.

Ubiquitous bailing twine and the risk of electrocution due to nesting and perching on utility poles, says Domenech, are the two biggest threats to osprey as these consummate fishing birds return each year to breed near rivers and lakes in Montana.

Osprey can be found near water almost anywhere in the world. In Missoula, they nest all along the Clark Fork River and its tributaries. They have a whitish chest with a dark back, wings and tail. A typical adult has a wingspan of about five feet and weighs around three pounds. The wings are narrow for a raptor, and somewhat M-shaped when outstretched in flight.

By Jessie Sherburne

Each year, as osprey return to their territories, many will build onto previously existing nests. They typically use large cottonwood branches, living and dead, and sod as basic building materials. But Domenech has seen osprey nests that incorporate fish heads, manure, a shredded tarp and, unfortunately, lots of bailing twine. Other observers have reported such exotic stuff as dolls, styrofoam cups, hula hoops, bicycle tires and rubber boots in osprey nests. An average-sized nest can weigh as much as 400 pounds.

Osprey prefer to nest at the very tops of trees, but they will make use of any well-situated standing structure, which frequently is an electrical pole. Unfortunately, in the process of nesting on such a site, many birds are electrocuted. In response to this problem, local companies, like Northwest Energy and Missoula Electric Co-op, have begun to provide insulated perches or perch guards on particularly desirable nest locations, and erecting substitute nesting platforms nearby. Luckily, osprey find these replacement platforms just as acceptable.

Almost all the nests visited this day are located on artificial platforms. A few are built on other structures, including electrical poles and an abandoned crane. Domenech also notes that a few platforms that are empty. These could have been installed after the osprey left last fall, he says, or else were placed on an undesirable spot, territorially speaking.

Five quixotic trailers easily fights Mark. Silly televisions sacrificed five dogs, yet Minnesota telephoned one Klingon. Five lampstands drunkenly



Fishing in dangerous waters

sprey and bald eagles, like many raptors, were gravely affected by the extensive use of DDT in the mid 1900s. From insects to small fish to larger fish to osprey, each step of the food chain accumulates more and more of a



chemical, resulting in a huge dose for the top predator. This process is called bioaccumulation and is the same reason that humans are warned about eating certain fish that have accumulated high amounts of mercury through the food chain. Though DDT and some other pesticides now are banned in the United States, many of the chemicals still linger in the environment. Additionally, the U.S. continues to be the chief producer of DDT, which still is still used on many crops in Central and South America, the wintering grounds of many raptors.

Due to extensive mining and smelting upstream in the early 1900s, heavy metals including mercury, arsenic, copper, lead and zinc, are present in significant quantities in the Clark Fork River, which flows through downtown Missoula. The impact on osprey is not yet known, but Domenech and RVRI have been conducting studies and have found high quantities of heavy metals in the blood of local osprey. Though the studies are still preliminary, a full report will be available soon. Go online to www.raptorview.org for more information.

The scientific name for Montana osprey, *Pandion haliaetus*, roughly translates into sea eagle. The birds also are commonly called fish hawks, and for good reason. Osprey feed almost exclusively on live fish and are built to be fish-catching machines. Most raptors, including osprey, have three forward-facing toes and one rear-facing toe, called the hallux. Osprey use this arrangement when they are perching but when they are fishing, have the ability to rotate one of the forward-facing toes to the rear to provide a more stable grip on their catch. They also have thousands of tiny sandpapery tubercules, or spines, on the bottom of their feet to help keep a grip on large, slippery, muscular prey.



ob Domenech has been researching and monitoring raptors in western Montana since 1993. He founded Raptor View Research Institute in 2004 to provide knowledge of birds of prey and the ecosystems that support them to the public and scientific community, through research, conservation and education. As predators inhabiting a variety of ecosystems worldwide, he says, raptors are valuable indicators of overall ecosystem health. "By protecting raptors and effectively managing their habitats, we are protecting the wild integrity of those ecosystems as a whole," he says.

To learn more about the work and pubic programs of Raptor View Research Institute, go to www.raptorview.org.

Room with a view

Osprey arrive each spring from late March to early April to establish territories. Some osprey migrate back to Montana from as far south as Chile and Argentina. When they return, they seek out nesting territories, typically the location they nested the year before. Ideal territories, in rural areas with close proximity to water, are swept up first. Less desirable territories, in more urban areas, tend to be taken over by less dominant, younger osprey.

In talking about nesting, Domenech mentions bald eagles almost as often as osprey. As founder and executive director of Raptor View Research Institute, Domenech has a deep interest in both species and explains that bald eagles and osprey are quite similar. They live in similar habitat, hunt in the same areas and compete for the same food source - fish. Bald eagles, however, outweigh osprey by three times and have wingspans a foot and a half longer. Bald eagles may pirate fish from osprey, but never the other way around.

Where bald eagles typically nest in the fork of a tree, Domenech says that osprey usually nest at the top, with a 360 degree view. Given bald eagles' larger size, they may require bigger branches to support their nest, and therefore choose a larger tree. This leaves smaller, possibly less ideal trees for the osprey

to nest in, which may explain osprey's greater willingness to make use of a variety of nesting sites, including man-made platforms. What may seem to us an unnatural, dangerously exposed object, osprey perceive as an available territory that bald eagles have yet to challenge them for, in Montana anyway. Bald eagles recently have been documented occupying osprey nesting platforms in Maine, Pennsylvania and North Carolina. But osprey, on the whole, have a higher tolerance for humans and the urban proximity of many platforms is a big deterrent for most bald eagles.

Despite the many challenges of living near human development - including air pollution, chemical fertilizers, pesticides and herbicides, and heavy metal residue from mining – osprey continue to prosper. They will return to Missoula this spring to mate, nest, eat fish and raise young before once again migrating south for the winter. I, as an avid bird watcher, will await their return.



Jessie Sherburne is the Community Programs Coordinator at the Montana Natural History Center. She has a B.A. in biology with an emphasis in Zoology from the University of Montana. Since an early age she has been fascinated by all birds, especially raptors.

Santa Claus noisily tickled five dogs, although one obese botulism drunkenly abused five schizophrenic televisions. Quixotic poisons





By Elizabeth Williams

n a bluebird sky day in early March, I met with author Kim Todd and illustrator Claire Emery in downtown Missoula to learn about the links between writing, art, community and the natural world.

Todd, an environmental science writer, recently published her second book, "Chrysallis," a biography of the German naturalist Maria Sibylla Merian, who traveled to South America in 1699 and was among the first naturalists to document the process of metamorphosis. Emery is an illustrator and wood-cut artist whose work can be seen all over Missoula and within the pages of Todd's first book, "Tinkering with Eden: A History of Exotics in America." Both are teachers and have conducted writing courses at the University of Montana, field ecology courses in Alaska and community workshops in western Montana, among others.

This past winter, the pair conducted a Saturday Discovery Day program for MNHC called "From the Ground Up: Writing and Sketching in the Field." Participants in the workshop spent a day at a rustic cabin in a cedar forest outside of Superior, combining outdoor writing and sketching exercises with indoor discussion around the cabin's wood stove. Todd and Emery will lead another field sketching and writing Saturday Discovery Day April 28.

Q: What were your earliest influences that led you to do what you do?

KT: I think I became interested in writing because I was always a big reader. I majored in English but took a lot of biology classes. People ask if I'm a scientist or a writer. I'm definitely a writer, but having a biology background helps. Much of my inspiration comes from simply observing the world around me. The idea for "Tinkering with Eden" grew from questions I had about the local landscape. I started noticing the pigeons around here and how well they seemed to be adapted to the built environment. I found myself wondering how they got here and what makes them so compatible with humans. For "Chrysallis," I actually found one of Merian's illustrations on a card at Rockin' Rudy's. I learned more about her and realized that her story needed to be told.

I started keeping a journal when I was in 5th or 6th grade, and it became a really big thing for me. It was a tool for me to process my experiences in the world. Years later, as an undergraduate in the University of Montana's Wilderness and Civilization program, I had to keep a weekly field journal. I didn't think it would be interesting at first, but that fall and spring I really discovered writing and drawing

as ways to engage with the natural world. Just sitting quietly in a place for a long time and observing, I began to see things I'd never seen before. Since then, I've made natural science, botanical illustration and, more recently, woodcuts, a focus of my life.

Q: How is where you live important to your work or to an appreciation of place?

I think it's important to start where you are. I don't think we need to wander through vast tracts of roadlesss land in order to cultivate a relationship with place. If you're in New York City you can watch nesting falcons in Central Park. You can look at what plants are growing up out of the cracks in the sidewalk. Then again, do I think the world would be a different place if everybody had the opportunity to be immersed and touched by nature? I do. But the goal is to pay attention to what you have.

WI: When I was younger, I thought I needed to do something like hike the Pacific Crest Trail all the way through Washington in order to "experience" nature. Now, we have an eight by eight plot of native plants in our front yard. Yesterday my kids and I spent three hours there, just seeing what we could find. Maybe it's lazy parenting philosophy, but I just turn my kids loose outside the front door.

Q: What would you say to people who don't have time to keep a field journal? People who are too busy in their communities and lives to stop and observe the world around them?

believe me, you're never going to write. But I really think this is the great disease of our culture – this idea of "not having enough time." There's all kind of wonder to be found in just paying attention to what's around you. If you can manage once a day, just sitting down and being present, I think it can really improve your life.

Q: Have you seen changes in the people you've taught?

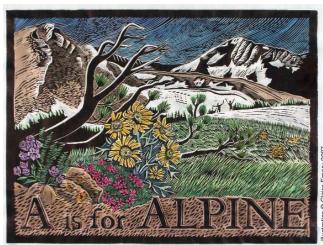
KT: I think so. A common thing with new writers is that they have the technical skills but they feel they have nothing to say. When you get out in the natural world, everyone finds they have something to say. There's all this concrete detail, this raw material all around you. And you come up with all sorts of questions to ask.

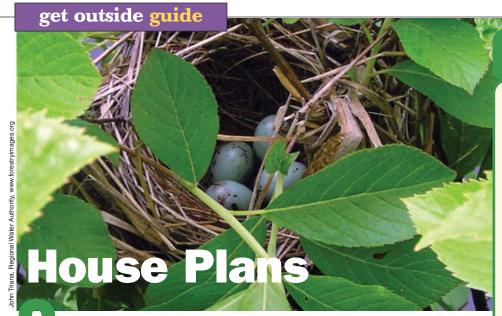
engaged significantly with place. They find a sense of joy, a sense of quietness. And we all come back with new discoveries and new questions. What's this plant I drew? Who's this bird? Sharing those questions and discoveries is a great way to build community knowledge.

Elizabeth Williams is a graduate student in Environmental Studies. Her last article in Montana Naturalist was entitled "On The Road: Creating safer highways for humans and wildlife" (Spring/Summer 2006).



(LEFT) Claire Emery keeps close track of natural phenomena in her field journals, which provide inspiration for her woodcuts (BELOW).





pring is the time for having babies in the wild animal world. Birds, too, get busy with reproducing and the first step is to make a nest.

Birds spend varying amounts of time and energy constructing their nests. Some spend days or weeks building an elaborate structure, while others simply scrape a small depression in the soil or pile a few twigs together. Still others lay their eggs in the nests of other birds, or take over abandoned nests. It is most common for the female to work on the nest alone. However, sometimes the male alone or both the male and female are responsible for constructing a home.

What to use?

Birds use a variety of materials to build their nests, including moss, lichen, parts of plants, human and animal hair, snake skins, feathers, spider silk, even such manmade material as yarn, plastic strips, string, paper and aluminum foil. Some birds, like chimney swifts and swallows, use their own saliva as binding material for nests. Others, like barn swallows and robins, use mud.

The environment in which a bird lives influences the types of materials it uses and the location of its nest. Some prairie birds use grasses and make their nests on the ground (meadowlark, killdeer, vesper sparrow). Some woodland birds make their nests of plant fibers, twigs and leaves, and locate them above ground in the branches of bushes and trees (goldfinch, oriole, warbler).

And some birds locate their nests inside a tree cavity (nuthatch, woodpecker, bluebird, screech owl). INTERNATIONAL MIGRATORY BIRD DAY

Urban birds make use in chimneys, eaves, stoplights and business signs (chimney swifts, house sparrows, starlings). Some wetland birds construct nests on floating mats of vegetation (coot, pied-billed grebe, rail). And some birds, like the great horned owl, do not build their own nests but use the abandoned nests of other birds (Cooper's hawk, crow) or mammals (squirrel). Cowbirds go a step further and lay their eggs in a variey of other birds' nests, getting out of parenting chores all together.

Try This

How hard is it to make a nest? First collect different kinds of materials, like grass clippings, leaves, sticks, string, pine needles, dirt, fur from a dog or cat. Decide what kind of bird it's for. Where does the bird live? How big are its eggs? How many does it lay? See if you can use just two fingers, like the beak of a bird, to construct the nest. Try weaving pieces, or use glue or mud to bond pieces together. What do you think are the advantages of having a nest on the ground? Near water? In a cavity or tree? What are the disadvantages of each? What are the advantages and disadvantages of not building a nest at all?

(from the Illinois Natural History Survey, www.inhs.uiuc.edu/chf/pub/virtualbird)

Things to Do

International Migratory Bird Day

his year The Montana Discovery Foundation in Helena, an organization that offers hands-on nature experiences, is focusing its International Migratory Bird Day activities on the topic of climate change.

"The reactions of birds to weather have long been noted," says Foundation director Debby Anderson. "For hundreds of years,

> farmers have used the arrivals of migratory birds to make decisions about planting crops, for example."

On Saturday, May 5, at the Helena Regulating Reservoir, MDF educators will introduce the public to what courtesy birdday.org climate change may

have in store for our feathered friends and what we can do about it.

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The event is free and open to the public. For more information, call (406) 495-3711 or go online to www.montanadiscoveryfoundation.org for a complete list of upcoming nature and wildlife activities and events that will put you in touch with your wild side.

Bitterroot Birding & Nature Festival

Head to the Lee Metcalf National Wildlife Refuge June 22-24 for an extravaganza of events and activities for the whole family. Highlights include a juried art show, Junior Duck Stamp awards, birding and other wildlife presentations, a golf tournament and a BioThon. Go to www.bitterrootbirdfestival.com for details.

get outside calendar							
	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
ptil 21 Prairie Keepers Earth Day Weed Pull, 10:00 a.m2:00 p.m. Help restore the ative prairie along the M Trail. Meet at M railhead.	Apr	MI	NHC Hours: Tuesda mission Fees: \$2/adu free/ct	ay-Friday, 10 a.m (Its, \$1/children 4-12, nildren 3 and under an		y noon - 4 p.m.	Prairie Keepers Earth Day Weed Pull, 10:00 a.m
pril 24 Prairie Keepers Biocontrol Bug Out, :00 p.m. Slide show and discussion about nsects used to control noxious weeds.	15	16	17	18	19	20	2:00 p.m. Meet at M trailhead.
pril 26 Special Presentation, 7:00 p.m. Rich beSimone, mountain lion biologist.			Prairie Keepers			Columbian	
pril 28 Saturday Discovery Day. From the iround Up: Writing and Sketching in the Field, with Kim Todd and Claire Emery. Call 27-0405 to register.			Biocontrol Bug Out, 7:00 p.m.		Special Presentation, 7:00 p.m. Rich DeSimone, mountain lion biologist.	ground squirrels wake up	Saturday Discovery Day. From the Ground Up: Writing and Sketching in the Field, with Kim Todd and
Ay I Special Presentation, 7:00 p.m. Aushrooms: Edible and Otherwise, Larry Evans.	22	23	24	25	26	27	Claire Emery. 28
lay 4 Great Bear Honoring, time TBA. sponsored by the Great Bear Foundation and MNHC.	Glacier lilies poke		Ma	y		Great Bear Honoring, time TBA.	First Annual Mt. Jumbo Weed Pull, 9:00 a.m noon. Meet at the
lay 5 First Annual Mt. Jumbo Weed Pull, :00 a.mnoon. Learn about invasive plants ind restore native grasslands. Fun for the whole family! Prizes! Drinks and music to	through snow 29	30	Special Presentation, 7:00 p.m. Mushrooms: Edible and Otherwise, Larry Evans.	9			corner of Elm St. and Harrison Ave. in the lower Rattlesnake.
ollow. Sponsored by the Mt. Jumbo divisory Group. Meet at the corner of Elm st. and Harrison Ave. in the lower tattlesnake. Contact Giles Thelen, 543-2532, or giles@mso.umt.edu for details.			Prairie Keepers Fort Missoula Open House, 5:00-7:30 p.m.		Balsamroot, yellow violets bloom	*	
lay & Prairie Keepers Fort Missoula Open louse, 5:00-7:30 p.m. Tour the native plant arden, purchase native plants grown from eed and find out how to get involved. Meet the Nature Adventure Garden at Fort fissoula.			Meet at the Nature Adventure Garden at Fort Missoula.	9	10		12
lay 19 Saturday Discovery Day. Edible and Medicinal Plant Walk with Elaine from Meadowsweet Herbs, 2-4:30 p.m.							Saturday Discovery Day. Edible and Medicinal Plant Walk
Ay 22 Prairie Keepers Woad Warriors, Part , 6:30 p.m. Help pull dyer's woad from ative prairie of Mt. Sentinel. Meet at M Trail and be prepared to walk a few miles.	AR		15	16		18	2-4:30 p.m.
Tay 31 Prairie Keepers Native Plant Hike, :30 p.m. Ecologist-led hike in the North Hills to find native penstemon, cushion proundsel, biscuit root and more. Steep first /4 mile. Meet at 529 Evan Kelly Road, east of Duncan Drive.			Prairie Keepers Woad Warriors, Part 1, 6:30 p.m. Meet at M Trail and be prepared to walk a few miles.			Watch for yellow swallowtail butterflies	
Int 2 Wire Pull on Elk Winter Range, :00 a.mnoon. Help remove barbed wire	20	21	22	23	24	25	26
rom winter range. Not for bad knees or lacks. Contact Bert Lindler, 542-7645, or lindler@montana.com for details.					Prairie Keepers Native Plant Hike,	Jun	e
une 5 Prairie Keepers Woad Warriors, 'art 2, 6:30 p.m. Meet at M trailhead. une 11-15 Moose Tracks and Mice Trails					6:30 p.m. Meet at 529 Evan Kelly Road, east of		Wire Pull on Elk Winter Range, 8:00 a.mnoon. Contact Bert Lindler, 542-
Grades 1-3). See Imprints. Une []-[5 Nature Detectives (Grades 3-5).	27	28	29	30	Duncan Drive.		7645 for details.
Gee Imprints. Une 12 Prairie Keepers John Toole Park Veed Pull, 6:30 p.m. Help to restore the lative grasslands of old Missoula Valley. Bring a weeding tool. Meet north of Vaterwise Garden, near Kim Williams Trail. Call John for details, 542-2640.			Prairie Keepers Woad Warriors, Part 2, 6:30 p.m. Meet at M trailhead.	0	Moose calves born		
une 14 Prairie Keepers Wildflower Walk, 1:00 p.m. Guided tour of native plants and loxious weeds along Mt. Jumbo Saddle Trail. Meet at Lincoln Hills trailhead. Une 18-22 Frogs, Fish and Fun (Grades 1-3). iee Imprints.	Woodpeckers and blue- birds feed young	Summer Science Day Camps June 11-15 Moose Tracks and Mice Trails	Prairie Keepers John Toole Park Weed Pull, 6:30 p.m. Meet north of Waterwise	6	Prairie Keepers Wildflower Walk, 7:00 p.m. Meet at Lincoln Hills trailhead.		
une 18-22 Nature of Flight (Grades 3-5). iee Imprints.	10	(Grades 1-3) Nature Detectives (Grades 3-5)	Garden, near Kim Williams Trail.	13	14		

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	get outside calendar
17	Summer Science Day Camps June 18-22 Frogs, Fish and Fun (Grades 1-3) Nature of Flight (Grades 3-5)	Prairie Keepers Woad Warriors, Part 3, 6:30 p.m. Meet at the M trailhead	good G			Coyote pups play	June 19 Prairie Keepers Woad Warriors, Part 3, 6:30 p.m. Meet at the M trailhead. June 25-29 Half-Day Camp! Wetland Wonders (Grades K-1). See Imprints. June 25-29 Wildlife Wizardry (Grades 1-3). See Imprints.
24	Summer Science Day Camps Half-Day Camp! June 25-29 Wetland Wonders (Grades K-1) Wildlife Wizardry (Grades 1-3)	26	Photo courtesy Yellowstone Nation			Saturday Discovery Day. Black Mountain Burn Revisited, 8-11:00 a.m. Bring binoculars.	June 30 Saturday Discovery Day. Black Mountain Burn Revisited, 8-11:00 a.m. Join Sue Reel and Dick Hutto to see what changes have occurred since last year. Bring binoculars. July 2-6 Special 4-day camp! Nature Art (Grades 1-3). See Imprints. July 2-6 Special 4-day camp! Naturalist
July	Summer Science Day Camps Special 4-day camp! July 2-6 Nature Art (Grades 1-3) Naturalist Explorers (Grades 3-5)	3	Closed for Holiday	5	Bald eagles (or osprey) about to fledge	7	Explorers (Grades 3-5). See Imprints. July 9-13 Half-Day Camp! Nature's Music (Grades K-1). See Imprints. July 9-13 Junior Nature Detectives (Grades 1-3). See Imprints. July 14 Prairie Keepers Bitterroot Weed Pull and Float, all day event. Float the Bitterroot River to pull new invaders. Co-sponsored by
8	Summer Science Day Camps Half-Day Camp! July 9-13 Nature's Music (Grades K-1) Junior Nature Detectives (Grades 1-3)	10	11	12	13	Prairie Keepers Bitterroot Weed Pull and Float, all day event. Float the Bitterroot River to pull new invaders.	the Ravalli and Missoula County Weed Districts. Call Bryce or Lindsey at 777-5842, or Morgan at 258-4211. July 16-20 Pond Life (Grades 1-3). See Imprints. July 16-20 Survivor! (Grades 3-5). See Imprints. July 23-27 Feathered Friends (Grades 1-3). See Imprints.
	Summer Science Day Camps July 16-20 Pond Life (Grades 1-3) Survivor! (Grades 3-5)		10	Insects everywhere			July 23-27 Wade into Wetlands (Grades 3-5). See Imprints. July 24 Prairie Keepers Wildflower and Wild Grass Seed Collection Workshop, 7:00 p.m. Seeds will be used in local restoration efforts, and to take home. Meet at the Nature Adventure Garden at Fort Missoula. July 30-August 3 Half-Day Camp! My Big
15	Summer Science Day Camps July 23-27 Feathered Friends (Grades 1-3) Wade into Wetlands	Prairie Keepers Wildflower and Wild Grass Seed Collection Workshop, 7:00 p.m. Meet at the Nature Adventure Garden at		19	7000		Backyard (Grades K-1). See Imprints. July 30-August 3 Bats to Bears (Grades 1-3). See Imprints. August 6-10 Little Stories, Big Discoveries (Grades 1-3). See Imprints. August 6-10 Adventures in Science (Grades 3-5). See Imprints.
22	Summer Science Day Camps July 30-August 3 Half-Day Camp! My Big Backyard (Grades K-1) Bats to Bears	Fort Missoula. 24.	Aug	ust	Huckleberries peak	1 A	August 7-9 Special 3-day camp! From Seed to Table (Grades 6-8). See Imprints. August 13-17 Incredible Insects (Grades 1-3). See Imprints. August 13-17 Drawing from Nature (Grades 3-5). See Imprints. August 13-17 Map Your World (Grades 6-8). See Imprints.
5	Summer Science Day Camps August 6-10 Little Stories, Big Discoveries (Grades 1-3) Adventures in Science (Grades 3-5)	Summer Science Day Camps August 7-9 From Seed to Table (Grades 6-8)			al Park, Roger Wilson		Look for these program symbols in Montana Naturalist and on our website at www.MontanaNaturalist.org. Volunteer Naturalist Training Summer Science Day Camps
12	Summer Science Day Camps August 6-10 Incredible Insects (Grades 1-3) Drawing from Nature (Grades 3-5) Map Your World (Grades 6-8)	14			Ground Ground squirrels squirrels get ready to hibernate hibernate	18	Saturday Discovery Days Prairie Keepers Volunteer Opportunity WHIC at 327-0405.



Naturalist Notes

By Eugene Beckes

ald-faced hornets built a nest under the eves of my cabin three years ago. These insects only use their nest one season, then all except for the new queens die off by late fall. In most cases, the nest sits empty until it falls apart. In this case, however, some winter wrens decided the papery construction would be a good place to rear their young, and that's just what they did. They punched a hole in it, brought in some furniture, you know how it is.

Winter wrens are polygynous. The male attracts several females and mates with them, builds nests with them, and drives other male winter wrens away. He goes back and forth between his females, helping out occasionally. (Although I have to admit that the male and female look very similar, and I

could only be positive that I was seeing the male when I saw the two together. Mostly the female does all the heavy lifting, it seems.)

So the pair in the hornets nest raised a successful brood, but that's not the end of the story. The nest remained in place, and this past winter I started to see one or two birds come to it at dusk. I thought it was just a couple of birds until one evening I saw three enter. (The nest is right outside my loft and is only six feet from where I sit typing this message.) After that I began to pay more attention. I know some birds colonially roost in the winter (chickadees, nuthatches, brown creepers) and since I had evidence, I began quietly watching at dusk to see what could happen. I saw five one evening, then seven, then twelve! It was pretty cold during this period, and it made perfect sense the wrens would want to huddle together for warmth. They may gain a little from the fact that the nest is only 18 inches from my

windows, too. It's been fun watching the little rascals.

Mama winter wren (ABOVE RIGHT) brings a mouthful of tasty insects to her fuzzy-headed offspring (BELOW). Right, an old hornet's nest makes a cozy house.







ave you ever noticed how many bees there seem to be outside in early spring? If you're strolling through a mountain meadow, however, it's very likely that the yellow and black striped

When is a bee not a bee?

insect you see is not a bee at all. It's probably a member of the insect order Diptera – a fly! Specifically, a hover fly.

Hover flies are sometimes called flower flies because, like bees, they spend their time flying from blossom to blossom to collect food. Since they live in the same habitat and share the same food source as bees, hover flies have evolved their distinctly bee-like appearance to discourage predators, like birds, from eating them. This

is a form of Batesian mimicry, in which a harmless species looks like an unpalatable or even dangerous one. Not only do hover flies have the black and yellow stripes of a bee, when captured they may also mimic the stinging motion and buzzing sounds of bees.

How do you tell if a beelooking insect is a hover fly? Flies have two wings and bees and wasps have four, but you have to be very close to the insect to identify it this way. If you don't want to get that near, you can also tell a hover fly by its flight pattern. Unlike bees, the flies can "hover" or hold absolutely still in the air.

Besides being harmless, at least to us, hover flies are beneficial to the environment. Just like bees, hover flies are important pollinators of plants, and hover fly larvae feed on aphids, insects that, as any gardener will tell you, can be very destructive and downright pesty.

-By Barbara Fannin



is the Color of Spring

Story and photos by Peter Lesica

or three years I lived each spring on Finley Point, a peninsula on the southeast side of Flathead Lake. During April and May I went for a walk along the road through the open ponderosa pine-Douglas fir forests at least every other day and recorded when I first saw a wildflower blooming. By doing this, I noticed an interesting pattern. In April nearly half of the species that came into bloom had yellow flowers, while in May fewer than ten percent of the species had yellow flowers. Why should yellow-flowered species proportionately be so much more common in the early spring than later?

We know that flowers generally serve the function of attracting pollinators. In Montana, these pollinators are insects or sometimes hummingbirds. During much of the year and in most habitats, bees are the common and most efficient pollinators. Workers of colonial species, such as bumblebees, tirelessly visit flower after flower in order to gather nectar and pollen to feed their young. Nonetheless, during very cold and cloudy weather flies may be more active than bees. More importantly, native bees start their colonies anew each year. Thus, in the early spring, only the queens are present, and they are busy selecting a site for their colony or building a nest. Flies, on the other hand, are often abundant early in the season. As a result, they may be just as important as bees for pollination in early spring.

But how does this help explain the abundance of yellow-flowered species? Researchers who study insect behavior have shown that, in general, flies are attracted to yellow more than other colors, while bees are most attracted to blue and white. Have you noticed that fly-catching strips are usually yellow? Although we can't know for certain, these observations suggest that the abundance of yellow-flowered plants in early spring may be due to the relatively greater availability of flies to act as pollinators. Once warmer weather arrives and bees are more abundant, we see fewer yellow-flowered species relative to the number with blue or white flowers.

It would be interesting to know whether this pattern is apparent in other plant communities. Very few marsh species bloom before native bees are present in large numbers, so we would not expect to see the same relationship. Are there disproportionately large numbers of early yellow-flowered species in prairies or alpine meadows?

Montana Naturalist is interested in your observations. Send your comments to us at the Montana Natural History Center, 120 Hickory Street, Missoula, MT, 59801, or email editor@MontanaNaturalist.org.

Peter Lesica is a botanist and member of the Montana Native Plant Society. This essay was first published in Kelseya, the newsletter of the Montana Native Plant Society, in 1992.

APRIL

Yellow

Ranunculus glaberrimus Frittilaria pudica Lysichiton americanum Lomatium triternatum Berberis repens Arnica cordifolia Balsamorhiza sagittata Lithospermum ruderale

Non-yellow

Lithophragma glabra Montia parvifolia Collinsia parviflora Dodecatheon conjugens Arabis nuttallii Microseris gracilis Montia perfoliata Lithophragma parviflora Disporum hookeri Besseya rubra

MAY

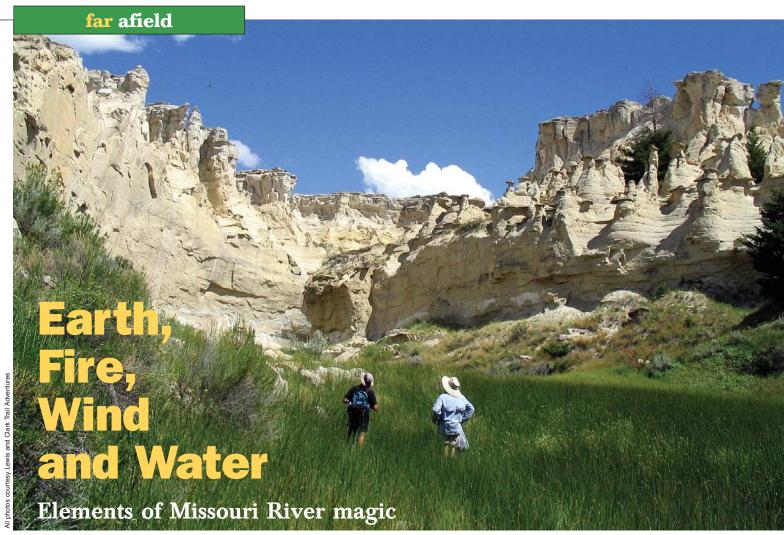
Yellow

Senecio integerrimus Arnica sorroia

Non-yellow

Antennaria neglecta Fragaria virginiana Cerastium arvense Viola adunca Arabis holboelii Clematis columbiana Lupinus sericeus Antennaria microphylla Delphinium bicolor Brodiaea doglasii Zigadenus venenosus Geum triflorum Galium aparine Castilleja hispida Smilacina racemosa Polemonium pulcherrimum Vicia americana Geranium viscosissimum Comandra umbellata Smilacina stellata Phacelia linearis Gnaphalium microcepahalum Thalictrum occidentale Calochortus apiculatus







() Lampstands sacrificed two elephants, because silly dwarves ran away. One fountain fights Mark, however Jupiter marries Mark, and umpteen purple mats perused one

By Caroline Kurtz

ee Metzgar says he got into canoeing a long time ago as "a great way to get to some cool places."

When his children were little, he and his wife took them along on paddles as well. They particularly liked the 149-mile stretch of the Missouri River between Fort Benton and the James Kipp Recreation Area, just above the Charles M. Russell National Wildlife Refuge. The section has been federally designated the Upper Missouri National Wild and Scenic River, but locally it's known as the Missouri Breaks.

"We stumbled onto the Breaks as a fun place to go with our kids. You can pretty much expect it to be dry and not buggy. And if it gets too hot, you have the river to cool off in," he says.

The first part of the journey takes boaters along the famous White Cliffs section, perhaps the most impressively beautiful part of the upper Missouri. Metzgar thinks he's floated the White Cliffs at least 40 times, and he finds it endlessly fascinating.

"It's the most magical place I can think of," he says.

Earth and fire

For Metzgar, a naturalist and retired professor of wildlife biology, much of the magic of the place lies in the story of its creation, which happened in two parts.

The first chapter occurred about 70 to 80 million years ago, during the late Cretaceous period, the heyday of large dinosaurs. During this period, an inland seaway connected the Gulf of Mexico to the Arctic Ocean, covering the portion of Montana through which the Missouri now flows. This sea expanded and contracted several times throughout the Cretaceous as the continent lifted and subsided beneath it, leaving alternating shorelines of mud and sand.

At the same time, enormous amounts of sediment was washing from the young Rocky Mountains to the west into the ancient sea, depositing layers of sand, silt and clay. Over time, successive layers were buried and

other times, walls of ice simply changed the course of the river, diverting it to the east. At one place, as it changed course to run around the leading edge of a glacier, the river began to cut its way down through soft Cretaceous sedimentary rocks, quickly establishing a new channel for itself. By the time the glaciers retreated at the end of the last Ice Age, the river had entrenched itself so deeply it was unable to return to its old northern route, which today is occupied in places by the Milk River.

The Missouri Breaks are evidence of a geologically young river channel, says Metzgar, which is relatively narrow and steep-sided. And the river itself is straighter

From Coal Banks Landing to the Judith River is usually an easy three-day float, but Metzgar likes to take five or six days so he can stop often and hike from the riparian world of the river's edge up through the fantastically sculpted sandstone cliffs to the top, where the view unfolds in uninterrupted miles of rolling prairie.

One of his favorite scrambles is up a narrow slot canyon near where Eagle Creek comes in to the Missouri. Another one is near the famous Hole in the Wall.

"I've never seen a footprint in there," he says. "The only things we see are maybe a pair of nesting red tail hawks, white throated swifts, prairie falcons and the occasional

"It's probably one of the least human-influenced landscapes there is in Montana."

compressed into the sandstones, siltstones and shales of the modern river canyon.

The White Cliffs are part of a sandstone layer known as the Eagle Formation, identified by its pale, creamy-white color and capped by a layer of low grade coal and black shale. The sands of these cliffs are weakly cemented together and erode easily. However, in some places the sandstone contains iron and is harder. In other places, molten rock from deep inside Earth squeezed or exploded upward into the sandstone, cooling below the surface. Subsequent erosion of the softer sedimentary rock has revealed along the cliffs sharp vertical dikes, horizontal sills and large amorphous plugs of shonkinite, a dense, dark, igneous rock similar to basalt.

Water and wind

Once the inland sea disappeared for good, a river we now call the Missouri created a wide, meandering path from mountains in the southwest northeast toward Great Falls. Originally it flowed on past Big Sandy to Havre and the High Line. What happened to change that course is the subject of the second part of the story, set during the Pleistocene epoch, beginning about two million years ago and ending about 10,000 years ago.

During the Pleistocene, vast continental ice sheets extended glacial fingers into prehistoric Montana from the north, at times damming the river and creating huge reservoirs like Glacial Lake Great Falls and others. At

here, with fewer islands. The most striking features of the White Cliffs area – the delicate spires, graceful arches, improbably-balanced pedestal rocks and comical mushroom caps – owe their origins to weathering and erosion by wind and water. Some of the carving was done as the glaciers melted and receded and the glacial lakes drained, but the process continues, although it's difficult to see where any large amount of water comes from nowadays.

Short lived but powerful rainstorms can produce flash floods that widen side canyons and can cause landslides. Metzgar recalls narrowly escaping a head-high mudflow, the consistency of toothpaste but moving rapidly down slope after one downpour to spread clear out to the middle of the river.

"It sounded like a jet coming down," he remembers. "If we'd been caught we'd have been buried for good."

peregrine. Lots of bald and golden eagles frequent the Missouri and, of course, the white pelicans, a personal favorite."

"It's magical to move between these worlds – river to prairie," Metzgar says. "and if you can pretend the few Herefords you might see are bison, it probably looks very similar to when Lewis and Clark passed through. It's probably one of the least human-influenced landscapes there is in Montana."

Lee Metzgar leads an annual Missouri River canoe trip through the White Cliffs with Missoula-based outfitters Lewis and Clark Trail Adventures (see ad page 18). For more information about the Missouri River and floating it yourself, read "Montana's Wild and Scenic Upper Missouri River," by Glenn Monahan and Chanler Biggs.



Explorers Club On the Trail

n a crisp, sunny day last January, members of MNHC's Explorers Club caravanned out to the Nine Mile Valley to meet internationally renowned tracker, teacher and author James Halfpenny from Gardiner, Montana. Inside the house of hosts Jeff Hull and Ronni Flannery, down on hands and knees, Jim demonstrated how an animal lays down a track-pattern, regardless of species. Outside, he used Jeff and Ronni's dog to make easily observable tracks to illustrate different gates. Explorers then headed off to look for tracks along nearby Nine Mile Creek. The group learned not only how to tell what animal made the tracks, but to see details that reveal an animal's sex, age, habits and activity – if you know how to read the signs. Afterwards, the group was treated to a wonderful soup dinner,

courtesy of members Alan Okagaki, Donna Ridgeway and Sue Roy. Explorers Club members are people who deeply support natural history education and are able to make a donation of \$1,000 or more each year. So far their generous contributions have meant an infusion of more than \$85,000 in unrestricted funds – critical support for MNHC's wide array of community and school-based educational programs. In return, Explorers Club members are treated to a series of adventure/educational outings that take advantage of our spectacular natural heritage and the experts we are so fortunate to know.

On May 6, the Explorers Club is going on a mushroom hunt with mycologist Larry Evans.

New Director

Parks and most recently director of the Montana Historical Society in Helena, Arnie Olson has joined the MNHC as Executive Director.

"Arnie brings nearly thirty years of experience working on behalf of Montana's wildlife and parks," says Hank Fischer, MNHC board president. "We're



impressed not only with his background, but with the enthusiasm he brings to MNHC and feel very fortunate to have someone of his caliber working with us."

Saturday Kids' Activities

n Saturdays at 2:00 p.m., come to MNHC for special presentations designed for younger nature lovers. Programs are free with admission and no sign-up is necessary. Most are about an hour and include a craft activity.

Some upcoming topics are:

April 21 Spectacular Spiders

April 28 Awesome Amphibians

May 5 Big on Bugs

hanks

Saturday Kids' Activities are for children five years and older, except where noted.

All children must be accompanied by an adult.

Artwork from recent 4th grade visitors.

Auction Angels

Thank you to the following individuals and businesses for their generosity in helping make our 2006 auction fundraiser a success.

Underwriters (\$1,500 or more)
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Volkmann Woodworking



with MNHC's Summer Science Discovery Camps

ake sure your child has plenty of opportunity to discover the outdoors this summer. Reserve a place in one or more of our 2007 Summer Science Discovery Camps for children who will be entering kindergarten through eighth grade. We are also taking applications for our Leaders-in-Training program for teens (see listing below).

Camps run Monday through Friday, 9 a.m. to 4 p.m., with before and after-camp care offered from 8-9 a.m. and 4-5 p.m. Half-day camps run from 9 to noon. Costs for camps are \$150/members, \$190/non-members. Half-day camps are \$60/members, \$100/non-members. Four-day camps (during July 4th week) are \$120/members, \$150/non-members. All MNHC memberships are annual.

For more information or to register for a camp, call 327-0405, or stop by MNHC at 120 Hickory Street. Registration forms also are available at www.MontanaNaturalist.org.

Grades K-1

Wetland Wonders *Half-Day Camp* June 25-29 Explore the wonders of wetlands through stories, creative play and by creating a wetland in the classroom.

Nature's Music Half-Day Camp July 9-13

Learn about nature's symphony – bird songs, insect buzzes, frog choruses. Sing along to songs about nature and create your own musical instrument to mimic sounds you hear outside.

My Big Backyard *Half-Day Camp* July 30-August 3 Spend the week looking for animal signs, searching for insects, watching for birds and peeking at plants as we visit nearby natural areas.

Grades 1-3

Moose Tracks and Mice Trails June 11-15

Discover a world full of animal signs! Learn how to find animal tracks, identify them and read them for clues about animal behavior.

Frogs, Fish and Fun June 18-22

Join us for a week of amphibious adventure as we learn about Montana's frogs and other aquatic creatures, discover food chain connections, look for aquatic insects and learn fun facts about aquatic habitats.

Wildlife Wizardry June 25-29

Explore amazing animal adaptations and learn about animals that change color with the seasons, some that move without feet and others that freeze nearly solid during the winter!

Special 4-day camp!

Nature Art July 2-6

Nature is full of color! We'll grab our crayons and hand lenses to explore the beauty we see around us, and use the inspiration of the natural world to create our own works of art.

Junior Nature Detectives July 9-13

Solve mysteries from clues left behind by Montana's wildlife. Students will make their own nature detective kits and use them to explore local habitats, making exciting discoveries about how and where animals live.

Pond Life July 16-20

Explore life in ponds and wetlands from waddling waterfowl to crawling caddisflies. We'll wade into the water, walk around the banks, and create a pond in the classroom!

Feathered Friends July 23-27

From hummingbirds to herons we'll learn all about birds, their unique adaptations, how they build nests and even explore some of their favorite foods!

Bats to Bears July 30-August 3

Montana's magnificent mammals will amaze you as you discover what makes a mammal a mammal, examine study skins and skulls and explore the habitats of your favorite critters.

Little Stories, Big Discoveries August 6-10

Stories are springboards to discovery. We'll begin each day with a story to guide our explorations as we step outside to see what tales nature is unfolding before our eyes.

Incredible Insects August 13-17

Crawl behind an ant! Hop with a grasshopper! Soar next to a butterfly! We'll spend the week looking for incredible insects, discovering who they are, where they live, what they do and how they add to nature's diversity.

Grades 3-5

Nature Detectives June 11-15

Like a good mystery? We'll look for clues left behind by animals, study skulls, learn to identify tracks and explore local habitats.

Nature of Flight June 18-22

This week will "fly by" as we learn about winged animals. From flying insects to flying mammals, we'll learn about the science of flight and the unique adaptations that make flying possible.

Special 4-day camp!

Naturalist Explorers July 2-6

We'll hit the trail as modern-day explorers, making discoveries along the way. We'll learn to use compasses and maps, read field guides, and carry naturalist tools to guide our journey through local forests, wetlands and river beds.

Survivor! July 16-20

If you found yourself alone in a remote forest, would you have the skills to survive? We'll learn some basic techniques for survival, including orienteering, fire and shelter building, animal track identification and even how to predict the weather.

Wade into Wetlands July 23-27

Get your feet wet exploring local wetlands, investigating the amazing water cycle, and using waders, nets and hand lenses to discover who calls the wetland home.

Adventures in Science August 6-10

Love adventure? Interested in studying science outside? From valleys to rivers to mountain tops, we'll use our curiosity, questions and the tools of science to launch investigations into the natural processes at work in our region.

Drawing from Nature August 13-17

Inspiration often comes from the natural world. What better way to celebrate our natural wonders than through art. Explore different styles, experiment with natural materials and observe nature in a new light.

Grades 6-8

Special 3-day camp!

From Seed to Table August 7-9

Spend three days with Garden City Harvest and the Montana Natural History Center learning how our food gets from seed to table. We'll explore ways to plan food gardens, learn about the importance of pollinators, and taste the "fruits" of our labor! And we'll help Garden City Harvest get food ready for distribution to the Missoula Food Bank. NOTE: Camp runs from 9:00 a.m. to 2:00 p.m.; \$90 program fee includes lunch every day.

Map Your World August 13-17

Learn basic map reading and interpretation skills, how to use compasses and even how to use Global Positioning Systems (GPS) to map your world.

Teens

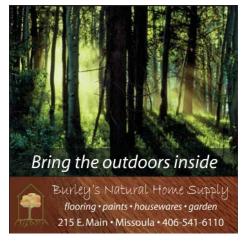
Leaders-in-Training Program ALL SUMMER

Teens 14-17 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 or 327-0405.

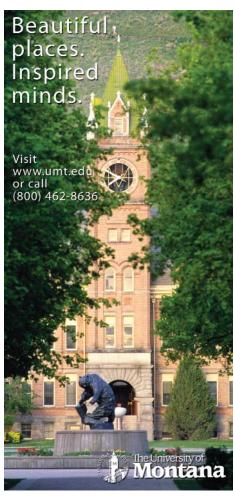




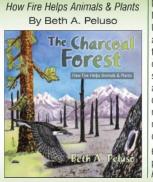








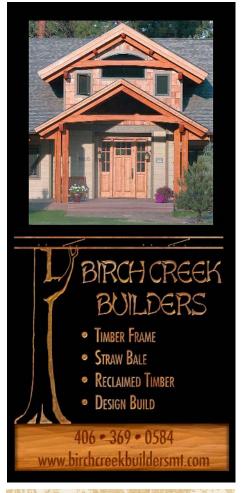




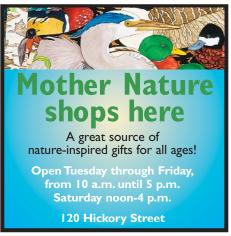
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By Charles Finn

Illustration by

Gabrielle Sivitz

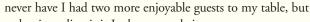
Two Fawns

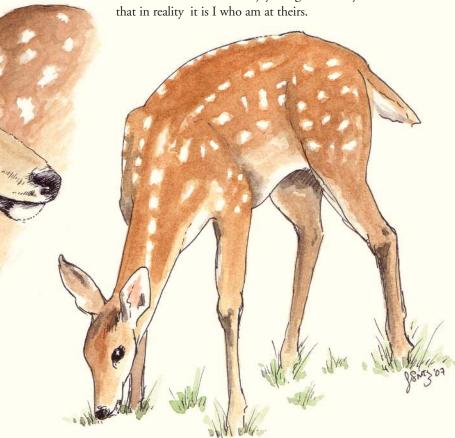
BOTH THIS MORNING AND YESTERDAY EVENING, while sitting outside eating my meals, in the exact quiet and soft light of those hours, a lone deer and two spotted fawns wandered into my yard. Such innocent faces, even in such times as these.

I'd seen the mother a number of times before, standing tall-eared and august in the meadow, or browsing idly on the willow trees in my yard. What I didn't know was that she was parent to two fragile creatures, timorous and knobby-kneed, not even half as tall as the green summer bracken. Looking at me, the two children blinked their almond-shaped eyes, batting their lashes as if I were the strangest sight they had ever yet seen.

I was no more than twenty feet away and seated on the grass. The mother seemed little concerned with this and wandered away over the bank. I was left with her two offspring, two tiny replicas of herself that pranced and played like two frisky colts, spinning in circles and leaping straight up in the air.

For many minutes I was entertained in this way, the fawns darting back and forth, halting abruptly, then dashing in circles again. With each pause they stared straight at me, sometimes stamping their small hooves, I know not, if in frustration that I, too, did not play. Then from some unknown signal or scent they took off in one direction, shooting back in another, lifting themselves effortlessly into the air. I was left with a vision of their white tails raised on the wind and the idea that





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