



Montana Natural History Center

Fall 2016

MONTANA Naturalist

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



**Celebrating 25
Years of MNHC**

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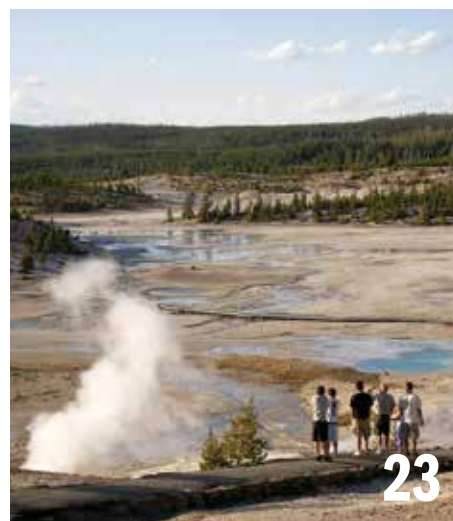
Welcoming new staff; Every Kid in a Park gets kids outside; come visit our Nature Adventure Garden; Annual Banquet & Auction on October 7; check out our YouTube channel!



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Cover — An American pika (*Ochotona princeps*) perches alertly on a rock in the talus slopes of its territory in Yellowstone National Park. Photo by Dave Shumway, www.daveshumway.com.

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tidings

I've visited a few more of our national treasures than usual in the past year. The

Grand Canyon and the Redwoods and Devil's Tower in addition to my usual trips to Glacier and Yellowstone. It seems particularly fitting this year, as the National Park Service celebrates its 100th birthday. They're

an amazing resource, our national parks. I visited the Tetons and Yellowstone last week, and was amazed, as always, not only by their beauty, but by the wide variety of people enjoying these places along with me. I heard German and French and Japanese. British and Canadian accents. Chinese and an eastern European language I couldn't quite place. Our national parks have a decidedly international feel.

I was heartened by so many diverse people spending time outside, exploring and enjoying the natural world. I love that people from all across the planet are visiting a remote corner of our country, simply because it's beautiful. To be one of a thousand people gasping in delight as Old Faithful spouts a steamy plume of water 150 feet into the air is an unexpectedly sacred experience. I am grateful that people still find the natural world awe-inspiring—and I hope that those visiting our national parks are, perhaps, inspired further: to better understand, and care for, and protect our wild, unique places. Because it's going to take all of us, working together, to ensure that this beauty remains for future generations to enjoy.

And so I am also heartened, as always, by the curious and caring naturalists who are right here in our community. Writer and naturalist Danielle Lattuga revels in the colorful world around her, and explores the purpose of the kaleidoscope of colors that surround us (page 8). Hundreds of kids in our Visiting Naturalist in the Schools classes got to go out on field trips this spring, learning to interpret, and then craft a lovely record of, what they observed (pages 11 and 18). Journalist Sophie Tsairis shares the story of one rare species of stonefly that depends on glaciers for its survival, wondering if we can act quickly enough to keep it from extinction (page 16). And naturalist Drew Lefebvre ponders wildfire—both its devastating and restorative effects—in a place she loves that has been forever changed by it (page 20).

What places do you love? What natural wonders fill you with joy, ignite your curiosity, and inspire you? What wild things do you want to protect?

As I ponder the topics shared in this issue, from the vast landscapes of the Great Burn to the tiny insects in an alpine stream, I am reminded of the gift of our public lands and preserved places like our national parks. May we strive to help them see another 100 years of inspiring travels, photography, and endless learning.

Allison De Jong

EDITOR

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Hundreds of people, of all ages and nationalities, watch the spectacular eruption of Old Faithful in Yellowstone National Park.

PHOTO BY GREG WILLIUS. FLICKR.COM



The Montana Natural History Center celebrates 25 years of connecting people with nature in 2016. For these three issues, *Montana Naturalist* is adding four extra pages to showcase MNHC's history: conversations with founders and long-time supporters, stories and photos from the archives, and fun memories of all MNHC has accomplished over the past quarter century. Join us for our walk down memory lane!

Celebrating 25 Years of the Montana Natural History Center: A Conversation with Lisa Bickell and Brian Williams

Lisa Bickell, Education Director, and Brian Williams, former staff Naturalist,

have spent a combined 23 years working for MNHC. I sat down with them recently to hear about their experiences as staff during MNHC's last decade (and more) of growth and change.

Allison De Jong: When did you both start working at MNHC, and in what capacity?

Lisa Bickell: I interned at MNHC in '99, my last year in college. I volunteered a bit with field trips up on Mount Jumbo, and also helped out with summer camps. I didn't actually start working as an employee until summer 2004, when I was hired as the Youth Programs Coordinator.

Brian Williams: I started in 2003, helping with the Watershed Festival, and then with summer camp in 2004. I did the Watershed Festival a second year, and then I did the Master Naturalist class, all while I was in grad school. I came back in 2007, and Lisa hired me to teach in the Visiting Naturalist in the Schools [VNS] program. I taught VNS, and also ran the Master Naturalist program, until I left in 2015.

ADJ: How has MNHC changed since you first started?

BW: I feel like I've seen MNHC grow in fits and starts. We bite off a big chunk, and then it's really hard for a little while, and then we recover and catch up with the vision. When we moved from Fort Missoula to Hickory Street, I remember people being excited about all the walk-in traffic we'd get. But when we got there and had people walking in, we were like, "What do we do with all this walk-in traffic?!" So we closed on Mondays and were only open half days. It was a big step that we weren't fully prepared for.

But then we grew into the space and were able to do more. We're doing three summer camps a week instead of one. The Master Naturalist classes went from once in the spring to three times a year. And VNS is

no longer 25 classes with volunteers doing a lot of the teaching, it's now 70 classes taught mostly by staff.

LB: We've got this history of setting goals that seem big and sometimes scary. The staff and board set these goals, and then freak out a bit: "Why did we say we're going to do that? Because now we have to do it!" It's challenging and uncomfortable at first, and then, because we have great people, we sometimes go beyond our own goals.

We've gone through periods of really fast growth, and realized there needs to be a balance between quantity and quality. We want to provide programming to meet the community's needs, but there's a tipping point when our quality will diminish because we're trying so hard to accommodate everybody. We've had to



Lisa Bickell teaching Visiting Naturalist in the Schools classes and summer camps in her early days at MNHC.





Brian Williams teaching kids about birds—one of his favorite subjects—during MNHC summer camps in the mid-2000s.



scale some things back here and there, because we wanted to make sure we had the best possible programs.

ADJ: What other ways has our programming shifted over the years?

LB: We've definitely put a lot of energy into VNS. When Brian came on, it became more structured with goals and objectives. That made it a much more powerful program, and I think the teachers have all been pretty happy with it.

BW: Teachers have always liked the program—I don't think we've ever gotten negative feedback on it. But when I came on, and Lisa became the Education Director, it was the first time that MNHC had someone whose only responsibility was VNS. My whole focus was on Visiting Naturalist, so there was time there to develop the curriculum.

ADJ: I think that's another strength of MNHC, the freedom to develop programs, for our staff to be creative and follow their interests.

LB: When people are given the time or space to think, they have lots of wonderful ideas. We have periods where we max out our staff, and then we hire new people, and everyone goes, "Ahhhh..." and we shift duties around, and suddenly we have all this time. And then we find more to do, because we are a never-ending source of energy and creativity and ideas.

BW: I feel like MNHC has always been good at accepting outside ideas—I wasn't an employee of MNHC when I ran the first Master Naturalist class; it was my graduate project. And that's a strength, being open to outside ideas and people.

LB: MNHC is very open to partnerships. We've always partnered with the Forest Service and the University, and more recently the National Wildlife Federation, the International Wildlife Film Festival, and many others. We've come up with some good ways to work with other organizations.

ADJ: What do you think is the best thing we do at MNHC?

LB: My favorite program is Visiting Naturalist in the Schools. It accomplishes what it sets out to accomplish in such a strong way. We also stick to our mission really well; we know exactly what it is that we're trying to do. We don't give up easily on programs. We don't give up easily on new ideas. We always know that we're trying to ensure that the study of natural history and celebrating natural history is important in our community. We work really hard to achieve that broad goal. And everybody at MNHC really believes in it, and believes in the power that that can have.

BW: I think MNHC is really good at being flexible and open-minded, at getting the best out of their staff because they're willing to let people try new things and not get stuck in a rut of how things have always been. Lisa let me tweak the VNS program when she saw I had time to do that, and Christine Morris is taking the Master Naturalist course in her own direction. That's very important to being a good organization.

ADJ: Where would you love to see MNHC go in the next 25 years?

BW: I think there's room for MNHC to be a bigger partner with the schools. The Visiting Naturalist program is really well

received, but because it's only in 4th grade, MNHC isn't as well known in the schools as other organizations. A lot of teachers would appreciate more support in teaching science—and there's not a lot of great accessible science curriculum out there. I think there's opportunity there for MNHC to step in, be a bigger resource and become a more well-appreciated organization across all grades within public schools.

LB: I want us to be among the most professional organizations in Missoula for educational nonprofits, and I'd love to be the leader in the state for environmental education. I want to be able to say that I work at the Montana Natural History Center and have people say, "Oh, yeah, I love that place!" I want to have a better exhibit area that has more changing opportunities, so you have more people coming in to see what's new.

BW: I think it'll take deciding what MNHC wants to be more well known for—it'll take a bit of focusing. We'll be defining the niche a little more, over the next 25 years. It's fun to think about.

ADJ: Is there anything else you'd like to share?

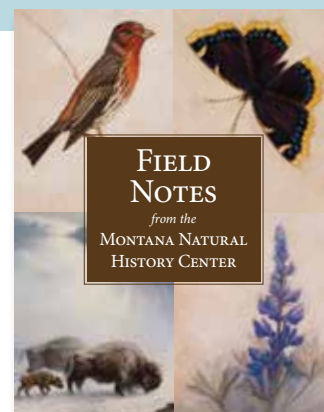
LB: Every now and then I think, "Why do I still work here?" And you know? Every single day there's something different. You show up one day, and you have to change an exhibit. Or you're putting in a garden, then doing some website work. No two days are ever the same.

To look back 25 years, and see where we are now, is amazing. I don't think I'll be working here in 25 years—I will definitely be retired. But I will come to the 50th anniversary party! 🐦

The Montana Natural History Center has had a wonderful year celebrating 25 years of existence:

- We've showcased history, stories, and photographs from the archives in this year's issues of *Montana Naturalist*.
- We're publishing *Field Notes from the Montana Natural History Center* this fall, an exciting celebration of both the Field Notes program and MNHC itself.
- We joined the Association of Science-Technology Centers, providing all of our members with reciprocal admission to more than 400 science centers and museums around the world.
- We transformed the weedy lot on the east side of our property into a beautiful Nature Adventure Garden, filled with native trees and shrubs and materials for natural play.
- Thanks to the generosity of Destination Missoula, we were able to offer free admission to our Center all summer, and saw hundreds of new people come through our doors.
- We had two fabulous events earlier this year: our Founder's Celebration in May and our Community Celebration in June.
- At our Founder's Celebration we had the privilege of honoring the many people who have played a role in the conception, creation, and continuance of the Montana Natural History Center—past and present board members, supporters, volunteers, and staff.
- Our Community Celebration was an opportunity to thank the larger Missoula community for their support over the past 25 years, and to introduce ourselves to those who have yet to learn about us. With toe-tappin' music from the Salamanders, a presentation by Mayor Engen, beer from Big Sky Brewing, and delectable food from the Big Dipper, Big Thai Country, Covered Wagon Hotdogs, and El Cazador, we had several hundred people join us for a marvelous party in our parking lot despite the cool, rainy weather.
- We are looking forward to a final hurrah (including a special 25th anniversary video) at this year's Annual Banquet & Auction on October 7th.

***Thank you for celebrating with us, and thank you for your support!
Here's to the next 25 years!***

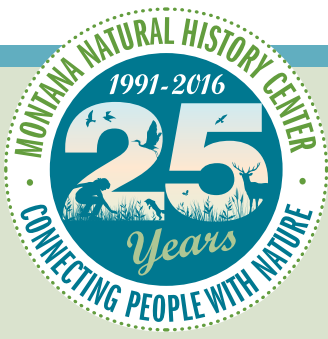


Order Your Copy of *Field Notes from the Montana Natural History Center* Today!

After two years of hard work (not to mention ten years of dreaming beforehand) to put together a book-length collection of Field Notes, Caroline Kurtz and the Montana Natural History Center are excited to announce the early October publication of *Field Notes from the Natural History Center*, showcasing 134 Field Notes written by 112 contributors over the past 25 years. The book also includes dozens of drawings by naturalists in our community and cover and section illustrations by the talented Stephanie Frostad.

With topics ranging from birds to geology to insects to mammals and more, *Field Notes from the Montana Naturalist History Center* is a perfect gift for your children, parents, friends, and family! Purchase price is \$17.95, with all proceeds going to support our natural history education programs. Purchase your copy at MNHC or order online at www.MontanaNaturalist.org!

Join us for a book launch party at the Montana Natural History Center on Friday, November 18th, from 5:00-7:00 p.m., where we'll celebrate our excellent publication with readings, an honoring of the contributors, and, of course, drinks and light hors d'oeuvres!



As To The Mission: The Next 25 Years

In a recent conversation with a longtime supporter of the Montana Natural History Center, the notion was brought up that it is getting prohibitively expensive to go outside. Call it the “gear tax.”

I wanted to reject this argument. After all, don’t all my friends hike and camp regularly? They certainly all carry along binoculars, and many have various field guides and mapping apps on their smartphones, as well as other naturalist gear. And don’t even get me started on my large tribe of fishing and hunting friends—talk about gear fiends.

But I had to concede that while some of my friends and relatives are lucky enough to have disposable income to afford these things, many of my friends and our fellow Montanans prioritize camping and hiking gear, naturalist paraphernalia, or recreational equipment while sacrificing other, more basic expenditures for their love of being outdoors.

Why do they do this? You know the answer: because we love to be outside. And we were lucky enough, at some point in our lives, to learn the value of spending time outdoors.

The Montana Natural History Center has always strived to get people outside and connected with nature. Over the years, we’ve been able to keep our services available to people of all socio-economic standing through the incredible generosity of supporters and charitable foundations.

We provide our highly impactful Visiting Naturalist in the Schools program to every school that we can physically get to. Period. For classrooms that are too far away, we are going to them digitally, providing live, dynamic, and interactive natural history education to students in rural Montana.

To ensure access for everyone, we offer scholarships for our wildly popular Summer Outdoor Discovery Day Camps and Master Naturalist courses.

And thanks to a visionary partnership with the Missoula Tourism Business Improvement District and Destination Missoula, we were able to offer free admission to our exhibits and gallery this past summer. This partnership fostered an incredible 300 percent increase in visitation to the Montana Natural History Center.

Why do we do this? Why does it matter? Because having a strong and healthy relationship with nature isn’t something that only people with means deserve.

Our imperative is that all Montanans—all people—understand, appreciate, and steward the natural world. To cite the oft-quoted Senegalese conservationist Baba Dioum, “In the end we will conserve only what we love, we will love only what we understand, and we will understand only what we are taught.”

In the next 25 years the Montana Natural History Center will certainly see growth. It will see the emergence of new ways to conduct great environmental education and connect people with the natural world. We’ll see changes in our footprint, both in influence (larger) and carbon (smaller).

But one thing that will remain the same is the focus on getting people outside, regardless of who they are or how much they make. We will keep teaching people about nature, never giving up the hope that they will understand, love, and conserve it for the next 25 years. And the 25 years that follow. And so on.

Thurston Elfstrom, Executive Director




Why do we do this?
Why does it matter?
Because having
a strong and
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only people with
means deserve.



Hunting the & Meaning of Color

STORY AND PHOTOS BY DANIELLE LATTUGA



When I moved to Montana from New England twenty years ago, I knew I would miss my three “f’s”: family, fireflies, and fall. Each one of those things brought its own style of color to my life, and in this drier, more rugged landscape, I was not sure what would catch my eye and find its way to my heart. Don’t get me wrong, I was enamored with Montana—its sheer bigness, its stonier ground, its bare, raw bones. But, I couldn’t help asking questions like:

Where are the sugar maples and birch trees?
What actually lives above tree line?
Will my skin ever taste humidity again?

Those questions were as fleeting as a Montana summer, and my first fall brought some surprising color. Willow leaves paled and dropped to reveal branches glowing red and orange—swaths of flame against blue sky. Western larch shone brilliantly in gold, like someone had pulled the string on a light bulb in the attic and lit up the dark forest. And of course, aspen and cottonwoods dropped yellow pools of leaves at their roots.

“Who needs sugar maples and fireflies?!” I thought.

The beauty of it all elated me.

Clearly, I need color emotionally, but I would be a bit narcissistic to think that all this color is made just to please me. Wouldn't I? In fact, as many of us have learned, color isn't necessarily made. It's perceived. Objects emit light in various combinations of wavelengths. Then, our minds interpret those wavelength combinations as color. As Sir Isaac Newton conveyed in his early studies, color is in the eye of the beholder. (Technically, it's in the brain.)

So, maybe it is all about me!

All joking aside, I find that fact fascinating in and of itself, but it begs another question: what then is the purpose of color?

Color's Many Hats

We know that color plays an important role in nature, but that role varies dramatically. There are innumerable examples of animals that use color to camouflage themselves so that they may be safe from predators or conceal themselves from prey. In Montana, Great Horned Owls blend into the bark of ponderosa pines or cottonwood trees so stealthily that even the most attuned birder may have trouble picking them out. Or consider the ermine (a.k.a. short-tailed weasel): it molts seasonally, growing a white coat to match the wintry landscape and slink along as quiet as a glacial breath.

Countless species of birds use colorful plumage to help attract a mate. Locally, the Lazuli Bunting comes to mind, with its electric blue back and day-glow orange breast. Who wouldn't want to date a guy bold enough to dress like that?

When it comes to plants, flowers bloom a particular color in order to attract a particular pollinator. In the spring, buttercups and arrowleaf balsamroot emerge first, not to wake us up with their cheery hues, but because flies, the first pollinators to emerge, are attracted to yellow. Next comes summer, and the deer will likely wait to pillage your apple tree until the fruit has blushed from green to pink—color tells them when their food is best to eat.

In the case of my beloved maple leaves (and other fall foliage), those fiery hues are a result of the change the plant is going through in response to conditions in the ecosystem. Leaves possess three primary pigments that allow them to reflect and absorb the different wavelengths of light that we interpret as color: chlorophyll, carotenoids, and anthocyanins. Leaves reveal the color of the dominant pigment found in them. In most cases, that is chlorophyll, and it is what makes a leaf green. In the fall, that chlorophyll begins to break down—not because of cooler temperatures, as we once thought, but because of a shorter photoperiod (or period of daylight). Trees possess a chemical called phytochrome that measures the photoperiod and “tells” a tree when to prepare for winter or begin abscission (dropping leaves). The tree begins by growing a layer of corky cells where the petiole of the leaf attaches to the tree. These corky cells prevent water and nutrients from getting in and sugars from getting out. That's when existing chlorophyll begins to break down and no new chlorophyll molecules are being made. Not coincidentally, that's also when fall colors begin to emerge, as the other pigments (namely carotenoids) become visible. So, deciduous

Nature's bright colors are all around: in arrowleaf balsamroot (top), mountain ash (middle), and western larch against a cerulean sky (bottom).



Top: A lazuli bunting sings, in full blue and orange breeding plumage.

Bottom: Ultraviolet patterns on plants lead butterflies such as this swallowtail to their flowers—in this case, mock orange blossoms.



trees like our lovely maples change color when a tree breaks down its valuable chlorophyll to save those resources, adds a few less costly pigments to protect the leaves as they change, and ultimately reveals the other, underlying yellow and orange pigments like the carotenoids.

The Eye of the Beholder

It's not just that we humans and other animals perceive color. More often than not, we perceive it differently. The cone cells in our retinas have varying degrees of spectral sensitivity that determine how many colors we see and at what intensity.

While most mammals are dichromats (typically only able to distinguish between blues and greens), humans are trichromats; we respond to red, green and blue stimuli. But bees and butterflies see even more color. Their range of vision extends into the ultraviolet realm. They can see the ultraviolet patterns on the leaves of the plants they pollinate and those patterns, or "nectar guides," lead them deep into flowers, to ensure a successful symbiotic relationship.

As far as we know, butterflies have the widest visual range of any wildlife. The Chinese yellow swallowtail butterfly possesses pentachromatic vision that is sensitive to UV, violet, blue, green, and red wavelengths. These butterflies can find food in shady places and on cloudy days.

When it comes down to it, butterflies are an all-around interesting study in color. It's no secret that the intricate color patterns on a butterfly are designed to foil predators, but the really interesting part is that the optical effect of those patterns is a structural manifestation, not pigment. The physical arrangement of the scales on their wings allows them to refract, diffract or interfere with light in such a way that, in the eye of a predator, they appear as flashes or disappear altogether. This can make them very difficult to catch and it's why older butterflies often have chunks missing from their wings—evidence of their brushes with death, or beaks, as the case may be.

But what about we humans? Why are we gifted with the ability to see so much color?

Neuroscientist Mark Changizi says that the human eye evolved, in part, to glean what another person feels by detecting subtle changes in skin tone: "One of the most important things in our lives is other people's faces and the skin on those faces. The brain really cares about seeing the small differences."

Further, in color theory, we have the concept of harmony.

What is pleasing to the eye? What engages the viewer and creates an inner sense of order? Color harmony creates a dynamic equilibrium that humans can engage with. If there is a lack of visual harmony, the viewer may either experience under-stimulation or over-stimulation—both of which result in disengagement with what one is seeing. The brain will reject what it can't understand. Color harmony, on the other hand, will evoke interest and a sense of order. Dynamic equilibrium enables a person to perceive something clearly and interpret risks or changes in the environment that could cause disease or death.

This all makes good sense, since we are so dependent on each other for so many things. And, it alludes to my own personal, totally subjective, non-scientific theory: Humans are emotional beings. Feelings are a big part of what makes us who we are and why we do what we do. Maybe humans can see all the beautiful color in the world so that we engage deeply with nature and develop a relationship that inspires us to care for and protect it. And, that's not just about the warm fuzzies. It's about preserving our species. If we take care of what sustains us, we ensure survival of our species.

In that way, maybe color really IS about us. 🐦

—Danielle Lattuga is a writer, editor and Master Naturalist who lives happily in Missoula, Montana. You can read more of her work at letterstomontana.com.

PHOTO BY MICK THOMPSON, FLICKR.COM

PHOTO BY DANIELLE LATTUGA

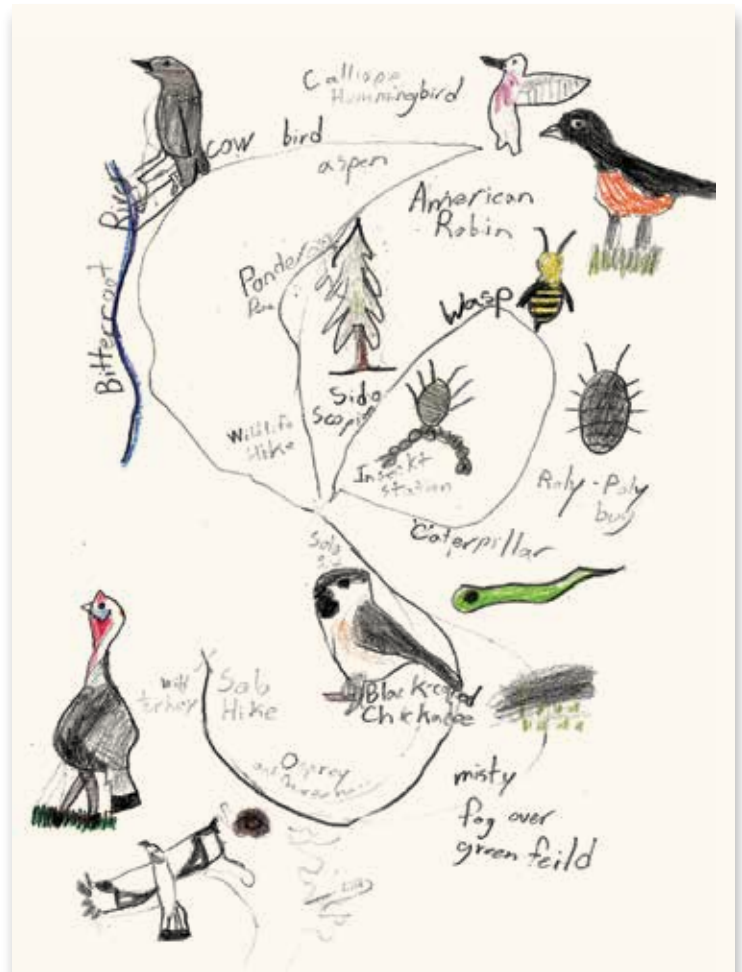
Make Your Own Event Map!

BY DREW LEFEBVRE

Event maps are a wonderful way for naturalists of all ages to document time spent outdoors. The next time you explore a special place, why not create an event map of your day?

Start by making careful observations of your surroundings. Most naturalists find it helpful to take notes during this process. Jot down your location, the date, weather, and any other interesting background information. Then, each time you notice something new, make a few notes about it. For example, if you walk down to the river bank, write down what you observe. How does the water look, sound, and feel? Is it moving quickly or slowly? Is it clear or murky? Are there any plants nearby? Take a moment to add a quick sketch, using labels or arrows if you like. Continue to take notes and create small sketches for any interesting things you notice during your day. The more detail you include now, the better your event map will be later!

When your day outside has drawn to a close, it's time to put all your notes to use. Find a fresh piece of paper and sketch out your route. Use dotted lines or footprints to represent the path you followed throughout the day. At appropriate spots, add drawings and information based on the notes you took. Once you've filled in all your information, you'll have a map of where you spent your day, uniquely marked to reflect exactly what you experienced at each spot along the trail. Your event map will not only be a reminder of a wonderful day spent outside, but will also serve as research. The next time you visit your special spot, you'll know just what to look for and what to expect, and you'll be able to tell right away what has changed!



Event map of field trip at Council Grove by Tyler Hotchkiss, 4th grader at Hawthorne Elementary in Missoula.

Kids' Corner

Event map submitted by Aubrey Sharbano, 4th grader from Pablo Elementary in Ronan.



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 1, 8, 15, 22, 29 miniNaturalist
Pre-K Program, 10:00-11:00 a.m.
Program free with admission.

September 3 Saturday Kids' Activity,
2:00-3:00 p.m. Animal Olympics.
Program free with admission.

October 6, 13, 20, 27 miniNaturalist
Pre-K Program, 10:00-11:00 a.m.
Program free with admission.

October 22 Saturday Kids' Activity,
2:00-3:00 p.m. Night Creatures.
Program free with admission.

November 3, 10, 17 miniNaturalist
Pre-K Program, 10:00-11:00 a.m.
Program free with admission.

November 12 Saturday Kids' Activity,
2:00-3:00 p.m. Track it Out!
Program free with admission.

December 1, 8, 15, 22, 29 miniNaturalist
Pre-K Program, 10:00-11:00 a.m.
Program free with admission.

December 3 Saturday Kids' Activity,
2:00-3:00 p.m. Wild Gift Workshop.
Program free with admission.

Adult Programs

August Gallery, all month. Sally Hickman:
Backyard Bird Project, Set II.

September Gallery, all month. Don Jones:
Wildlife Photography.

September 2 First Friday Gallery Opening,
4:30-6:30 p.m.

September 7 Sip and Sketch with Nancy Seiler,
7:00-9:00 p.m. Butterflies. \$25.

September 8 Fort Missoula Native Plant Garden
Program, 5:30 p.m. Soup and Spud Fest. \$5.

September 16-18 Naturalist Field Weekend,
3:00 p.m. Friday-6:00 p.m. Sunday.
Dinosaur Dig. \$300; \$280 MNHC members.

September 21 Glacial Lake Missoula Chapter
Meeting, 4:00 p.m. Free and open to the public.

September 23 Evening with a Naturalist:
Robert Michael Pyle hosted by Annie Garde,
7:00 p.m. \$60.

September 24 Glacial Lake Missoula,
8:00 a.m.-6:00 p.m. The Classic Tour. Register
with GLM Chapter at 406.728.5221.


























October Gallery, all month. Don Jones:
Wildlife Photography.

SUN	MON	TUE	WED	THU	FRI	SAT						
<h1>August</h1> <div><p>August Gallery, All month. Sally Hickman: Backyard Bird Project, Set II.</p></div>				<h1>September</h1> <div><p>miniNaturalist Pre-K Program, 10-11 a.m.</p></div> <div><p>First Friday Gallery Opening, Don Jones: Wildlife Photography 4:30-6:30 p.m., show up all month.</p></div> <div><p>Saturday Kids' Activity, 2-3 p.m. Animal Olympics.</p></div>								
28	29	30	31	1	2	3						
<div><p>Streamside cottonwoods turn golden</p></div>				<div><p>Volunteer Naturalist Training, 4-5:30 p.m.</p></div> <div><p>Sip and Sketch with Nancy Seiler, 7 p.m.</p></div>	<div><p>miniNaturalist Pre-K Program, 10-11 a.m.</p></div> <div><p>Fort Missoula Native Plant Garden Program, 5:30 p.m. Soup and Spud Fest.</p></div>	6	7	8	9	10		
11	12	13	14	15	16	17						
18	19	20	21	22	23	24						
25	26	27	28	29	30	1						
<div><p>Beavers add to winter food caches</p></div>				<div><p>miniNaturalist Pre-K Program, 10-11 a.m.</p></div>	<div><p>Annual Banquet and Auction, 5-9 p.m.</p></div>	2	3	4	5	6	7	8
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SUN	MON	TUE	WED	THU	FRI	SAT
		November		 miniNaturalist Pre-K Program, 10-11 a.m.	 First Friday Gallery Opening, 4:30-6:30 p.m. Steve Slocomb: Sunburst Wildflowers.	
30	31	 November Gallery, all month. Steve Slocomb: Sunburst Wildflowers. 1	2	3	4	5
6	7	8	9	 miniNaturalist Pre-K Program, 10-11 a.m.	 Saturday Kids' Activity, 2-3 p.m. Track it Out!	12
		 Glacial Lake Missoula Chapter Meeting, 4 p.m.	 miniNaturalist Pre-K Program, 10-11 a.m.	 Field Notes from the Montana Natural History Center book launch party, 5 p.m.	18	19
		 Evening Program, 7 p.m. Naturalist Trivia Night. 15	16	17	18	19
				December	 Saturday Kids' Activity, 2-3 p.m. Wild Gift Workshop.	26
27	28	29	30	 miniNaturalist Pre-K Program, 10-11 a.m.	 First Friday Gallery Opening, 4:30-6:30. Gail Trenfield and Mary Kelley: Water and Sky: Ninepipes Landscapes. 1	2
		 Evening Program, 5-7 p.m. Wreath Making.	 December Gallery, all month. Gail Trenfield and Mary Kelley. 30	 miniNaturalist Pre-K Program, 10-11 a.m.	2	3
		27	28	29	30	31
		 Volunteer Fall Fiesta, 4:30-6:30 p.m.	 Evening Program, 7 p.m. Working Dogs for Conservation. 6	 miniNaturalist Pre-K Program, 10-11 a.m.	8	10
18	19	20	21	22	23	24
		 Evening Program, 7 p.m. Naturalist Trivia Night. 14	 miniNaturalist Pre-K Program, 10-11 a.m.	15	16	17
		 Glacial Lake Missoula Chapter Meeting, 4 p.m.	 miniNaturalist Pre-K Program, 10-11 a.m.	21	22	23
		18	19	20	21	22
25	26	27	28	29	30	31

Resident waterfowl seek out open water

Pygmy nuthatches roost together in tree cavities to keep warm

October 7 Annual Banquet and Auction, 5:00-9:00 p.m. at the University Center Ballroom. Bid on exciting trips, naturalist experiences, and fun items in our live and silent auctions, enjoy a delicious dinner, and celebrate with us as we wrap up a great **25th anniversary** year! \$50.



October 19 Glacial Lake Missoula Chapter Meeting, 4:00 p.m. Free and open to the public.

November Gallery, all month. **Steve Slocomb: Sunburst Wildflowers.**

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

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

November 16 Evening Program, 7:00 p.m. **Naturalist Trivia Night.** \$5 suggested donation; MNHC members free.

November 18 Field Notes from the Montana Natural History Center book launch party, 5:00-7:00 p.m. Enjoy drinks and light hors d'oeuvres as we celebrate our Field Notes book publication! Free.

November 30 Evening Program, 5-7 p.m. **Wreath Making.** \$10; \$7 MNHC members.

December Gallery, all month. **Gail Trenfield and Mary Kelley: Water And Sky: Ninepipes Landscapes.**

December 2 First Friday Gallery Opening, 4:30-6:30 p.m.

December 7 Evening Program, 7:00 p.m. **Working Dogs for Conservation.** \$5 suggested donation; MNHC members free.

December 14 Evening Program, 7:00 p.m. **Naturalist Trivia Night.** \$5 suggested donation; MNHC members free.

December 21 Glacial Lake Missoula Chapter Meeting, 4:00 p.m. Free and open to the public.

Volunteer Opportunities

September 7 Volunteer Naturalist Training, 4:00-5:30 p.m. Introduction to volunteering with the Visiting Naturalist in the Schools Program. No prior experience necessary.

September 21 Volunteer Naturalist Training, 4:00-5:30 p.m. Visiting Naturalist in the Schools Field Trip Training. Learn how to teach kids about the flora and fauna of western Montana during the October VNS school field trips for 4th and 5th graders. No prior experience necessary.

October 5 Auction Volunteer Briefing, 4:00-5:00 p.m. We need ~25 volunteers to assist with our Annual Banquet & Auction on October 7. At this brief training a few days before the event, we'll go over the schedule of events, assign tasks, and discuss the various duties for the evening.

December 7 Volunteer Fall Fiesta, 4:30-6:30 p.m. Enjoy good food and conversation with MNHC staff and your fellow MNHC volunteers in appreciation of your time and effort!

get outside guide

Naturalist Word Search

S	L	H	D	R	B	B	U	T	T	E	R	F	L	Y	arboretum
A	B	T	H	G	W	U	E	Z	G	H	C	R	A	L	Big Burn
I	T	G	Z	B	H	S	T	O	N	E	F	L	Y	O	butterfly
R	H	N	A	E	R	I	F	D	L	I	W	E	I	P	cedar
E	P	E	D	I	C	H	R	O	M	A	T	I	C	V	color
I	A	L	F	D	D	M	U	T	E	R	O	B	R	A	dichromatic
C	M	E	H	Q	B	B	Z	M	O	N	T	A	N	A	endangered
A	T	V	K	R	A	P	L	A	N	O	I	T	A	N	event map
L	N	A	P	V	S	I	P	P	E	P	I	K	A	T	glacier
G	E	W	E	N	D	A	N	G	E	R	E	D	P	L	invertebrate
D	V	Q	X	B	I	G	B	U	R	N	J	M	U	W	larch
R	E	D	Q	F	F	M	M	R	Q	C	O	L	O	R	Montana
G	U	L	T	R	A	V	I	O	L	E	T	K	L	B	national park
A	E	T	A	R	B	E	T	R	E	V	N	I	O	Y	pika
E	B	R	C	Y	C	E	D	A	R	Y	H	U	D	D	stonefly
															ultraviolet
															wavelength
															wildfire

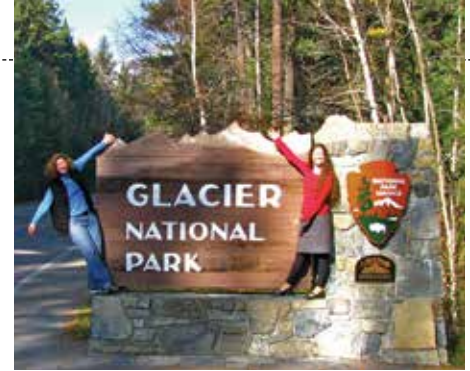


PHOTO BY GREG PETERS

DID YOU KNOW...

that our National Park Service sites (which include National Parks, National Monuments, and National Recreation Areas) offer free entrance days? There are two this fall: on September 24, National Public Lands Day, and November 11, Veteran's Day. Fall is a wonderful time to enjoy Glacier and Yellowstone and other sites farther afield; crowds are fewer and the fall foliage and weather are stunning. Happy exploring!

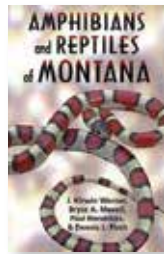
Looking for something to read? Stop by and check out the Montana Natural History Center's Staff Picks from the Ralph Lee Allen Environmental Education Library!

Amphibians and Reptiles of Montana

by J. Kirwin Werner, Bryce A. Maxwell, Paul Hendricks and Dennis L. Flath

I've really enjoyed learning more about amphibians and reptiles from this fantastic guidebook. There are clear photos of adults, eggs, and larval stages, and the background information contains helpful descriptions of behavior, habitat, and development. I have used this book frequently on river trips and have found the descriptions of adult and juvenile frogs and toads very useful in identification.

~Christine Morris

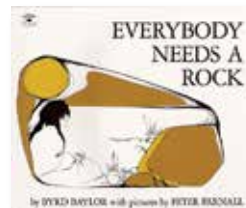


Everybody Needs a Rock

by Byrd Baylor, illustrated by Peter Parnall

We love reading this book to summer campers at MNHC. It has a beautiful story and pictures, but most importantly, it asks readers to get up, go outside, and engage with nature. Do you have a special rock? Everybody needs one: this book will show you where to start.

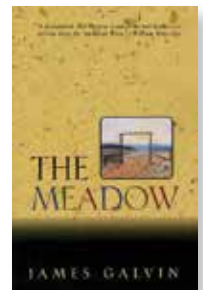
~Stephanie Laporte Potts



The Meadow by James Galvin

This is a lyrical, haunting novel about a wild meadow in the mountains on the Colorado/Wyoming border, telling the hundred-year history of the hardy people who struggled to eke out a living on it. The landscape is a character in and of itself, vivid and harsh and beautiful all at once.

~Allison De Jong

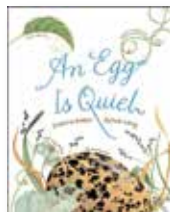


An Egg is Quiet by Dianna Aston,

illustrated by Sylvia Long

We read this great children's book at home from time to time and my kids and I love the art. We enjoy trying to match different animals to their eggs, too. It was very exciting when my 4-year-old correctly identified ladybug eggs in our yard! He'd seen them in the book. It was a pretty proud naturalist-parent moment for me.

~Lisa Bickell

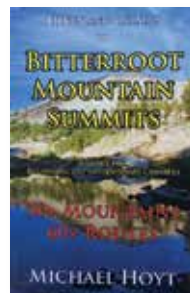


Hikes and Climbs to Bitterroot Mountain

Summits by Michael Hoyt

My husband and I love exploring the Bitterroots—so close to home and so full of amazing hikes. And this guidebook, with its photographs, maps, elevation profiles, and detailed directions, is a great resource for those just wanting to get to some backcountry lakes as well as those interested in the gorgeous views from the summits!

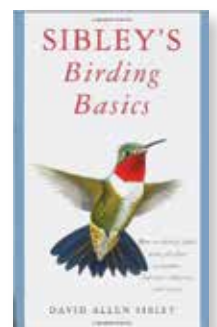
~Allison De Jong



Sibley's Birding Basics by David Allen Sibley

There are many things that make Sibley's Birding Basics a great book. The illustrations are not only beautiful, but incredibly descriptive. Sibley's Birding Basics is a wonderful resource for learning about birding and an excellent source of scientific information about birds. Plus, it fits nicely into your pack!

~Thurston Elfstrom



From Sunny Plain to Leafy Oasis:

Celebrating the State of Montana Arboretum

BY ALLISON DE JONG

When most people visit the beautiful University of Montana campus in Missoula, enjoying the shade and green created by its many trees, they don't realize that they're also visiting the State of Montana Arboretum. Those lovely trees casting pools of shade all across campus were planted with purpose, with UM's Arboretum Committee continually working to create areas that represent different bioregions, to increase the diversity of the plantings, and to make the arboretum itself better known both to locals and out-of-town visitors.

The Arboretum is celebrating its 25th anniversary this fall, but its history stretches back much further. Morton J. Elrod, the first professor of biology at UM, planted many trees on campus in the early 1900s, including the ponderosa pines of Memorial Row in 1919. Over the decades, other trees were planted, sometimes hundreds at a time in big planting efforts. In 1991 botany professor Mark Behan worked with state legislator Harry Fritz to attain official arboretum designation for the University of Montana campus.

Even though the designation didn't bring any funding, the Arboretum Committee has made do. When UM celebrated its centennial in 1993, a representative shrub or tree was planted for each county and reservation in Montana. The committee has also collaborated with the UM grounds and construction crews to replace damaged trees and increase diversity; the result is a collection of more than 2200 trees representing over 100 species. And now, as the Arboretum celebrates 25 years, the committee is using contributions from donors and an Urban and Community Forestry Grant from the DNRC to create



Past and present: the University of Montana campus circa 1909 and in October 2015.

an inviting, outdoor interpretive space including information panels and a mini plant community between Main Hall and the University Center.

"It's an exciting Arboretum," says Kelly Chadwick, who's been on the committee since 1992. "We have some unusual species, and are working to get more." The more unique specimens include two hybrids of western larch/alpine larch and several "fossil trees"—species that were native to North America, and Montana, pre-glaciation. These include ginkgo, dawn redwood, bald cypress, and katsura. Another special tree is the largest red oak in the state.

Managing an arboretum requires taking the long view, so while the present diversity and tree placement aren't quite ideal, the committee has a strong plan for future plantings, and the result will be a cohesive layout with defined regional plant communities. The Arboretum is focused on North American trees (including an area emphasizing Montana trees and shrubs in particular), and the committee has recently divided the campus into the continent's main forest regions—boreal, northern hardwoods, central hardwoods, etc.—so that new trees

will be planted in the appropriate places.

The committee is now focused on getting out the word about this unsung resource. They are developing a website (www.umt.edu/arboretum), hoping to offer both guided and unguided tours to accommodate diverse visitors, and working to improve interpretation throughout campus. "In the end," says John Goodburn, chair of the Arboretum Committee, "we want to be a destination here in Montana. It's for all the citizens of our state." 🦋

Join in the Arboretum's 25th Anniversary celebrations!

Date: Friday, September 30

Location: north side of Main Hall
(east end of UM Oval)

10:00 a.m. – Ribbon-cutting ceremony
for Arboretum Interpretive Space

1:00 p.m. – 25th Anniversary Celebration

1:30 p.m. – Tours of the State of Montana Arboretum

Contact Marie Rothell at 406.243.5529 or marie.rothell@umontana.edu for more information.

Want to learn more, donate to the Arboretum, or help out in other ways? There are lots of opportunities to get involved!
Contact Sam Barkley at 406.243.5533 or sam.barkley@mso.umt.edu.

The Fate of the Western Glacier Stonefly

BY SOPHIE TSAIRIS

High in the wilds of Glacier National Park, far from the beaten trails frequented by hikers and tourists, run icy cold streams fed by water melting from glaciers. Deep beneath the water's surface lives one of Montana's rarest creatures—the nymphs of *Zapada glacier*, the western glacier stonefly.

Few storybooks are written about stoneflies. The nymphs spend their lives underwater, and the adults are a nondescript darkish color, less than half an inch long. Many people don't even know they exist, and few people get excited at the mention of the western glacier stonefly. Joe Giersch is an exception to that.

Giersch is an expert in rare, alpine, cold-water macroinvertebrates in Glacier National Park. And he's fascinated by this little-known species, which, though likely as ancient as the oldest dinosaurs, wasn't even discovered until 1971. Because it spends most of its one-to-two-year life span as a larva finding sanctuary deep beneath within glacial streams, this rare invertebrate could go extinct and most of us would never know.

And *Zapada glacier*'s extinction is a distinct possibility. With a group of fellow scientists, Giersch has been trekking deep into the wilderness to sample Glacier's high-alpine glacial streams—the western glacier stonefly's historic habitat—since 2011. Much of the area they traverse has only rarely been explored by other humans, and many of the streams they sample have never been sampled before. What the team has found does not bode well for the species' future. Though it has recently been found in two new streams, out of the six streams in which it had previously been found, the western glacier stonefly is now present in only one. This evidence, along with Glacier National Park's diminishing glaciers and overall rising temperatures, shows a significant contraction of the range of the species.

Stoneflies are a foundation of the food chain in freshwater ecosystems, acting as decomposers of organic material. The nymphs are highly sensitive to even the slightest changes in

water temperature and habitat quality, and thus are a prominent indicator for the health of freshwater ecosystems. The significance of the western glacier stonefly's disappearance is paramount, despite the fact that it is not the first creature most people think of in terms of vulnerability to climate change.

In Glacier National Park the effects of climate change are all too clear. Many of the park's largest glaciers are expected to



A spring-fed stream in the Two Medicine drainage of Glacier National Park is one of two new locations for the western glacier stonefly.





disappear altogether by 2030—and *Zapada glacier*'s fate is tightly bound to the rapidly disappearing glaciers of its habitat. Because it needs those glaciers to survive, the western glacier stonefly could set a precedent for how the U.S. Fish and Wildlife Service (FWS) handles species threatened by climate change in the lower 48 states.

In December 2010, the Xerxes Society for Invertebrate Conservation and the Center for Biological Diversity filed a petition to protect the stonefly under the Endangered Species Act. The Fish and Wildlife Service then issued a statement in 2011, acknowledging that listing *Zapada glacier* under the Endangered Species Act may be warranted and that it would begin an in-depth review of its biological status—but then failed to issue a legally-required decision. On April 15, 2015, the Center for Biological Diversity filed a lawsuit against FWS for failing to act in protecting the western glacier stonefly, reminding FWS that this particular species of stonefly exists only in Glacier National Park and is dependent on the cold glacial waters for survival. Finally, on September 9, 2015, the U.S. Fish and Wildlife Service came to an agreement with the Center for Biological Diversity, promising to make a decision on whether or not to list the western glacier stonefly as an endangered species by September 30, 2016.

There is an increasing number of species petitioned for listing under the Endangered Species Act, but the western glacier stonefly stands apart from most. The stonefly is one of a shorter

USGS Aquatic Entomologist Joe Giersch stands at the outlet of Grinnell Glacier in Glacier National Park, the main locality of the western glacier stonefly.



Approximate actual size

list of species that survives in one specific habitat and whose fate is proven to be directly and solely linked to changes in climate. And even if the western glacier stonefly makes the list, the best method for protecting the species is still uncertain. Scientists are considering the possibility of translocation—raising the nymphs in laboratories and transplanting them into streams where they're not currently found—but it is unclear whether they would survive in streams that are slightly warmer than their natural glacial habitats.

Joe Giersch agrees that the options for protecting the stonefly are limited, which is part of the challenge with getting the endangered species listing. "The Endangered Species Act... dictates that you have a management plan," he says, "not only protecting the species, but fixing the problem." Unfortunately, translocation—or most other solutions scientists might come up with—"would likely be a short-term fix."

Zapada glacier's story is still being written, and it's too early yet to know if it will have a happy ending. Understanding the vulnerability of the western glacier stonefly is important for highlighting the fate of many other species affected by climate change, and perhaps in telling its story, we can affect the outcome—and the outcome of similar stories. For it is not just about the disappearance of one out of 3,500 species of stonefly, it's about the health of the entire fragile, beautiful ecosystem it inhabits. 🦋

—Sophie Tsairis is an environmental journalist under the big skies of the West. Committed to giving a voice to all things wild, she writes to inform readers through stories of the natural world.

Want to learn more about *Zapada glacier*? Check out www.xerces.org/western-glacier-stonefly.

imprints

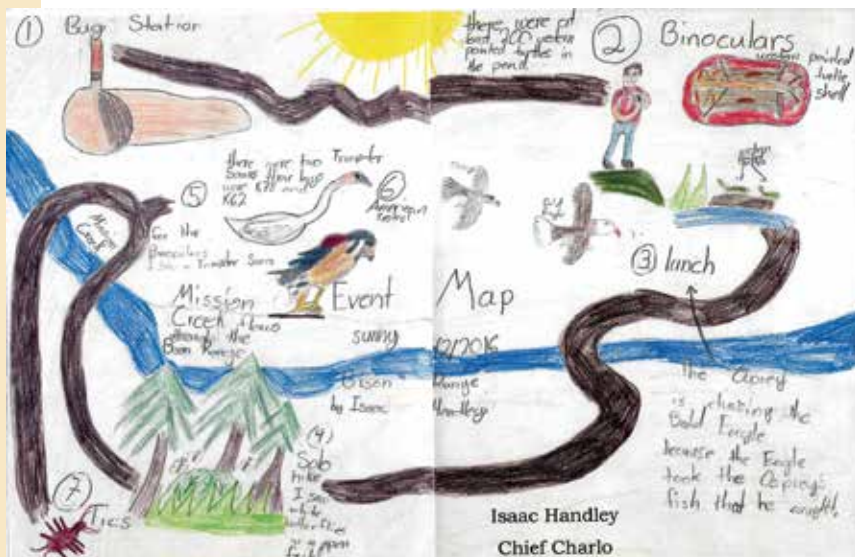
Every Kid in a Park Helps MNHC Get Kids Outside

As the 2015-2016 school year drew to a close this past spring, so did another successful year of our Visiting Naturalist in the Schools program. With a record participation of 64 fourth- and fifth-grade classrooms, VNS reached over 1400 Montana students this year! Each VNS classroom enjoyed seven hands-on naturalist lessons throughout the school year, plus two full-day field trips, one in the fall and one in the spring. As one participating teacher described it, VNS is focused on “empowering students with knowledge and skills to view themselves as naturalists and to respect our natural world.”

This year, VNS was able to take advantage of a new, one-time federal initiative: Every Kid in a Park. Launched by the White House in partnership with federal land management agencies, this program provided our fourth-grade classes with free transportation to their spring field trip sites. Traveling by school bus is expensive, and Every Kid in a Park was a big help for teachers in providing their students with access to unique, beautiful federal land.

To show their appreciation, fourth graders created event maps of their spring field trip experiences. The drawing shown here is but a small sample of the amazingly creative work we received. We truly have some budding young naturalists in our program!

Want to learn how to create your own event maps? Check out page 11 of our Get Outside Guide!



Isaac Handley, a 4th grader from Chief Charlo Elementary in Missoula, drew this event map of his field trip at the Bison Range this past May.



MNHC's Evening with a Naturalist featuring Jack Horner and Hank Green



The Montana Natural History Center is on YouTube!

Subscribe to our YouTube channel and check out our growing array of videos! Were you unable to attend our Evening with a Naturalist programs? Watch the full conversations with Jack Horner, John Marzluff, and Emily Graslie on YouTube. Want to give your friends and family insight into what it means to be a naturalist? Show them our “Tools of a Naturalist” video and spread the inspiration! Amy Howie, our ID Nature Coordinator, is filming both in our green screen room and out in the field, working with our staff and board to create informational videos about our programs and educational videos about natural history. Learn about lichen, fossil digging, corvids, and more, and stay tuned for future projects!



Continue the Celebration!

Our Annual Banquet & Auction will be our last big hurrah in a fabulous year of celebrating our 25th anniversary! Join us on Friday, October 7th, in the University Center Ballroom for dinner, drinks, celebrating, and the opportunity to bid on our always-exciting array of nature adventures, unique travel packages, local artwork, and more in both our live and silent auctions. Reserve your tickets today by going online to MontanaNaturalist.org or calling 406.327.0405. \$50 per person (\$60 per person after September 26th).



Stop and Play in Our Nature Adventure Garden!

We invite you to explore our newly-completed Nature Adventure Garden, on the east side of our building and just off the river trail. Sculpt fantastic landscapes in the sandbox, enjoy the shivering leaves of our little aspen grove, weave branches and grasses through our outdoor loom, or just relax in the shade and watch the stream flow by.



Bailey Zook, Teaching Naturalist

Thanks to the generosity of Ron Clausen and his friends, who once again made us the recipients of their yearly Montana Extravaganza fundraiser, we were able to add a second Teaching Naturalist to our staff this fall. We are thrilled to welcome **Bailey Zook** to our team! Along with teaching in our Visiting Naturalist in the Schools program, Bailey will be assisting with summer camps, Center Visits, the miniNaturalist pre-school program, and other educational outreach. Bailey was born and raised in north-central Florida where she spent most of her time exploring the lakes and conservation property in her backyard. This spurred her to study Environmental Science at Florida State University and continue on to receive her Masters in Geography. Through her work as a Fire Ecology Intern, Youth Leader, Instructor of Undergraduate Environmental Studies, and Teacher's Aid, her love and appreciation for environmental education continued to deepen. In 2013, she and her husband traveled around the country in search of mountains, trees, and water, and have called Missoula home ever since. She enjoys wandering on foot and by boat to learn the biogeography of the surrounding landscapes as well as watching her chickens flap around their yard. Bailey loves to share her naturalist enthusiasm and knowledge and is grateful to be doing so at MNHC.



Heather Waetzig, AmeriCorps VISTA

We are also excited to welcome **Heather Waetzig**, our first-ever AmeriCorps VISTA, who will be working with us for the next year. She'll be helping us increase volunteer capacity and recruitment, establishing new connections to the University, developing our capacity for extracurricular youth programs, and getting the word out about our scholarships so that any kids who want to participate in our programs can do so. Heather grew up in western Washington near the beautiful Cascades. She graduated from Pacific Lutheran University in 2013 with a BA in History and has spent the last two years as a reading tutor at an elementary school in Port Angeles, Washington. This is her third year serving with AmeriCorps, and she is excited to be working at a natural history center. By learning more about the natural world she hopes we can better understand ourselves and who we are, and she hopes serving at MNHC will allow her to continue her passion for sharing educational opportunities with the community. In her spare time Heather enjoys reading, listening to music, and hiking in the woods. She finds being in nature very refreshing and is looking forward to the snow Missoula will have in the winter!



Clearwater Crossing trailhead,
ten months after last year's fire.

PHOTO BY DREW LEFEBVRE

After the Flames: Reflections on a Landscape Shaped by Fire

STORY BY DREW LEFEBVRE

IT'S HARD NOT TO FEEL JUST A LITTLE BIT SAD. I'm standing by the water's edge at Clearwater Crossing, a popular campground and trailhead on the bank of Fish Creek, a tributary of the Clark Fork River. It's springtime and the water is high, rushing past clear and cold and full of sounds. I've stood at this very spot dozens of times and yet now, as I scan my surroundings, I struggle to find a familiar landmark. The Forest Service cabin which once stood at the edge of the parking lot burned to the ground last fall. So did the horse corral and several outbuildings. Charred stumps choke the driveway and the trails, and blackened trees creak in the wind. Gone too is my favorite man-made structure: a long, narrow, wood-and-steel suspension bridge that used to span the width of Fish Creek. The bridge was barely wide enough for one person and a backpack, and used to sway ominously with every step. It, too, has disappeared without a trace.

I know that fire can be good for the land. A quick-burning, low-intensity wildfire—like the one that swept through here last fall—provides countless macro- and micro-services to the ecosystem.

Many trees, plants and fungi rely on it to propagate and thrive. Fire can open up corridors for animal habitat and make room for new vegetation, providing wildlife populations with much-needed food. Native Americans all across the continent once used fire to manage the landscape; these days, foresters, firefighters, farmers, and ranchers do too.

Yet it can be hard not to view wildfire as a destructive force. It comes in quickly, often with little warning, and, depending on its intensity, can devour most anything in its path. The blackened landscape that remains might bear little resemblance to what was there before. Nature operates on such a vast timescale compared to our human lifetimes, and it's quite possible that, once a fire sweeps through, the landscape we knew and loved will not be fully restored within our lifetime. Even though my brain tells me that fire is beneficial, it can be hard to truly accept it.

Of course, this part of the country is no stranger to wildfire. In fact, Clearwater Crossing lies within the boundary of the largest wildfire in United States history. Known simply as the *Big Burn* or the *Great Fire of 1910*, this fire consumed three

million acres in western Montana, northern Idaho, and northeastern Washington. The massive fire had no singular cause. Hot, dry weather during the spring and summer of that year resulted in timber conditions that were just right for a big blowup. Sparks from lightning, locomotives, and human-caused fires started things burning over the course of the season. When the wind picked up in late August, thousands of little fires were whipped into one big blaze, and a giant firestorm burned through the area for days.

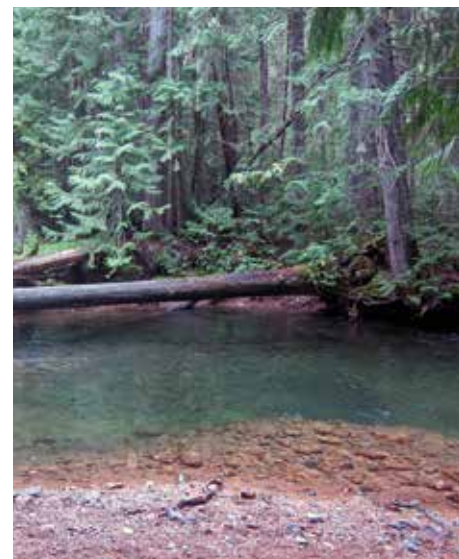


PHOTO BY DREW LEFEBVRE



Left: Preparing to swim ashore from the island in French Lake.

Below: A view of the Stateline Trail in the proposed Great Burn Wilderness.

Opposite page, bottom: A quiet swimming hole along Fish Creek.

The Big Burn of 1910 drastically altered much of the landscape through which it passed. Almost nothing survived the firestorm. Today, in the area now known as the proposed Great Burn Wilderness, nearly every living thing in sight is younger than the fire. Though most of the area looks like it has been lush and green forever, most of the trees are no older than 106 years—in many cases, much younger. Only rarely does a backcountry adventurer encounter a low, wet grove of giant cedars or a high-elevation slope of massive larches, evidence that a handful of trees were either large enough to survive or just missed the flames' path. These mammoth trees are proof that something was here before the fire, and that those survivors lived long enough to recolonize the area.

Now it's mid-July, and I've returned to the banks of Fish Creek for another visit. The sky is mostly cloudy and the air is cool—it's perfect weather for hiking. As we shoulder our packs in the parking lot, I am amazed at how different the landscape looks after only a couple months. Fireweed, yarrow, and penstemon poke up their colorful heads like familiar friends, growing between and above the crumbling charcoal. Fallen branches and dead logs have been moved to the side, reminding us that the old, well-worn trails still exist. The trees, though still blackened in some places, are buzzing with life: Pine Siskins give their buzzing calls overhead, while Black-capped Chickadees flit from branch to branch. In the distance, I hear thrushes singing early-morning, liquid songs. There's no hint of fiery destruction in the air. The landscape feels green and alive. There's a sense of renewal.

Eleven miles later, my hiking companions and I have reached our furthest

point for the day. We stand at the shore of French Lake, just this side of the Montana/Idaho divide. The cloudy sky has darkened and the cool air has become downright chilly. The first drops of rain prick my face. I'm about to suggest that we head back to camp when I hear a commotion behind me.

"I can't resist! I'm going in!" I turn around in time to see my friend mid-stride, tugging his clothes off as he runs toward the water. With an awkward splash he's in, swimming for a tiny island about 100 feet offshore.

He lands on the island and I pause to take in the scene. I might as well be standing in a nature documentary. The tiny, shrubby island sits just offshore, surrounded by a crystal-clear lake fed by a delicate waterfall. The ridge line is rocky and craggy, a sharp silhouette, still harboring last

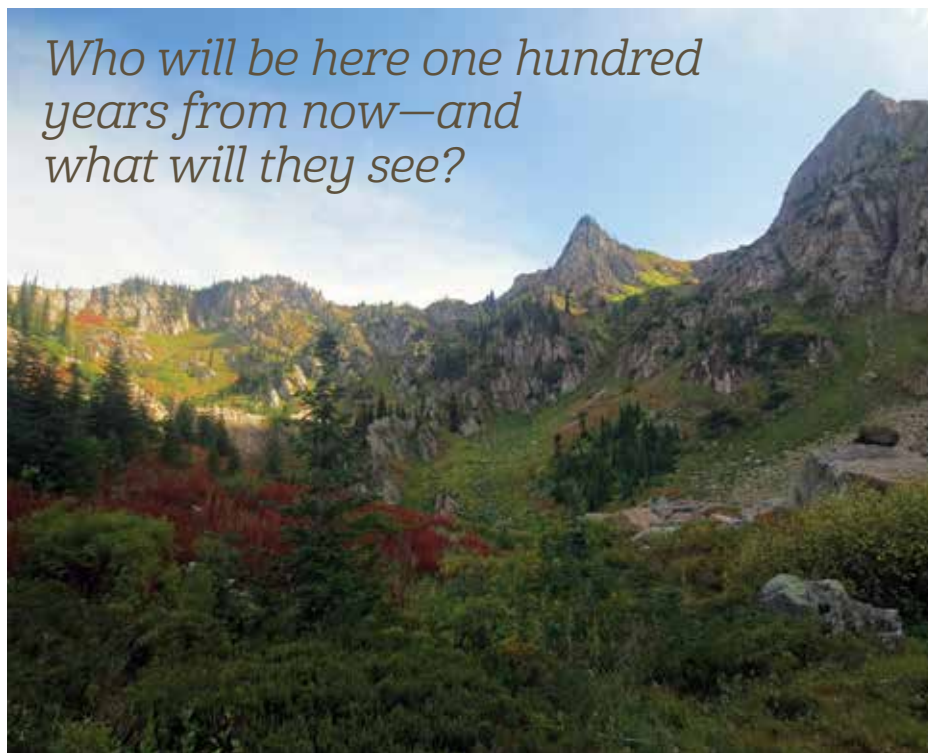
winter's snow in a handful of secret shady spots. I am suddenly very grateful to be here at this moment.

What did this place look like last year? What did it look like after the 1910 fire? I wonder which landmarks I would have recognized. Some things change, but the island? The rocky ridge line? Those have been here for eons, and will continue to remain. I wonder how many others have stood at this exact spot, maybe watching a daring friend shiver on the tiny island. Who was here one hundred years ago? One thousand? Who will be here one hundred years from now—and what will they see?

I realize, standing on the shore of the lake as my friend begins his chilly return swim, that I can make my peace with wildfire. I cannot know what a place looked like before my lifetime, and I cannot know what it will look like after. I can only be grateful to witness it for a short length of time, one which will inevitably include cycles of destruction and creation, birth and death, growth and renewal. I'm just happy to enjoy it while I can. 🦋

—Drew Lefebvre is a Teaching Naturalist at the Montana Natural History Center. She also works as a backcountry trip leader, taking groups of volunteers out to explore the proposed Great Burn Wilderness. She holds an MS in Environmental Studies from the University of Montana.

Who will be here one hundred years from now—and what will they see?





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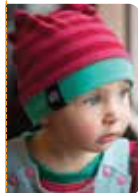
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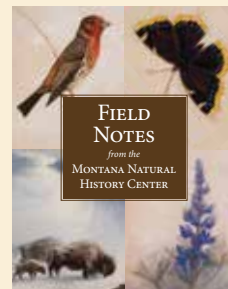


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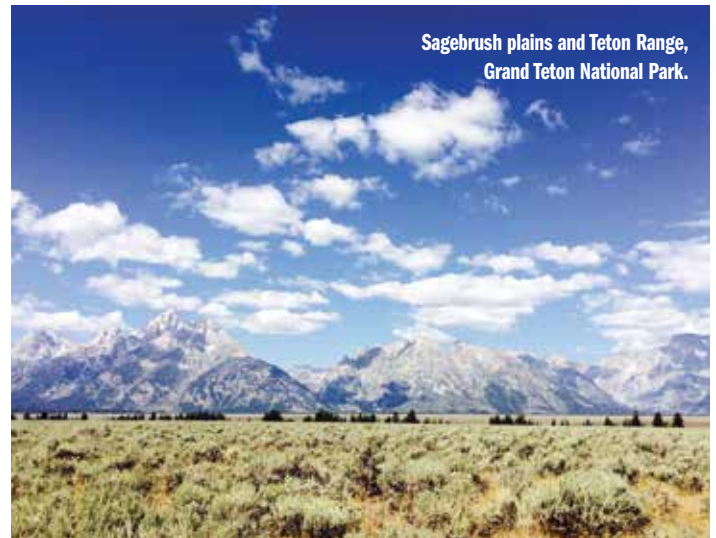
Bowman Lake (left) and Clements Mountain (below) in Glacier National Park.



Celebrating Our National Parks

This year marks the 100th anniversary of the National Park Service, established August 25, 1916, when President Woodrow Wilson signed into law the National Park Service Organic Act. The National Park Service was created “to conserve the scenery and the natural and historic objects and wildlife therein, and to provide for the enjoyment of the same in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations.”

Let these photos inspire you to celebrate our parks in the best way possible—going out and exploring them!



Sagebrush plains and Teton Range, Grand Teton National Park.

Lower Yellowstone Falls (below) and Norris Geyser Basin (right), Yellowstone National Park.





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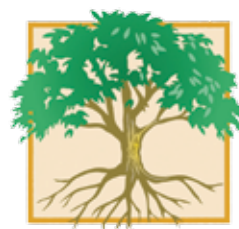
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