

# MONTANA Naturalist

Fall 2015

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

The Weight of a Billion Years:  
**Exploring the  
Beartooths'  
Rocky Heart**

Migration Stories | The Secrets of a Fen | Explore Montana's State Parks



# MONTANA Naturalist *Spring/Summer 2015*

## inside

### Features

4

#### TIME IN THE BEARTOOTHs

The Life of a Mountain,  
the Life of a Stonefly

BY SARAH CAPDEVILLE

6

#### CREATING NEW STORIES

A Naturalist Ponders Migration

BY BRIAN WILLIAMS

8

#### ANCIENT ASPENS

Studying One of Earth's  
Oldest Organisms

BY GILIA PATTERSON



4



6



8

13

#### COMMUNITY FOCUS

Noxon School gets students outside  
with new nature trail and outdoor  
classroom

14

#### FAR AFIELD

Unearthing the Secrets of a Fen  
BY ALLISON DE JONG

16

#### IMPRINTS

Best wishes to Arnie Olsen in  
his retirement; join us for our  
Fall Celebration and Auction;  
big thanks to Big Sky Brewery;  
spotlight on new staff; check out  
our new Pleistocene exhibit



14



9

### Departments

3

#### TIDINGS

9

#### GET OUTSIDE GUIDE

Explore western Montana state  
parks; *People Before the Park*  
book review; kids' corner;  
bog lemming maze



13

18

#### MAGPIE MARKET

19

#### REFLECTIONS

A Study of Skulls



16

**Cover** — The golden autumn splendor of an  
alpine larch is reflected in the waters of Glen  
Lake in the Bitterroots. Photo by Allison De Jong.

*No material appearing in Montana Naturalist  
may be reproduced in part or in whole without the  
written consent of the publisher. All contents  
© 2015 The Montana Natural History Center.*



**Montana Natural History Center**  
Connecting People with Nature

120 Hickory Street, Suite A  
Missoula, MT 59801  
406.327.0405  
www.MontanaNaturalist.org

**Executive Director**  
Thurston Elfstrom

**Education Director**  
Lisa Bickell

**Communications Coordinator**  
Allison De Jong

**Development & Finance  
Coordinator**  
Deb Jones

**Community Programs  
Coordinator**  
Christine Morris

**Visiting Naturalist  
Program Coordinator**  
Christine Wren

**Development & Marketing Director**  
Ramey Kodadek

**Native Plant Garden Manager**  
Sarah Lederle

**ID Nature Coordinator**  
Amy Howie

**Youth Programs Coordinator**  
Stephanie Laporte Potts

**Teaching Naturalist**  
Drew Lefebvre

**Office Manager**  
Holly Klier

**Volunteer Visiting  
Naturalist Instructors**  
Valerie Bayer  
Rod Snyder

**Volunteer Librarian**  
John Bremer

**Education Intern**  
Jenah Mead

**Board of Directors**  
Hank Fischer, *President*  
Stephen Speckart, *Vice President*  
Marcia Kircher, *Secretary*  
Betty Oleson, *Treasurer*  
Ian Foster  
Janice Givler  
Ryan Huckleby  
Kris Litz  
Colleen Matt  
Mark Metcalf  
Sarah Millar  
Edward Monnig  
Rick Oncken  
Tom Roy  
Kelley Willett

**Montana Naturalist  
Art Director**  
Eileen Chontos

## tidings

**Fall is upon us**, and I find myself looking forward to cooling temperatures, longer angles of sunlight, the renewal that the shifting season brings. I love fall for its vivid colors and crisp air and new beginnings.

This year in particular, fall encompasses new beginnings at the Montana Natural History Center. It's been a year of change for us, with some of our long-time staff moving on to the next phase of life, whether that be a new career or retirement. Arnie Olsen retired in June after eight years at the helm of MNHC, while Alyssa McLean is studying to be a nurse, Lena Viall is the new Development and Communications Coordinator at Five Valleys Land Trust, and Brian Williams will be teaching some lucky first graders at Hawthorne Elementary this fall.

These changes have provided us the exciting opportunity to create new positions to meet our growing needs, and we proudly introduce to the community the new members of the MNHC staff: Amy Howie, ID Nature Coordinator; Stephanie Laporte Potts, Youth Programs Coordinator; Drew Lefebvre, Teaching Naturalist; Holly Klier, Office Manager; and, as our new Executive Director, Thurston Elfstrom, formerly the Digital Marketing Manager for the Montana Office of Tourism. We will be hosting an open house to welcome Thurston and the rest of our new staff on Tuesday, September 8th, from 4:30-6:30 p.m. at MNHC—please join us for the celebration!

Besides celebrating all the wonderful new people at MNHC, we are, as always, celebrating the beauties of western Montana, too. In this issue naturalist Brian Williams writes about the joy of creating new stories from observations and experiences in nature (page 6). Gilia Patterson shares her awe of aspens, some of the oldest organisms on the planet (page 8). Cammy Shaw, kindergarten teacher at Noxon School, is thrilled to make use of the school's new nature trail and outdoor classroom to take her students outside (page 13). Writer Sarah Capdeville ponders the concept of geologic time on a trek into the Beartooth Mountains (page 4).

What will you celebrate this fall? Might you delight in exploring a fen, one of our rarer ecosystems (page 14)? Or perhaps visit one of Montana's many state parks (page 9) for a camping trip or a day hike? Maybe you'll take a ramble in the high country to see the alpine larches changing color, or simply sit in your backyard with a cup of tea, enjoying the scent of the autumn leaves and the honking of geese as they fly south for the winter. There are many ways to experience the beauties of the changing season—however you choose to do so, may you revel in it!

Happy fall!

Allison De Jong

EDITOR

[adejong@MontanaNaturalist.org](mailto:adejong@MontanaNaturalist.org)



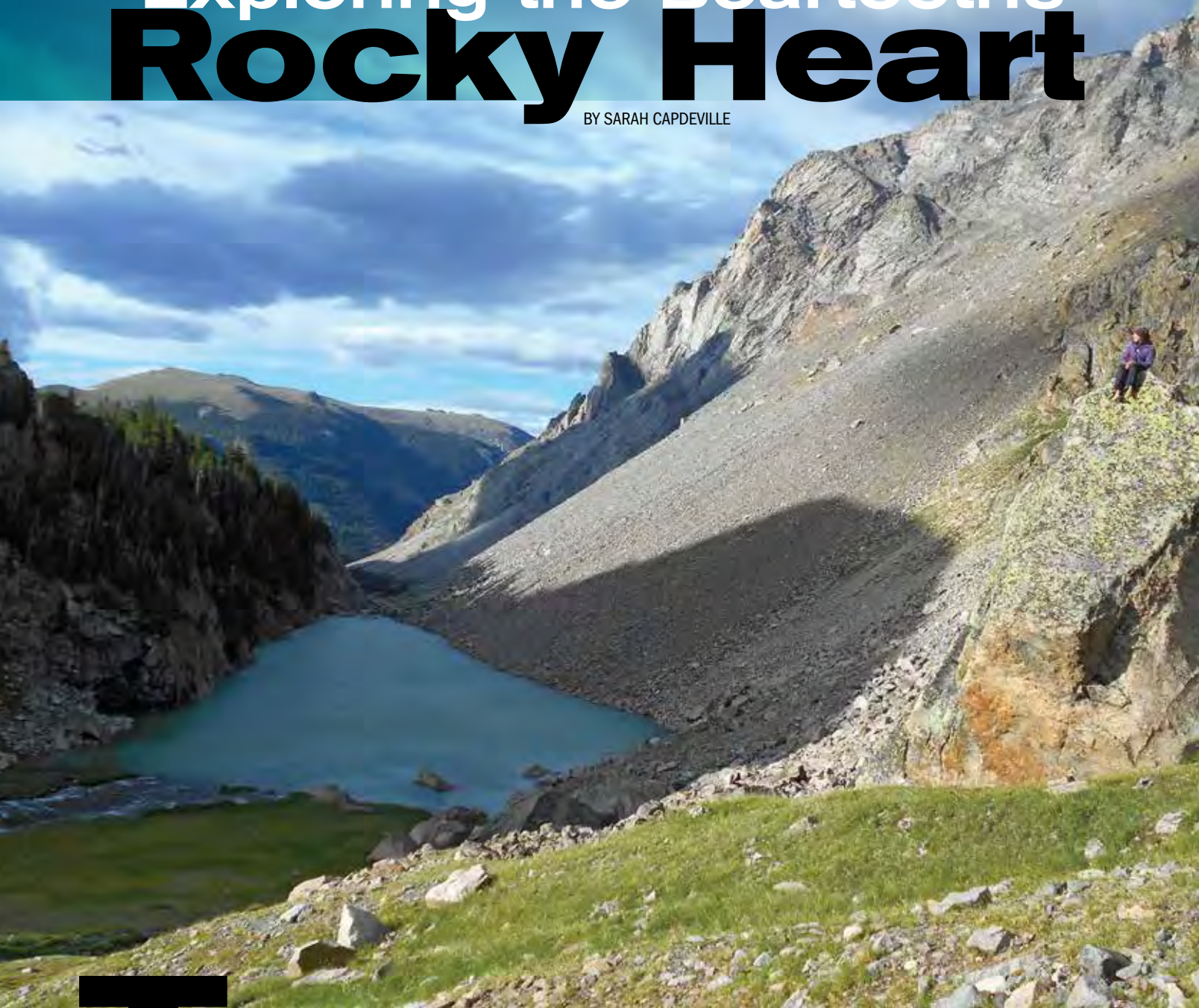
Admiring the autumnal colors at Glen Lakes in the Selway-Bitterroot Wilderness.

PHOTO: ALLISON DE JONG



# *The Weight of a Billion Years:* Exploring the Beartooths' **Rocky Heart**

BY SARAH CAPDEVILLE



**T**he stone slab had dried from the afternoon's rain and pressed roughly against my palms and bare feet. I peered up the steep face of the boulder I was attempting to summit and hesitated, my toes curled into a subtle ledge of rock. Wind rushed through a pocket of krummholz above and gusted against my face. Then the sun returned, low and the color of honey, and I scrambled up the boulder's sharp flank.

The view from the top of the boulder revealed a landscape characteristic of the Beartooth Mountains: spired peaks, rolling plateaus, sky-blue mountain lakes fed by whitewater streams. Above, Silver Run Peak jutted into the evening sky, and switchbacks cut down its side from Sundance Pass. Wildflower-rich fields sloped below to the rocky rim of Sundance Lake, and below that the valley holding the West Fork of Rock Creek fell gradually before turning east behind the plateau.

I took a deep breath as another rush of wind buffeted the rock and sent a clump of clouds shadowing the fields and lake. A windy weather system was blowing through the area; earlier that day, I had leaned over the edge of the pass and let the gusts hold my weight, forty-pound backpack and all. Here at the bottom of the pass the wind was less severe, but at just below 10,000 feet I sat in the midst of high currents of air that flowed above most of civilization. The clouds rushed past like a time-lapse





PHOTO BY DANNY SAVAGE

film; sun gave way to a peppering of rain and back again in a matter of seconds.

The geology of the Beartooths did not give way in a matter of seconds, but rather in a matter of millions and in some places billions of years. Many of these long valleys are U-shaped, smoothed away by glaciers from the most recent ice age, and quite a few still cling to high peaks today: Grasshopper Glacier, Castle Rock Glacier, Granite Glacier. These icy tongues deposited moraines below mountains and valleys, forming ridges and piles of sedimentary rocks sometimes hundreds of feet high. In the thick of forests and burned areas, huge boulders have rested among conifers and wildflowers for thousands of years,

**LEFT:**  
The author perches atop a boulder, looking out over Sundance Lake.

**BELOW:**  
Beartooth peaks: a glimpse of two billion years.



dropped haphazardly as the glacier grew and retreated across the slope.

Some 100 million years ago, a seaway stretched from the Gulf of Mexico to the Arctic Sea, gradually blanketing the Interior West in layers of sedimentary rock. In time, uplift and erosion drained the sea and broke apart these crumbling layers, revealing the Beartooths' rocky heart: a solid mass of metamorphic rock from the Precambrian Age, stone warped by heat and pressure over two billion years ago. Metamorphic rock forms when sedimentary or igneous deposits become compressed beneath grating tectonic plates, or when they edge too close to the earth's scalding core. When the stone emerges from the crust after thousands of years, its mineral composition has been altered; the extreme conditions of its formation make it the last type of rock to weather and erode away over time.

A band of white quartz about the width of my hand circled the boulder, surrounded by rougher grains of black, olive, and smokey hues. My gaze followed the lines of scree and talus slopes up Silver Run Peak, and I imagined how this massive chunk of mountain had come to lie at the plateau's more verdant base: dropped by the finger of a glacier or toppled for thousands of feet from the summit in a roaring tumble that rivaled the echo of thunder.

I laid my head back against the level top of the boulder, stared up at the turbulent sky, and tried to fathom the entity of two billion years.

There are moments, especially in wilderness, when time seems to stop, perched on some rim of contrast to our rushed lives in the valleys below. I've sat on the shore of Carter Lake in the Rattlesnake Wilderness and felt that hush of time: the narrow spruces and skeletons of whitebark pines and shards of snow filling the cliff gaps had stood timeless below the descent of the solstice sun, and I felt the swelling stillness of that instant tipping forward like the glossy water of the lake's outlet.

On that boulder at the base of Sundance Pass, there was no pause in time. It was mid-July, and yet wildflowers had just reached their peak blooms in the pockets between talus fields. Buttercups and grouse whortleberry bushes grew low

to the ground among clumps of soft grasses munched down by scampering marmots. At the base of the boulder I had found a stash of dry forbs tucked beneath some rocks, a sign that pikas were already preparing for winter. I turned my head westward, where the clouds were racing past golden spurs of East Rosebud Plateau, their wispy bellies and billowing heads level to my gaze. Time was gusting past in the buckling of rock layers, in the retreat of glaciers, in the flare of wildflowers, in the swirling and invisible currents of wind, holding at once the weight of billions of years and the seconds between spits of rain.

As I lay on my back atop that ancient Beartooth stone, I saw the facade of that static image of wilderness brush away with the wind. Change is scrawled across domed plateaus and glacial valleys, voiced by the chirp of a marmot and the eddy of a trout, etched down the mountainside where rocks have tumbled and split. It's easy to overlook these details, difficult to see two billion years as a dramatic passage rather than a single point in history. It takes an acute awareness, one I won't pretend I have reached, to understand both the life of a mountain and the life of a stonefly. It takes time.

***It takes an acute awareness, one I won't pretend I have reached, to understand both the life of a mountain and the life of a stonefly. It takes time.***

The rays of evening sun had left Sundance Lake below and were seeping ever higher up the mountainside, and the wind ran cold across my bare feet. I wanted to stay on that rocky vista and watch the sun turn to the Milky Way, the Milky Way turn to morning, the morning turn to winter, the winter turn to decades, the decades turn to epochs. But time, at my scale, would not allow that. I let out a long breath and rested my palm against the boulder's grainy face. In my mind, I tried to hold the expanse of plateaus and blue-silted lake and smooth valley, not as a single image, but as a changing landscape, one rolling ahead in all its constant metamorphosis. 🐉

*—Sarah Capdeville is a recent graduate of the University of Montana. You can find her backpacking, running, or traveling to wild places in Montana and beyond, or writing about them with a cup of tea in hand.*



# *Learning to Read: A Migration Story*

BY BRIAN WILLIAMS

One February afternoon in Missoula's North Hills, I walked into a big flock of robins. They moved through the sere grass in abrupt, unsynchronized movements, like actors in a silent movie—three steps, head cock; three steps, head cock—each in its own direction.

My blood quickened. Here was something unexpected; a large flock of robins, at the end of winter, in prairie habitat. The naturalist in me lives for these novel encounters, when observation lifts a veil on a new story. I watched more closely.

The disjointed marching was regularly broken when a robin stabbed at the freshly thawed ground. I bent down to see what the robins hunted, but could find nothing on top of the thick mud. I didn't realize the full extent of the flock until a group of about 50 birds lifted up in the wind and were swept to another hillside. The original flock was only diminished by about a quarter.

While robins overwinter in the Missoula valley, they do so in small numbers. Most years there are fewer than 50 total individuals reported on the Missoula Christmas Bird Count, an annual winter bird census. Clearly these weren't the usual winter residents. And while robins can seem ubiquitous in summer, they are spread more evenly across the landscape and confined to habitats that have at least a few trees for nesting.

The unusual combination of elements pointed to one conclusion—this was a migrating flock of birds. They were my first sign of spring that year, a memorable marker of the turning seasons.

The hunt for those moments when observations weave into prior experience to create a new story inspires my naturalist growth. It was my previous experiences watching and studying birds that framed this moment as unusual and, consequently, infused it with magic. The thrill of personal discovery, of creating stories from observation and experience, is the richest joy I find in being a naturalist.

And that thrill never ends. Just as my prior bird study created the opportunity to recognize the flock of robins as a sign of migration, the experience itself became the foundation for more discovery. A few years after my first encounter with late winter robins, I was out walking the North Hills in February again, specifically looking for the robins. I found them, but this time spread in many smaller groups throughout the North Hills, flushing as I walked close. Once, instead of flushing a little flock of robins, I flushed a raptor with prey in its talons. When it lit on a fence post I could see through my binoculars that it was a Peregrine Falcon, pinning a limp robin down between its talons! I was not the only one out looking for robins that day.

In time, I built even more stories, more personal connections to spring migration: Song Sparrows suddenly singing in evenly spaced intervals along the Clark Fork River during my pre-dawn runs in the middle of February; the fluting ring of meadowlark song in the first week of March; the week in early June when brilliant Western Tanagers flit in hundreds of fruit trees across Missoula yards. The richness of each experience was proportional to background that prepared me for it, and each encounter prepared me to ask better questions and experience migration in richer ways.

Indeed, some of the most memorable moments of my naturalist career have come when, for a short time, the migration of birds became visceral: lying on my back near Corpus Christi, Texas, watching thousands of Broad-winged Hawks stream overhead; running into a flock of a hundred bluebirds in the Blackfoot Valley

prairie, grounded on their flight north by a spring storm; sitting in a grove of live oak trees in south Texas, listening to the quiet *snap* of warbler beaks all around as they refueled on insects after a flight across the Gulf of Mexico. In those moments, I've felt caught up in, in contact with, a big, powerful force of the natural world. And when the experience passed, I had a new understanding, a new story of how the world works.

Once in a while, I find that the haphazard accumulation of experiences suddenly align into a larger meta-story that opens up a brand new perspective on the world. I remember the power of suddenly reversing my perspective on migration—perhaps the evolution of migration was successful not because it let birds avoid the harsh winter but because it let them exploit the temporarily rich resources of temperate and arctic summers. I'd always thought of migration as a winter survival mechanism, but perhaps it's a summer survival mechanism to avoid intense competition for resources in the tropics?

Suddenly, instead of marveling at how an adult Calliope Hummingbird can return to the same nest site each year, I began wondering how a first-year Calliope can navigate to a winter home that it has never seen before. Instead of admiring year-round residents like chickadees and Golden-crowned Kinglets for toughing out the winter, I began admiring them for sticking out the summer when they must compete for resources with many more species.

The idea is not one new to the world. Nor is it necessarily true. Even if the language we commonly use unconsciously supports the conception

of migration as a strategy for coping with winter, science clearly recognizes that migration is beneficial both to avoid winter and exploit seasonal resources. However, the idea, the story, is mine because I came to it through first-hand observation.

Now, when fall arrives and I watch a kettle of hawks circling over a patch of sun-warmed ground, I think of them as heading home rather than leaving. When the warblers and flycatchers and thrushes show up in their migration haunts, I wonder how many are making their first trip to an unseen home. In November I look forward to the birds who will come home to Montana for the winter—Northern Shrikes, Rough-legged Hawks, Snow Buntings. In this story of migration, autumn is the season of homecoming.

The story isn't important to science or even to the layperson especially. It is important because of the time I spent learning to decode it—time with binoculars and mentors and field guides in rain, sun, snow, ice, heat and humidity. It is important because I created meaning from experience and observation. It is important because it is one I read myself. 🐦

—Brian Williams was a professional naturalist for the past 10 years, guiding bird-watching tours in south Texas and working for the Montana Natural History Center. This fall he's migrating to a new career as a first-grade teacher in Missoula.



The thrill of  
personal discovery,  
of creating stories  
from observation and  
experience, is the  
richest joy I find in  
being a naturalist.



Pando in its fall foliage.



PHOTO BY J. ZAPPELL

# ANCIENT GIANTS

BY GILIA PATTERSON

The hot summer sun beat down on my back as I climbed the trail to the ridge. Looking for a place to wait for my hiking companion, I found a grove of quaking aspen. Their distinctive white bark was beautiful and their leaves rustled at the hint of a breeze. They did not offer much shade, so I instead opted for the shelter of a large ponderosa pine. Compared to the sturdy trunk of this pine, the aspen stems appeared slender, fragile, and not quite mature. The stand of aspen, however, was probably much older and much larger than my pine. In fact, aspen are some of the largest and longest-lived organisms on the planet.

Although a grove of aspen appears to contain many trees, it is actually one organism that arose from a single seed. Each aspen trunk, known as a ramet, shares the same underground

Although a grove of aspen appears to contain many trees, it is actually one organism that arose from a single seed.

root system. New ramets form from roots that grow horizontally underground for up to 100 feet. This is called vegetative, or asexual, reproduction. The collection of ramets connected to a single root system is called a clone or a colony, and all ramets in it are genetically identical. New colonies arise through sexual reproduction. In the spring, aspen produce catkins, and pollen from male catkins fertilizes eggs in female catkins. The fertilized eggs become seeds that float through the air as white, cottony tufts. Each seed can create a new colony.

A single seed gave rise to the largest and oldest known aspen colony. The colony, named Pando, covers 106 acres in Utah and contains about 47,000 ramets. It weighs more than 13 million pounds and is one of the largest organisms in the world. Scientists have estimated that Pando is an amazing 80,000 years old. Biologists identified Pando in 1976 by careful observation, and other biologists verified the boundaries in 2008 using modern molecular techniques. They found that ramets along the edges are genetically identical to those in the middle.

Anyone can tell apart different aspen colonies through careful observation. The time in the spring that aspen produce leaves is genetically determined. Clear boundaries form as different colonies leaf out at slightly different times. The angle between the branch and the trunk of ramets is also genetically determined. All of the ramets of one colony may form 45 degree branch angles, whereas a neighboring colony may form 80 degree branch angles. When used to identify colonies, these physical traits give the same results as molecular techniques.

How do aspen grow so large and live so long? One significant reason is that aspen thrive on fires, avalanches, and other disturbances. When all its ramets are destroyed, an aspen simply regenerates from its underground root system. A colony senses that ramets have been knocked down and produces new ramets even faster. A colony can expand over a large area because its extensive root system allows ramets in wet, rich soil to transport water and nutrients to ramets in dry, poor soil. As long as disturbances regularly knock down ramets and surrounding trees, an aspen will live and grow.

After a few minutes in the shade I continued on the trail, leaving the aspen grove behind. I have no way of knowing how long the grove had been there or how long it will live. But my guess is that, years from now, hikers like me will still pause to enjoy its beauty.

—This feature first aired as a Field Note on Montana Public Radio in July 2015. Gilia Patterson studies biology and math at the University of Montana. When not doing science, she enjoys trail running, hiking, biking, Nordic skiing, and playing foosball.



# Explore Western Montana's State Parks This Fall



Montana has 54 state parks (and counting), with the majority on the western side of the state. How many have you visited? Our state parks offer everything from natural wonders to cultural history to sparkling lakes and rivers, and are great places for families to get outside and explore. Don't know where to start? Here are a few suggestions:



## Council Grove State Park

For those in Missoula, this is a short drive west of town. Council Grove encompasses 187 acres of old-growth ponderosa pines, open fields, and riparian habitat along the Clark Fork River. The park is day use only, but is open year-round. Visitors can enjoy observing many bird species, from Lewis's Woodpeckers to Osprey to Great Horned Owls. A wide curve in the river offers a perfect swimming hole on a hot summer day, and there are lovely shady spots ideal for a picnic.

**Directions:** From I-90, take the Reserve St. exit (101), go south two miles to Mullan Road, turn west on Mullan and drive seven miles to Council Grove, which is on the left.

## Fish Creek State Park

This 5,600-acre park is the second largest in the state, and new enough that it is still in the process of being developed. With a variety of habitats, from the waters of Fish Creek to the peaks of mountains, it is a haven for a variety of wildlife, as well as full of beautiful places to explore. It is open year-round for myriad activities: fishing, hiking, biking, photography, wildlife viewing, huckleberry picking, snowshoeing, and cross-country skiing. There are a few scattered user-created campsites, with the hopes of creating a large, developed campground in the future.

**Directions:** Take exit 66 on I-90, and go south on Fish Creek Road.

## Painted Rocks State Park

Want to see migrating waterfowl in spring and fall? Want to camp in a quiet forest, with the chance of seeing deer, elk, moose and bighorn sheep? Painted Rocks State Park, which is open year-round, is just the place. This 23-acre park is located on the Painted Rocks Reservoir, providing not only great wildlife viewing, but boating, fishing and camping opportunities in the beautiful, remote setting of the West Fork Valley of the Bitterroot Mountains.

**Directions:** 17 miles south of Hamilton (and four miles south of Darby) on U.S. 93, turn west onto Route 473/West Fork Road and drive 23 miles.



## Placid Lake State Park

A popular summer spot, Placid Lake is located on a branch of the Clearwater River in the Swan Valley. The park is a great place for fun on the water, from swimming and fishing to boating and birdwatching. The 31-acre park has 41 campsites as well as a horseshoe pit, volleyball court, and boat ramp. There are also biking and hiking opportunities on old logging roads nearby. It is open from May 1st through November 30th, and fall is a beautiful (and less busy) time to enjoy the area.

**Directions:** From Clearwater Junction, take Hwy. 83 north ten miles, turn west onto North Placid Lake Road, and drive three miles to the park.



## Lost Creek State Park

A hidden gem near Anaconda, Lost Creek spills through a narrow canyon between 1200-foot towering grey limestone cliffs. One of the park's most popular spots is Lost Creek Falls, where a short, paved trail leads to the creek cascading over a 50-foot drop. The 500-acre park is open from May 1st through November 30th, with 25 campsites nestled in the forested canyon. Wildlife enthusiasts can look for bighorn sheep and mountain goats, and the area also offers hiking and biking opportunities.

**Directions:** From I-90, take exit 208 and go five miles on Hwy. 1 towards Anaconda. Take a right on Hwy. 48 and, soon after, a left onto Hwy. 273. In two miles turn left on Lost Creek Road and go six miles.

## Lone Pine State Park

Just outside of Kalispell, this state park has interpretive trails, a newly-remodeled visitor center with information on the wildlife and ecology of the area, and year-round workshops and programs for children and adults. The 270-acre park also has scenic overlooks providing beautiful views of the Flathead Valley, and offers several miles of trails for hiking, biking, horseback riding, wildlife viewing, and cross-country skiing.

**Directions:** On Hwy. 93 going north towards Kalispell, take the 93 bypass for 3.5 miles to Foy's Lake Road. Turn left after three miles onto Lone Pine Road and drive one mile to the park.



**WANT EASY ACCESS TO INFORMATION ON ALL OF MONTANA'S STATE PARKS?**

Download the free Official Montana State Parks Guide app, available at [www.pocketranger.com/apps/montana](http://www.pocketranger.com/apps/montana).

# get outside calendar

## MNHC Hours:

Tuesday-Friday, 9 a.m. - 5 p.m.

Saturday, noon - 4 p.m.

Admission Fees: \$3/adults (18+),  
\$1/children (4-18), \$7/family rate  
Free/children under 4 and MNHC members

## Programs for Kids

September 3 miniNaturalist Pre-K Program,  
10:00-11:00 a.m. \$3; \$1 MNHC members.

September 10 miniNaturalist Pre-K Program,  
10:00-11:00 a.m. \$3; \$1 MNHC members.

September 17 miniNaturalist Pre-K Program,  
10:00-11:00 a.m. \$3; \$1 MNHC members.

September 24 miniNaturalist Pre-K Program,  
10:00-11:00 a.m. \$3; \$1 MNHC members.

September 26 Saturday Kids' Activity,  
2:00-3:00 p.m. Explore Forest Fire! \$3;  
\$1 MNHC members.

October 1 miniNaturalist Pre-K Program,  
10:00-11:00 a.m. \$3; \$1 MNHC members.

October 8 miniNaturalist Pre-K Program,  
10:00-11:00 a.m. \$3; \$1 MNHC members.

October 15 miniNaturalist Pre-K Program,  
10:00-11:00 a.m. \$3; \$1 MNHC members.

October 22 miniNaturalist Pre-K Program,  
10:00-11:00 a.m. \$3; \$1 MNHC members.

October 29 miniNaturalist Pre-K Program,  
10:00-11:00 a.m. \$3; \$1 MNHC members.

October 31 Saturday Kids' Activity,  
2:00-3:00 p.m. Spooky Skeletons. \$3;  
\$1 MNHC members.

November 5 miniNaturalist Pre-K Program,  
10:00-11:00 a.m. \$3; \$1 MNHC members.

November 12 miniNaturalist Pre-K Program,  
10:00-11:00 a.m. \$3; \$1 MNHC members.

November 19 miniNaturalist Pre-K Program,  
10:00-11:00 a.m. \$3; \$1 MNHC members.

November 21 Saturday Kids' Activity,  
2:00-3:00 p.m. Our Wild Raptors. \$3;  
\$1 MNHC members.

December 3 miniNaturalist Pre-K Program,  
10:00-11:00 a.m. \$3; \$1 MNHC members.

December 5 Saturday Kids' Activity,  
2:00-3:00 p.m. Beaver Lodge Boogie. \$3;  
\$1 MNHC members.

December 10 miniNaturalist Pre-K Program,  
10:00-11:00 a.m. \$3; \$1 MNHC members.

December 17 miniNaturalist Pre-K Program,  
10:00-11:00 a.m. \$3; \$1 MNHC members.

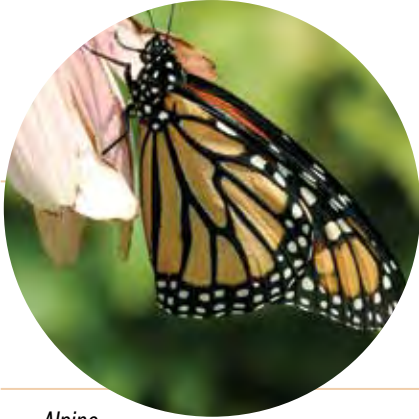

## Adult Programs

September Gallery, all month.  
Killdeer Artisans Guild Group Show.

September 4 First Friday Gallery Opening,  
4:30-6:30 p.m.

September 8 Open House & Celebration of New  
Staff, 4:30-6:30 p.m. Join us in welcoming our  
new staff, including Thurston Elfstrom, MNHC's  
new Executive Director!

September 16 Glacial Lake Missoula Chapter  
Meeting, 4:00 p.m. Free and open to the public.

SUN	MON	TUE	WED	THU	FRI	SAT
<b>September</b>						
30	31	1	2	3	4	5
	Monarch butterflies head south	Open House & Celebration of New Staff, 4:30-6:30 p.m.		miniNaturalists Pre-K Program, 10-11 a.m.	First Friday Gallery Opening, 4:30-6:30 p.m. Killdeer Artisans Guild Group Show.	
6	7	8	9	10	11	12
			Glacial Lake Missoula Chapter Meeting, 4 p.m.	miniNaturalists Pre-K Program, 10-11 a.m.		Naturalist Field Day, 9 a.m.-5 p.m. Local Geology featuring Glacial Lake Missoula.
		15	16	17	18	19
		Volunteer Naturalist Training, 3:30-5:30 p.m. Field Trip Training.		Fort Missoula Native Plant Garden Soup & Spud Fest, 5-7 p.m.		Saturday Kids' Activity, 2-3 p.m. Explore Forest Fire!
		22	23	24	25	26
	Alpine larches turn golden		Auction Volunteer Briefing, 4-5 p.m.	miniNaturalists Pre-K Program, 10-11 a.m.		Glacial Lake Missoula Chapter Field Trip, details TBA.
27	28	29	30	1	2	3
				October Gallery, All month. Staff Picks.		Fall Celebration and Auction, 5-9 p.m. University Center Ballroom.
	Brown and brook trout spawning			miniNaturalists Pre-K Program, 10-11 a.m.		
4				miniNaturalists Pre-K Program, 10-11 a.m.		
11	12	13	14	15	16	17
			Glacial Lake Missoula Chapter Meeting, 4 p.m.	miniNaturalists Pre-K Program, 10-11 a.m.		
			Naturalist Trivia Night, 7 p.m.			
18	19	20	21	22	23	24
		Golden eagles migrate		miniNaturalists Pre-K Program, 10-11 a.m.		Saturday Kids' Activity, 2-3 p.m. Spooky Skeletons.
25	26	27	28	29	30	31

DAVID CAPPAERT, MICHIGAN STATE UNIVERSITY, BUGWOOD.ORG

USDA FOREST SERVICE SOUTHERN RESEARCH STATION ARCHIVE, USDA FOREST SERVICE, SRS, BUGWOOD.ORG





# get outside guide

## Kids' Corner



### Holiday Scents: Simmering Potpourri

Cammy Shaw's kindergarten class at Noxon School spent time last fall learning about Montana trees, and that included an afternoon on the nature trail using their five senses to identify their favorites. The lovely rich scent of the cedar trees inspired a holiday craft project. The students collected a few cedar branches and combined them with dried orange peels (gleaned from their school lunches), cranberries and whole spices to create bags of "simmering potpourri" for their families—a perfect way to infuse a home with wonderful smells from Halloween to Christmas.

Help the northern bog lemming find its dinner of sphagnum moss!



POTPOURRI PHOTO BY CAMMY SHAW

## Book Review: *People Before the Park*

*People Before the Park*, newly published by the Montana Historical Society, is a fascinating read about the cultural and natural history of the land within and surrounding Glacier National Park. Missoula anthropologist, ethnohistorian, and ethnographer Sally Thompson, in collaboration with elders from the Kootenai and Blackfeet tribes, paints a rich picture of the land, plants, animals, cultural trails, and stories that are central to the historical homelands of both of these tribes.



The heart of the book presents two primary chapters, each created by cultural committee members from the Kootenai and Blackfeet tribes. Both narrate the natural history and stories of this unique landscape in the framework of the unfolding "moons" within a seasonal round "lifeway" during the 19th century. For the Kootenai, the stories begin in mid-winter at Apgar, "The Place Where They Dance." In the worldview of the Blackfeet, early spring, "When Geese Return" (March) signals the start of a new year.

One of the gifts in the publishing of this book is the cultural knowledge generously shared by each tribe. In their own voices, we learn about specific place names in Glacier that hold spiritual connections to their ancestral traditions. Black and white historical photographs and detailed botanical illustrations add depth to the narrative of their peoples' stories.

Sally Thompson's opening and closing chapters offer insightful commentary about the historical and contemporary sense of stewardship felt by both Kootenai and Blackfeet tribal members. She speaks to the importance of the effort required by all us to protect this unique treasure, the Crown of the Continent.

This title is newly available in the Montana Natural History Center library. Come check it out! —Christine Wren





# Noxon School Takes Education Outdoors

BY ALLISON DE JONG

Imagine a group of kindergarteners, armed with magnifying glasses and collection bags on a sunny fall day.

They cluster around a Douglas-fir on a forested hillside, enraptured with the bugs crawling up and down the bark. Next they find tiny mushrooms scattered along the forest floor, some of their caps jaggedly missing, looking decidedly munched upon. Then the kids crouch down around a line of deer prints in the earth, pointing excitedly, following the deer's trail. At last the group troops down the hill to a simple but sturdy pole building with three picnic tables, where they spread out their finds—leaves, scat, bugs, mushrooms. Their teacher asks, “So what did you learn

today about how animals prepare for the winter?” and a dozen small hands shoot into the air. Cammy Shaw, the kindergarten teacher at Noxon School in Noxon, Montana, wants scenarios like this to become commonplace. And thanks to Noxon School's new nature trail and outdoor classroom, getting kids outside has become infinitely easier. Shaw takes her students outside often, in every season and all kinds of weather. In addition to teaching her students about animal adaptation, hibernation, and migration as she did last November, she also uses the nature trail and classroom to teach about seasonal change, insects, scat, dinosaurs, geology, Native technologies, and more.

As a participant last year in A Forest for Every Classroom, a year-long place-based workshop for educators, Shaw was particularly interested in finding ways to get her students outside. In spring 2014 she chatted with Teri Burt, Noxon's high school science teacher, and learned that Burt had long wanted an outdoor classroom on the school property, but thus far the project lacked the necessary



**TOP:** Cammy Shaw's kindergarteners measure dinosaur “bones” in their new outdoor classroom.  
**BOTTOM:** Noxon School's nature trail is ready for young explorers!



funding. That conversation inspired the two educators to do what they could in the meantime, so they created a nature trail on the hillside at the back of the school property, weaving it up the hill through dense trees to an open area with a patch of thimbleberry bushes.

Their original dream became reality when the school ordered a simple pole building that it ended up not needing. Shaw and Burt knew from the moment they saw it that the building would make a perfect outdoor classroom, and thanks to their fundraising efforts and generous support from the community, it was purchased and installed in October 2014. Shaw's kindergarten class began

using it immediately, and she and Burt are encouraging their fellow teachers to incorporate more outdoor time into their lessons as well.

“I want all the teachers to start using it, because it's a great resource,” says Shaw. “I'd love to do some trainings and provide materials that help teachers to [use the nature trail and classroom] for their areas, whether it be math, science, art, history—we've found ways to cover every single subject.” She and Burt have already created several themed trunks—one on animals, one on forestry, and one on aquatics—that are filled with resources from books to tools to specimens, and can be used for kindergarteners, high schoolers, and every grade in between.

Shaw has a lot of freedom in developing her curriculum, for which she is immensely grateful. Now she is working to help her colleagues figure out how they can integrate Montana's common core standards into outdoor lessons, from shop classes building benches for the outdoor space to art classes making shadow drawings with leaves and branches. “We just have to be creative in putting the two things together to benefit both,” Shaw says with enthusiasm. “There's no end to what you can do—it makes it lots of fun.”





## *Unearthing Secrets:* **A Day in a Montana Fen**

STORY AND PHOTOS BY ALLISON DE JONG

**Squoosh. Squoosh.** My feet, encased in calf-high rubber boots, sank into the thick sphagnum moss, and water crept up to the ankles of my boots. I pulled one foot free with a loud squelch, lunged towards the nearest hummock, then rescued my other foot. The hummock was just big enough for me to balance on, and the water lapped the toes of my boots.

I was spending the day in a fen in the Swan Valley with a dozen fellow naturalists, learning about the flora and fauna of these unique ecosystems from Kristi duBois, a wildlife biologist for Fish, Wildlife and Parks, and Steve Shelly, a regional botanist for the Forest Service. Before allowing us to venture out onto the unstable surface of the fen, Kristi and Steve had warned us to avoid walking in each other's footsteps and not to get too near the areas of open water, and reminded us that hummocks, slightly thicker and more stable collections of plant matter, were our friends.

From my mostly-secure perch, I watched the rest of the group make their

way across the fen, their movements cautious yet erratic. The surface undulated beneath their feet, as though it were an enormous waterbed—which wasn't so far from the truth. The fen's surface was not solid ground. What looked like solid ground was actually a thick layer of peat resting on the water beneath. In some places the layer was thinner; in some, non-existent, and in these places the wide discs of lily pad leaves floated on the surface of the open water.

Steve explained to us that peatlands, a general term that includes fens and bogs, are places where peat has accumulated to a thickness of at least twelve inches, and often more. Peat consists of partially-decayed plant material—not just moss, but any kind of plants. For peat to form, an area needs to be wet—saturated, in fact—throughout the year. In these waterlogged places, decomposition is anaerobic (without oxygen), and thus slower than it would be if the decomposition was aerobic (with oxygen). The cooler temperatures in prime



**TOP:** Intrepid naturalists, armed with rubber boots and walking sticks, make their way across the wet, undulating surface of the fen.

**ABOVE:** Slender cottongrass in full seed. Though a species of concern in Montana, it is abundant in this fen.



peat ecosystems also slow decomposition. The organic plant matter accumulates at a faster rate than it decomposes, resulting in the peat layer gradually thickening. In western Montana, peatlands deepen by one to two inches every century.

We also learned that the bedrock beneath and around a fen affects the amount of plant diversity within it; limestone or calcitic bedrock, like that in the Swan Valley, is alkaline and supports more diversity, while granitic areas are acidic and support fewer types of plants. The fen we were exploring was somewhere in between, with a nearly neutral pH, but even so was home to several plant species of conservation concern in addition to the more common sedges, mosses, and forbs.

That morning, when we'd stood on the moat (the firmer, less peaty ground on the edge of the fen), looking across the bright green meadow-like expanse, one of the first things I noticed was bits of white fluff scattered about. Upon closer inspection, that fluff turned out to be cottony seeds perched atop slim stems; we learned this was slender cottongrass (*Eriophorum gracile*), that, though abundant in this fen, was rare elsewhere.

Another species of concern that was abundant here was *Drosera anglica*, the carnivorous English sundew. We couldn't walk across the fen without stepping on them—they created a veritable, and sticky, blanket beneath our feet. These plants look like something from another planet: a tiny green “paddle” covered with stiff, pinkish-red hairs, each with a miniscule glistening drop at its tip. The drops are incredibly sticky, and any insect unfortunate enough

to brush against them finds itself trapped... and dissolved. Most of the sundews I stooped to study more closely had some type of insect caught in their dew, and a few had even trapped unlucky dragonflies and damselflies.

Not all animal life finds fens to be unlucky places, however. The dense mat of water-saturated plants provides ideal habitat for many invertebrate species, and, on the other end of the size spectrum, large mammals such as moose, elk, and even grizzly bears have been observed in fens around western Montana. Of all

The surface undulated beneath their feet, as though it were an enormous waterbed—which wasn't so far from the truth.

the wildlife that can be found in and around fens, however, what I most hoped to catch a glimpse of was the extremely rare northern bog lemming (*Synaptomys borealis*), whose primary habitat is fens with thick mats of sphagnum moss. Kristi informed us that this small brown rodent is so rare as to be Montana's rarest mammal, with only 30 documented findings, mostly through trapping, though she had been thrilled to glimpse one on a wildlife camera only a couple of weeks before.

So when, on our way around the far edge of the fen, I saw a small, dark form dart out of a nearby hummock, I couldn't help but hope that this was my (very) lucky day. Several of us were walking together, and we saw perhaps half a dozen brownish rodents scampering away from our intruding feet. One of them burst from hiding two inches from my boot, pausing

just long enough for me to get a good look at its tail, which was about an inch and a half long—alas, too long for a northern bog lemming, which has a very short tail. Kristi told us that they were most likely meadow voles (*Microtus pennsylvanicus*), a much more common rodent, but still exciting to see scurrying through the moss. I wondered how many other small animals were hiding just out of sight, and imagined them creeping out once we were gone and the fen was quiet once more.

Our shadows swung eastward and we began making our reluctant way out of the fen, stopping to admire a few final plants: the wine-red flower of a marsh cinquefoil (*Comarum palustre*); the white flowering stalk of hooded lady's-tresses (*Spiranthes romanzoffiana*), one of the orchid species that can be

found in fens; and one more carnivorous plant, greater bladderwort (*Utricularia vulgaris*), which has an underwater bladder that opens inward when triggered by small organisms, then quickly snaps closed, trapping its prey in less than a second.

At the edge of the fen, I looked out over the vivid green carpet of plant life rooted in a floating mat of partially-decayed plants, thinking how well it hid its secrets, how like a normal meadow it looked. I jiggled the peat mat beneath me one last time before stepping onto firm ground. Squoosh. Squoosh. 🐾

**LEFT:** Carnivorous English sundews wrap their sensitive, dew-tipped “tentacles” around insects to digest them.

**CENTER:** Kristi shows skins of two of the small rodents that can be found in fens: meadow voles (top) and southern red-backed voles (bottom).

**RIGHT:** Fens are a great habitat for orchid species, such as this flowering hooded lady's-tresses.



# imprints



## Executive Director Arnie Olsen Bids Farewell to MNHC

In June, Arnie Olsen, our Executive Director for the past eight years, retired and moved to the Oregon coast. Arnie leaves behind him an organization that is stronger than ever, on the cusp of its 25th anniversary. Since Arnie took the helm in 2007, MNHC has:

- Established our headquarters at 120 Hickory Street in Missoula as a permanent home and center for nature education and completed a full remodel of the interior and exterior of our building that mirrors the quality of our programming.
- Expanded every program that takes place under the roof and out in the field including Visiting Naturalist in the Schools, Master Naturalist, Center Tours, Naturalist Field Days, Summer Outdoor Discovery Day Camps, miniNaturalist Pre-K programs, Evening Lectures, Naturalist Trivia Nights, and so much more.
- More than doubled our permanent staff positions.
- Launched new programs including ID Nature (featuring green screen technology and teacher workshops offered statewide).

As Arnie wraps up his career with MNHC, we are reaching more than 2,700 children through direct programming, 1,200 adult community members through workshops and trainings, nearly 1,000 teachers and students through the traveling trunk program, and thousands more through *Montana Naturalist* magazine and *Field Notes* on KUFM.

MNHC changed so much with Arnie's leadership and the hard work of staff, board members, and generous donors, it's hard to remember how things used to be—and to realize just how far we've come! The board and staff at the Montana Natural History Center thank Arnie for his leadership, his vision, and the experience he brought to our organization. Enjoy your retirement, Arnie!

## SPOTLIGHT:

### Stephanie Laporte Potts, Youth Programs Coordinator

We are thrilled to welcome **Stephanie Laporte Potts** to MNHC in the new position of Youth Programs Coordinator! Stephanie has an M.S. in Environmental Studies from the University of Montana, and B.A.s in Environmental Science and International Studies from American University. After falling in love with the natural world while at summer camp in her native Michigan, she has spent the last decade working in environmental outreach, education, and program management in Montana, Chile, Canada, and on the east coast with organizations including the Student Conservation Association, EarthShare, the University of Montana, and Garden City Harvest. An avid birder, hiker, and gardener, Stephanie can often be found weeding her front lawn while surrounded by chickens, or exploring the rivers and mountains of Montana.



### Drew Lefebvre, Teaching Naturalist

We are also excited to welcome **Drew Lefebvre** as our new Teaching Naturalist! Drew grew up in the beautiful hemlock forests of southern Maine.

She attended college in Boston, where she received a B.A. in Linguistics and Philosophy. In 2009 she moved to Missoula for a season of trail work, and has been spending as much time as possible outdoors ever since. She credits local organizations such as the Montana Conservation Corps, the Great Burn Study Group, and the Wilderness Institute for providing her with experience as an environmental educator and naturalist. Most recently, she received an M.S. in Environmental Studies, with a focus on Environmental Education, from the University of Montana. Drew spends her free time exploring the natural world through hiking, backpacking, gardening, reading, and birding. She is thrilled to begin her time here at MNHC.

PHOTO BY ADAM POTTS

PHOTO BY MERLE ANN LOMAN

PHOTO COURTESY DREW LEFEBVRE



## MNHC Welcomes New Board Members

Several new members have recently joined MNHC's Board of Directors. We'd like to give a hearty welcome to Ian Foster, Kris Litz, Colleen Matt, Sarah Millar, Tom Roy, and Kelly Willett. We're so glad to have you on board!

And a big thank you to our outgoing board members who have given time, energy, and passion to MNHC for the past several years: Julie Cannon, Susie Graham, Sally Johnson, and Penny Ritchie. We're so grateful for all you've done!



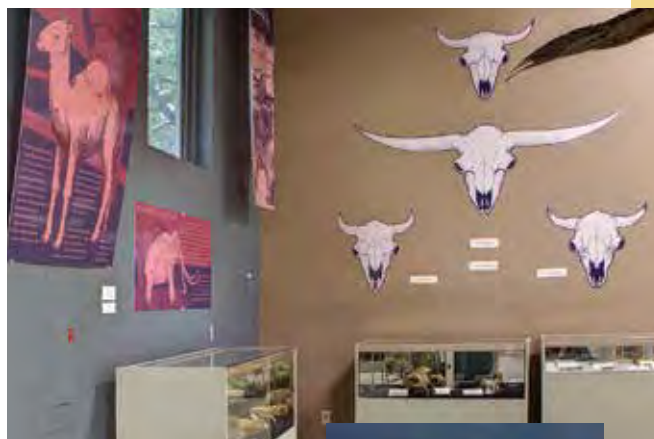
MNHC PHOTOS

## A Big Thanks to Big Sky Brewery!

We've had another great summer of music at Big Sky Brewing Company's summer concert series! Our volunteers and staff have poured beer for a variety of great shows, with an average of 28 volunteers selling beer tickets, pouring beer and serving water to thirsty concert-goers at each show. Proceeds from last year's beer sales allowed us to buy a beautiful new bus so we can keep getting kids and adults out into nature, and proceeds from this year's sales will allow us to buy another one. Big Sky Brewing Company's support has been tremendous and we can't thank them enough for allowing us this special opportunity!

## It's Time to Party!

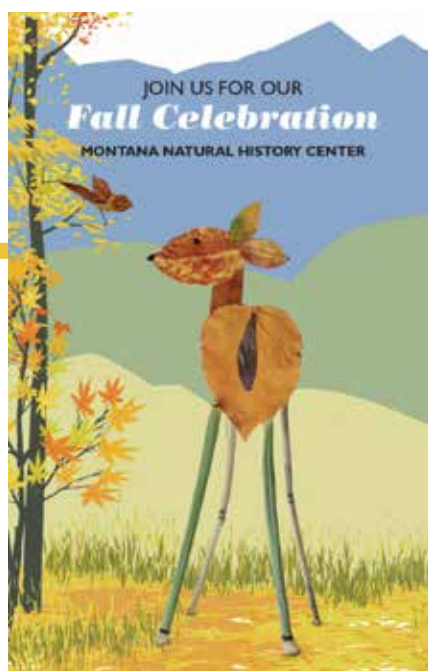
Our Fall Celebration & Auction is changing venues—this year's festivities will be held in the beautiful University Center Ballroom! Join us on Saturday, October 3rd, for dinner & drinks, socializing, and the opportunity to bid on an exciting variety of nature excursions, unique travel packages, local artwork and more in both our live and silent auctions. Reserve your tickets today by going online to [www.MontanaNaturalist.org](http://www.MontanaNaturalist.org) or calling 327.0405. \$50 per person (\$60 per person after September 19th).



## Journey Back to the Pleistocene with our Newest Exhibit



This past spring our Education Intern, Tom McKean, collaborated with the University of Montana Paleontology Center to put together a brand-new exhibit on the Pleistocene Era at MNHC. Come learn about Pleistocene megafauna (including bison, camelops, and mammoths), enjoy Tom's beautiful drawings, and check out cool fossils from mammoth teeth to camelops bones. In addition, we have a case of fossils from the private collection of Sherri Lierman, one of MNHC's dedicated volunteers, which includes a variety of mostly Pleistocene flora and fauna, including a "terrible pig" jaw, a caddisfly in amber, and a replication of the canine tooth of a saber-toothed cat.





**TALLEST PINE IN THE WORLD  
LIVES IN A FOREST AT RISK**



Learn what can be done about it in our new book by **Carl E. Fielder and Stephen F. Arno**

**PONDEROSA**  
People, Fire, and the West's Most Iconic Tree  
248 pages • 6x9  
102 color illustrations  
23 historical photos  
\$20.00, paperback

**MP Mountain Press**  
PUBLISHING COMPANY  
P.O. Box 2399 • Missoula, MT 59806 • 406-728-1900  
800-234-5336 • info@mountainpress.com  
www.mountainpress.com

**Love kids? Love nature?**

Volunteer with our Visiting Naturalist full-day field trips!

Field trips run every school day in October.

Spend a day (or three) outside with 4th and 5th grade students teaching them about our big, beautiful world!  
To volunteer or for information, contact Stephanie Laporte Potts, Youth Programs Coordinator at 327.0405 or [spotts@montananaturalist.org](mailto:spotts@montananaturalist.org)



*Tune in to*  
**Field Notes**

Hear all about the flora, fauna, bugs and birds of western and central Montana.

Field Notes can be heard Sundays at 12:55 p.m. and Tuesdays and Fridays at 4:54 p.m. on KUFM/KGPR radio, 89.1 in Missoula and 89.9 in Great Falls.

Field Notes welcomes new writers and sponsors. Contact the Montana Natural History Center at 327.0405 for details.

**Montana**  
Public Radio



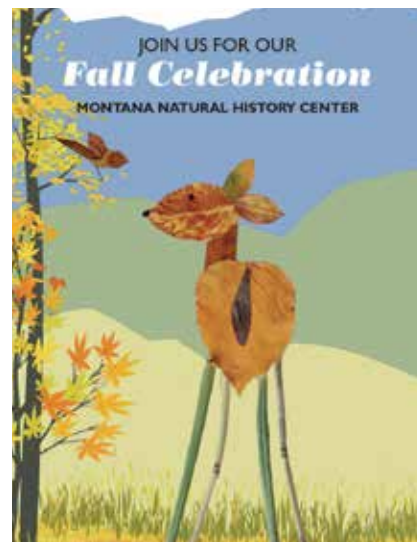
 **REcreate** designs



upcycling since 2005



[www.recreatedesigns.com](http://www.recreatedesigns.com)



**Saturday, October 3, 2015**

5:00-9:00 p.m.

University Center Ballroom

Join us to support MNHC's ongoing efforts to

**Connect People with Nature,**

visit with old friends and meet new ones, and bid on live and silent auction items.

[www.MontanaNaturalist.org](http://www.MontanaNaturalist.org)  
or call 327-0405.



**UMT.EDU/BEE**



**GOOD FOOD**  
S T O R E

[www.goodfoodstore.com](http://www.goodfoodstore.com) | Missoula | 406.541.3663



*Friends of the*

**Lee Metcalf National Wildlife Refuge**

P.O. Box 758, Stevensville, MT 59870

406-777-5645



# A Mammalian Skull Study

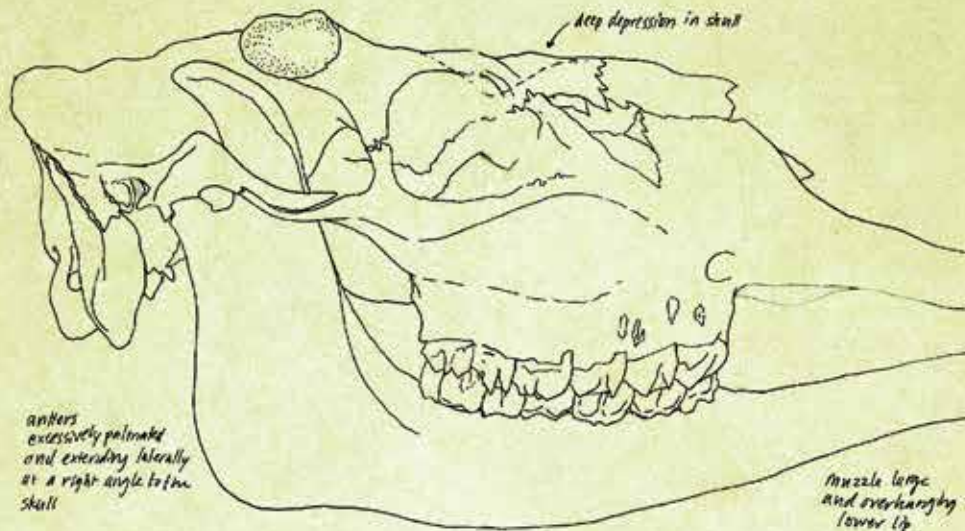
DRAWINGS BY TOM MCKEAN



*Taxidea taxus*  
BADGER



*Canis latrans*  
COYOTE

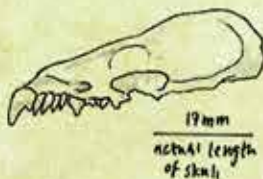


*Alces alces*  
MOOSE



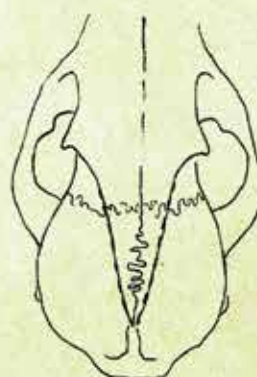
*Sorex palustris*  
N. WATERSHREW

22 mm  
actual length of skull



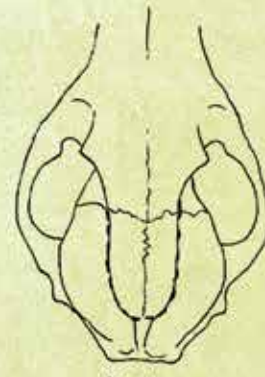
*Sorex merriami*  
MERRIAM'S SHREW

19 mm  
actual length of skull



*V. vulpes*

*Vulpes vulpes*  
RED FOX



*V. velox*

*Vulpes velox*  
SWIFT FOX

"V" vs. "U" shaped temporal ridges

Tom McKean is a recent graduate from the Wildlife Biology program at UM and an aspiring naturalist. He currently lives and stalks nature in Salt Lake City, UT.



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

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

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.*

☐ Family Membership: \$50 ☐ Individual Membership: \$35

☐ Supporting Membership (magazine only): \$10

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

☐ I am enclosing payment by check.

Name \_\_\_\_\_

Address \_\_\_\_\_  
\_\_\_\_\_

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

Phone \_\_\_\_\_

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

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.

*Start getting connected with a visit to our website –*

***[www.MontanaNaturalist.org](http://www.MontanaNaturalist.org)***. *Become a member online, 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, Suite A,  
Missoula MT 59801 or Fax: 406.327.0421**

## Family & Individual 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



**If you have enjoyed** the articles and  
photos in *Montana Naturalist*, won't you  
please help us continue to celebrate  
Montana's natural history by becoming a  
supporting member? Your \$10 donation will  
go directly to support the costs of producing  
this magazine. *Thank you!*

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