Montana Natural History Center

Spring/Summer 2018

MONTANA Naturalist

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

Pollinators & Wildfire:
Fire-Adaptive, Pollinator-Friendly Plants

All About Alpine Larch | Raptor Research & Conservation | Homesteader Phenology | Life, Underneath

MONTANA Naturalist Spring/Summer 2018

inside

Features

Cover – Honey bee *(Apis mellifera)* on a thimbleberry blossom. Honey bees are a domesticated animal with worldwide distribution, and can outcompete our native North American bees (including bumble bees) in natural environments, though they do provide an important agricultural service. If you look closely you can see the hairs in its compound eyes. Also take note of the large pollen packet on its leg! Photo by Eugene Beckes, flickr.com/photos/121795831@N02/.

Departments

Montana Natural History Center
Connecting People with Nature

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tidings

PHOTO BY ALLISON DE JONG

Pasqueflowers bloom in late afternoon spring sunlight on Mount Sentinel.

Spring seems slow to come this year. In past years, the forsythia and daffodils have bloomed in my yard at the end of March. This year, we're halfway through April and there are no flowery pops of color to be seen when I gaze around my backyard. And even though I love winter and snow and cold, I find myself ready for sunshine and warmer days.

At the same time, there are reminders of the changing season, if only I take the time to look. I saw my first buttercups of the year on a hike last week, a few scattered bits of yellow glimmering on the brown forest floor. The Clark Fork River is running faster and higher, and the Osprey have returned to their nests. Spring may be coming slowly, but it is coming.

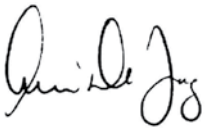
This spring I have a particularly tangible reminder of change and a new season that has nothing to do with the weather. As I write this, I feel my son turning and shifting beneath my ribs, forcing me to lean back a little as he pushes a foot (or maybe two) against a space that will soon be too small for him.

Change is on the horizon.

And change, constant change, is one of the beauties of this world we live in. The seasons shift. Flowers bloom, send out their seeds, die. Snow covers the landscape, then melts away. Fire sweeps through forests, leaving charred blackness, but soon enough come the fireweed, the Black-backed Woodpeckers, the morels. Life and death are all tangled up together in the natural world.

And so they are in this issue. Botanist Steve Shelly explores the ecology of that amazingly-adapted high-altitude deciduous conifer, the alpine larch, reveling in its uniqueness while hoping that some of them survived last year's Lolo Peak Fire (page 4). Naturalist Danielle Lattuga ponders fire, too, and how it affects our native pollinators—and what we can do to help them (page 7). Fourth graders from Paxson Elementary spent time this school year learning about what Montana's animals and plants do in the winter, and how much life and activity happens under the snow (pages 11 and 23). Researcher Kenneth Walcheck shares the story of a homesteader who recorded decades of phenological data on the chinking of his log cabin, providing a vivid window into the past (page 20).

It's good to be reminded of the necessity—and beauty—of change. And of the richness of a world where the hard things and the delightful things are inextricably connected. Perhaps, this spring and summer, we can let the natural world inspire us to accept the challenges as well as the delights, to accept that experiencing both simply means that we are alive in this world.



Allison De Jong
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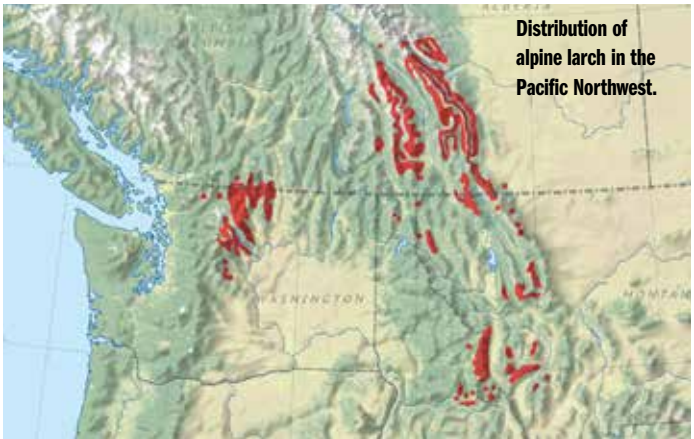
ALPINE LARCH

Montana's unique high-elevation deciduous conifer

BY STEVE SHELLY

THE FIRST TIME I EXPERIENCED AN ALPINE LARCH FOREST, WHEN I MOVED TO WESTERN MONTANA MANY YEARS AGO, I WAS AWESTRUCK. A friend and I had hiked up to Carlton Ridge, high on the horizon southwest of Missoula near Lolo Peak, during early fall. Snow was already starting to blanket the mountains, and I was not really anticipating that we would soon be hiking through a forest of fall color. As we steadily made our way up into the larches that cover the top of the ridge, though, it was like entering a golden tunnel. The combination of brilliant yellow needles on the larch trees, the white mantle of snow, and the blue sky was breathtaking, unlike any other forest I had ever visited.

As these trees change color during the last half of September, the appearance of the golden-yellow "cap" on Carlton Ridge marks the onset of fall, and is readily visible from Missoula. This colorful stand of alpine larch *(Larix lyallii)* is one of the most unique forests in the northern Rocky Mountains. The ridgeline in this high-elevation area above the Mormon Creek drainage escaped past glaciation, and as a result there is an unusual layer of deeper soil that is much unlike the very rocky sites that alpine larch typically occupies in the Bitterroot Mountains. This unique tree is one of only four deciduous conifers, in addition to baldcypress *(Taxodium distichum)*, tamarack *(Larix laricina)*, and western larch *(Larix occidentalis*), that are native to North America. Alpine larch is also unusual in being the only erect deciduous tree that inhabits the alpine timberline. In the Bitterroot Mountains, the species is abundant above 7,500 feet on north-facing slopes, and rarely occurs below 6,500 feet.



Distribution of alpine larch in the Pacific Northwest.

MAP: EVAN DERICKSON

PHOTOS BY STEVE SHELLY

Both alpine and western larch are endemic to a relatively small geographic area in the Pacific Northwest. Alpine larch is confined to the higher, cooler environment of the upper subalpine and lower alpine zones in the inland northwest. It occupies limited areas of southern British Columbia and southwestern Alberta, and extends southward into Washington, northern Idaho, and western Montana. Western larch occupies lower and middle elevations over roughly the same geographic area, although its range extends into central Idaho and Oregon as well. Another area where their ranges differ is in Montana and Alberta, where alpine larch extends east of the Continental Divide to the Front Ranges of the Rocky Mountains. Across their overlapping geographic ranges, though, western larch is by far the more common species of the two, owing to the greater abundance of low- to mid-elevation habitat. Aside from their usual difference in elevation, the two species can be distinguished by their twigs, cones, and foliage color. The new twigs of alpine larch are covered by white woolly hairs, while the twigs of western larch are either hairless or have very short, inconspicuous hairs. The cones of alpine larch are about two inches long, while those of western larch are typically shorter. And during the growing season, the needles of alpine larch are bluish-green and rather dull, while those of western larch are yellow-green and shiny.

Carlton Ridge is one of the few places where these two larch species overlap in elevation. The site where this occurs is on the steep north face of the ridge, between approximately 6,000 and 6,200 feet, in a very rocky area that experienced a huge landslide in the distant past. Studies of the physical characteristics of larches in this area indicated that hybridization between the two otherwise typically separated species took place in the past. More recent genetic studies detected four trees that are likely hybrids, thus confirming that interbreeding between the two species has indeed occurred on Carlton Ridge.

A portion of the alpine larch stand on Carlton Ridge occurs in a Research Natural Area (RNA), a protected site that was established on the Lolo National Forest to help conserve this unique forest (see sidebar on page 6). On Carlton Ridge, and in several other RNAs in Montana, studies of the growth rings in trees have revealed much information about past environments, as well as how changing environmental conditions may be affecting our forests. For example, recent studies of ring widths have been used to understand whether changing climate patterns are affecting tree growth rates. In the case of ponderosa pine *(Pinus ponderosa)*, tree growth rates have been increasing since the 1950s, especially in older trees on drier sites. The increase in carbon dioxide in the atmosphere may be having a "fertilizer effect" on the trees, as such change can cause the trees to use water more efficiently. On Carlton Ridge, the growth rings in alpine larches have been studied to understand the historic extent of fire in the northern Rocky Mountains. That study revealed an average tree age of approximately 350 years, a remarkable number considering that the average diameter of the trees is only about 17 inches!

[A recent] study revealed an average tree age of approximately 350 years, a remarkable number considering that the average diameter of the trees is only about 17 inches!

To the south, alpine larch stands near Trapper Peak in the southern Bitterroot Mountains occupy sites on both north- and south-facing slopes, with the former having higher soil moisture and cooler temperatures on average. Recent tree ring studies there have revealed that growth rates between these two microsites have diverged as the prevailing climate conditions of the region have changed. Since 1993, which was an abnormally cool, wet summer in Montana, the alpine larch trees found on the north-facing slope have been growing faster in comparison to those found on the south-facing slope, which is the reverse of what was occurring prior to 1993. This trend is possibly due to warmer overall temperatures and earlier snowmelt, causing the soil moisture to decrease more quickly on the south-facing slope.

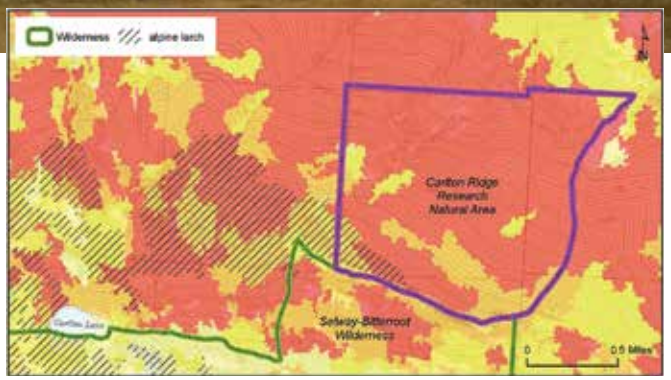
On Carlton Ridge, there are many openings in the forest that are starting to fill in with young alpine larch trees. Dr. Steve Arno, who has studied alpine larch since the 1960s, has theorized that the upward trend in summer temperatures may be benefitting the trees in this case, again as the growing seasons get longer and snowmelt occurs earlier. This may be allowing for more seeds to germinate and form a new generation of trees. Future trends in climate are difficult to predict with certainty, especially regarding how the amount and timing of precipitation might change. But the increase in young alpine larches on Carlton Ridge is a positive sign that the species may be able to persist in the future.

Young alpine larch trees have been colonizing forest openings on Carlton Ridge in the Bitterroot Mountains.

One trend that is occurring in the West is more frequent and more intense wildfires. Historically, fire occurs infrequently in the

Smoke plumes from the Lolo Peak Fire on August 18, 2017.

PHOTOS BY STEVE SHELLY



Preliminary map of tree mortality on Carlton Ridge, from low (light yellow) to high (red), after the Lolo Peak Fire.

MAP: U.S. FOREST SERVICE

cold, moist, and rocky sites where alpine larch occurs. Unlike western larch, its thick-barked and fire-resistant relative, alpine larch is a relatively thin-barked species that seldom survives even moderate surface fire if there is combustible material at the base of the tree. Last summer the alpine larches of Carlton Ridge were threatened by an unusually severe fire. During several wind events in August 2017, the Lolo Peak Fire, which eventually covered over 53,000 acres, burned across the north face of Carlton Ridge. As the giant smoke plumes rose ominously over the Missoula valley, there was a lot of anxiety about the fate of the alpine larch. The concern arose frequently around town: "Hopefully the Carlton Ridge larches will be okay!"

While field work is needed to be sure, the fire may not have completely burned the alpine larch stand along the ridgeline. Preliminary mapping of tree mortality indicates that a portion of the stand may have been less impacted. And once rain and snow returned and the fire was finally out, there was a tinge of yellow color visible in late September near the very top of the ridge, providing another reason to be cautiously optimistic that at least some of the alpine larch trees survived. Much of the alpine larch forest on Carlton Ridge has an open understory of red mountain heather *(Phyllodoce empetriformis)*, grouse whortleberry *(Vaccinium scoparium)*, and wood rush *(Luzula hitchcockii)*. These low-growing species are indicators of moister sites in the mountains and would not be likely to support an intense surface fire, providing additional hope that the alpine larch will survive. However, some of the oldest trees have broken limbs at their base, exposed hollow trunks, and are adjacent to large dead whitebark pines *(Pinus albicaulis)*, which probably supported more severe fire that killed most of these vulnerable alpine larch trees. Field surveys are planned for this summer to better determine the fate of these landmark trees.

As I've worked in alpine larch stands over the last few years, my appreciation for this remarkable tree species has grown immensely, both from a scientific and an aesthetic standpoint. The overwhelming feeling that I get when I'm among these trees, though, is that they are magical—as if nature was experimenting to see whether a deciduous tree could make it way up high in the mountains. So far the experiment has been working!

—Steve Shelly has been a botanist in Montana for 33 years. He started out at the Montana Natural Heritage Program in Helena, and is now the regional botanist for the U.S. Forest Service in Missoula.

Research Natural Areas

The U.S. Forest Service and other land management agencies designate Research Natural Areas (RNAs) to represent some of the finest examples of natural ecosystems. A total of 533 RNAs have been established on national forests and grasslands throughout the United States. This network of special areas includes high-quality examples of widespread ecosystems, as well as unique habitats or ecological features and rare plant and animal species. RNAs are protected for the purposes of scientific study and education, and for the conservation of biological diversity. Scientists can use RNAs as baseline reference areas to compare with managed ecosystems, and to monitor succession and other long-term ecological changes. RNAs are also available for use by university and school groups, native plant societies, and other organizations interested in pursuing natural history field trips. In Montana, 64 RNAs have been established on the seven national forests in the state. These range in size from 40 to over 19,000 acres, and include a total of approximately 90,000 acres. Cliff Lake, the first RNA in the state, was established in 1952 on the Beaverhead-Deerlodge National Forest. The Carlton Ridge RNA was established on the Lolo National Forest in 1987. Additional information about RNAs is available online at www.fs.fed.us/rmrs/research-natural-areas/.

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FIRE-ADAPTIVE PLANTS *for* POLLINATORS

BY DANIELLE LATTUGA

PHOTO: JIM PEACO, NATIONAL PARK SERVICE

Fireweed and other flowers grow quickly after the 1988 Yellowstone fire.

My first five years in Montana were blissfully free of wildfire. I'd walk outside, gaze up at Lone Peak, in the Gallatin Valley, and marvel at its crisp outline against the clear, blue sky. Then, as I drove my car full of belongings to Missoula, in the year 2000, I got my first taste of smoke. Literally. Familiar sights were draped in a ghostly haze, helicopters swooped down to the river for water to fight the fires, and the highway closed behind me as if there was no going back. And, well, there wasn't.

Over the years, wildfire has become a regular visitor to our region, something many of us understand as a normal natural process exacerbated by human activity—but not something we ever get comfortable with. I can't say that my own family has adapted, but I know, like many, we try to adjust. Last year, it meant fleeing during the worst part of the worst fire season we've had on record in the last 100 years.

But I always wonder about our non-human neighbors who can't flee: the animals and plants who must adapt or die. And, as a gardener and beekeeper, I am particularly curious about how the increasing instance of wildfires might impact our pollinators and what we can do to help.

It is no secret that pollinators play a critical role in the propagation of countless plant species—including food crops. Seventy-five percent of the world's flowering plant species depend on pollinators to reproduce and 35 percent of the world's food crops also depend on them for reproduction. Scientists estimate that one of every three bites of food we eat is a result of the work that pollinators do.

Montana's native pollinator species include six different species of bumble bees, leafcutter bees, carpenter bees, sunflower bees, metallic green bees (or sweat bees), polyester bees, digger bees, and mason bees. There are also 45 species of lepidoptera (butterflies and moths), seven hummingbird species, wasps, certain beetles, and flies that contribute to pollination in Montana.

We rely on native and non-native pollinators to pollinate nearly 40 agricultural crops in our state. And, while not native, honey bees are responsible for the state's tenth most valuable crop (ranking us in the top two producers of honey in the nation) and for pollinating countless crops and native plant species across the state. But it's not just about humans. Other wildlife depends on pollinators as well, because without them, there would be fewer nutritious seeds and berries to consume.

It is also no secret that pollinators face many threats: habitat destruction, loss of forage diversity, increased pests and diseases, as well as pesticides and herbicides that increase their vulnerability or outright kill them.

It can seem like there is a lot of gloom and doom when it comes to wildfires and pollinators, but the good news is: in the short run, fire actually seems to help pollinators. In the wake of wildfires, we get more flowers, which translates to more forage for pollinators.

And the other good news is that nature is a fascinating adapter and gives us a lot to work with. There are numerous plants that are pretty effective at resisting fire and many others that are fantastic at recovering after a fire. Knowing about fire-adaptive, pollinator-friendly forage gives us the opportunity to further support our pollinators, by protecting the plants they need and/or planting more of them.

WHAT DOES "FIRE ADAPTIVE" MEAN?

In this context, plants adapt certain traits or methods that help them survive and/or reproduce after a fire. Consider our state tree, the ponderosa pine. If you've ever walked up on one of these beauties, you've likely been seduced by the sweet vanilla scent of their bark. Maybe you've leaned your face in for a deeper sniff only to feel the warmth and think that tree might just be made partly of fire. But you've probably also noticed how thick said bark is. This thickness actually helps to insulate the tree from the heat of wildfire.

Other fire-adaptive traits in plants include:

- Producing new growth from underground organs, rhizomes, or roots.
- Protecting buds with layers of succulent, nonflammable foliage.
- Locating buds within the main stem and root, in order to protect them.
- Possessing seeds that are only dispersed by fire. (Many pine species, including lodgepole pine, only open their cones after a fire—the term used to describe this type of cone is "serotinous.")

7 NATIVE, POLLINATOR-FRIENDLY, FIRE-ADAPTIVE PLANTS

It's likely that you've seen many of these species of plants in town or on the trails and their beauty is enough. But now you can admire them for their role in our ecosystem as well, and maybe even plant a few in your own yard or garden.

1) Blanketflower *(Gaillardia aristata):*

This yellow and red beauty blooms abundantly July through September and has become a favorite in water-wise gardens across the state because of its ability to thrive in variable conditions and the stability it provides in disturbed areas. The plant has long been known for its medicinal qualities–the Blackfeet used infusions of its roots and leaves to treat their upset stomachs and saddle sores on horses. It was also one of the species collected by Captain Meriwether Lewis along the Blackfoot River in 1806, and contemporary cancer studies have determined that the plant contains a tumor-killing compound. The plant's chemistry composition is not considered volatile and it has a high moisture content, so it is believed to have low likelihood of flammability.

BLANKETFLOWER: MATT LAVIN

Known pollinators include: Long-horned Bee | Fritillary Butterflies | Skipper Butterflies

2) Yellow Rabbitbrush *(Chrysothamnus nauseosus):*

This brushy shrub blooms August through October and thrives in more arid climates. The soft green foliage and dusty yellow flowers provide much forage and full ornamentation for the late season. And, traditionally branches of rabbitbrush were used for smoking hides. While rabbitbrush is also susceptible to top kill in a fire, it sprouts vigorously after a burn, from epicormic buds located just below the surface of the soil. It also reestablishes well through seeds that can be carried for relatively long distances.

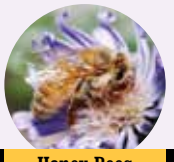
RABBITBRUSH: MATT LAVIN

Known pollinators include: Painted Lady Butterflies

3) Prairie Coneflower *(Ratibida columnifera):*

A cheerful flower with uplifting posture, prairie coneflower tends to thrive in wide, open, sunny locations. It is not known for high nutritional value, but is certainly palatable to livestock and wildlife. It is well suited for post-burn areas. Again, though susceptible to top burn, when dormant it has good fire tolerance, since it sprouts from the caudex–or intersection of stem and root. It also produces numerous small seeds, which increases its ability to reestablish on burned areas.

PRAIRIE CONEFLOWER: WILLIAM M. CIESLA, FOREST HEALTH MANAGEMENT INTERNATIONAL, BUGWOOD.ORG



Known pollinators include: Skipper Butterflies | Bumble Bees | Honey Bees

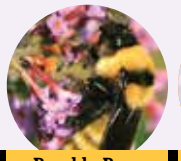
Want to learn more about these and other fire-adaptive plants for pollinators? The U.S. Forest Service and the U.S. Department of Agriculture have ample resources online. You can also talk to your county extension agent to find out the plants best suited for your particular area.

And remember: after the fire, comes the bloom.

—Danielle Lattuga is a Montana-based Master Naturalist and writer. This time of year she stays fit chasing butterflies (it's a short season, gotta pack it in).

4) Maximilian Sunflower *(Helianthus maximiliani):*

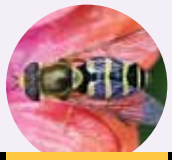
A Montana summer is not complete until you see these bright beauties growing in clusters on hills and roadsides. You won't see them, however, on highly grazed range. They provide much late season forage for pollinators and mammals alike, where they do bloom. They also show strong fire tolerance when dormant, and reproduce with both rhizomes and seeds that allow them to thrive on burned sites.

Known pollinators include: Honey Bees | Bumble Bees | Native Bees | Butterflies

5) Chokecherry *(Prunus virginiana):*

Chokecherry is a hearty shrub that blooms in April and May. The notable clusters of creamy flowers turn into deep purple-black berries that make a fabulous jam—even though their astringency produces a choking sensation upon eating them (hence the apt name). Those flowers provide some of the earliest forage of the year for pollinators. And the plant is well adapted to fire. Although it is susceptible to top kill in a fire, surviving root crowns and rhizomes re-sprout quickly, post fire. And, chokecherry seed germination improves with heat, suggesting that the plant benefits from fire.


Known pollinators include: Honey Bees | Flies | Sweat Bees

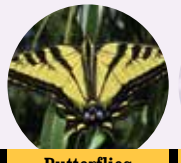
6) Lewis Flax *(Linum lewisii):*

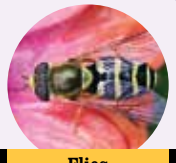
These elegant, ethereal blue flowers bob on flexible fibrous stems from May through September. They demonstrate good fire resistance because the leaves and stems stay green with significant moisture content throughout the fire season. These same plants have been cultivated for over 4,000 years in Africa and Eurasia to produce linen thread from the stems. And they tolerate drought, cold winter, and semi-shaded conditions. They also produce ample seeds, therefore ensuring greater recovery, post fire.


Known pollinators include: Flies | Mason Bees

7) Smooth Blue Aster *(Symphyotrichum laeve):*

An autumn favorite, these showy purple flowers with yellow centers provide dense clumps of hearty blooms in August and September. White-tailed deer prefer to graze this plant to other forbs and it provides them with high nutritional value. Of course, it also attracts many pollinators, but is particularly suited to butterflies, as it provides them with forage and shelter. Smooth blue aster is rhizomatous and hence can sprout even after being top-killed by fire. It occurs in areas with frequent fire regimes and is presumed to be fire adapted, though there is little specific information available on it.



Known pollinators include: Butterflies | Native Bees | Long-horned Bee | Flies

BLUE ASTER: MARY ELLEN (MEL) HARTE, BUGWOOD.ORG LEWIS FLAX: STEVE DEWEY, UTAH STATE UNIVERSITY, BUGWOOD.ORG CHOKECHERRY: MARY ELLEN (MEL) HARTE, BUGWOOD.ORG SUNFLOWER: MATT LAVIN
SWEAT BEE PHOTO BY MDC STAFF, COURTESY MISSOURI DEPARTMENT OF CONSERVATION. NATIVE BEE: DAVID CAPPAERT, BUGWOOD.ORG. LONG-HORNED BEE: JOHNNY N. DELL, BUGWOOD.ORG. BUMBLE BEE: DAVID CAPPAERT, BUGWOOD.ORG. HONEY BEE: JOSEPH BERGER, BUGWOOD.ORG

Naturalist Notes *from Western Montana and Beyond*

Observations and watercolors from Jenah Mead, who is currently taking the Montana Master Naturalist Course. These entries are from this spring's nature journal.

What have you observed outside lately? What wild creatures, flora, and weather exist near your home? What makes your place unique? Tell us about the natural history of your place—and it could get published! Send your Naturalist Notes (up to 350 words) and a photo or drawing, if you wish, to Allison De Jong, Editor, at adejong@MontanaNaturalist.org.

February 17th, 2018

Side roads of Reserve and Mullan. Morning, cold and snowing. Red-tailed Hawks mostly perched on posts and trees. One screamed as it flew.

February 24th, 2018

Greenough Park. Morning, around 10am. Very cold, but clear. Near the bridge, we spotted a pair of American Dippers down where the stream bent. The pair perched on ice floating in the stream. They would dip their heads in the water, dive, and resurface a few seconds later.

March 26th, 2018

Council Grove, 6:45pm. Turning our attention to the treetops, we spot two American Kestrels, a male and female. The female has a small rodent in her talons. While the male watches us, she eats. During courtship, male kestrels may feed females. I wonder if the rodent is a gift.

Kids' Corner

The Water

by Rasa Smith, age 7

The water

The water

The great

Blue water

Twirling and whirling on the ground

Roughly among the green grass ground

It wiggles and jiggles

In a great grassy way

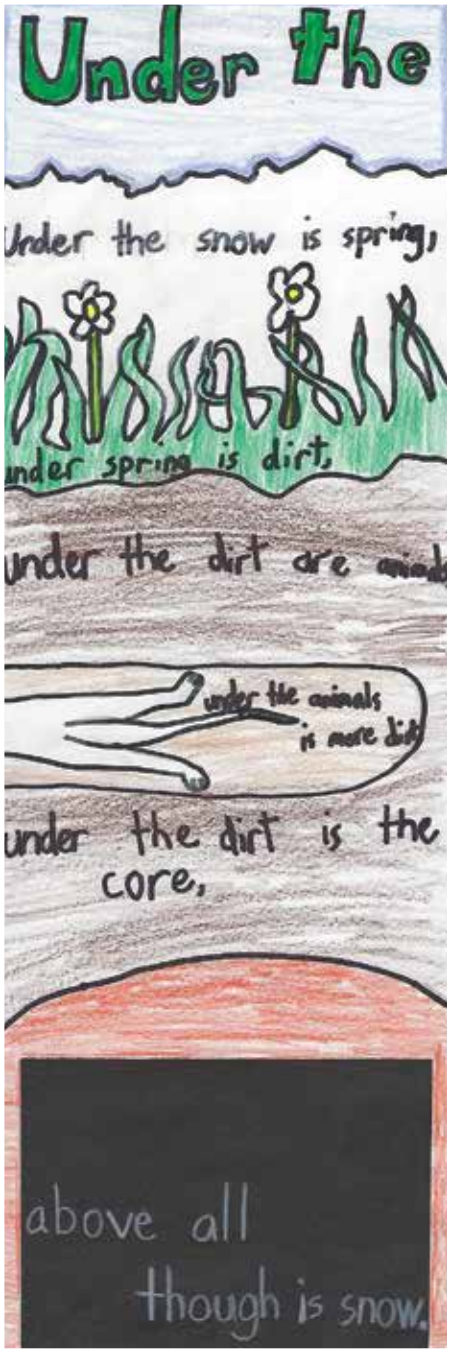
So next time you see it

In the rough stony creek

Make sure to say thank you

For the water we seek

Enjoy these "Under the…" naturalist observations and drawings from Kelli Van Noppen's fourth-grade class at Paxson Elementary:



by Cooper Hogan

by Savannah Shepherd

Calling All Kids!

Do you have any nature art, photography, poetry, or stories you'd like to share? We showcase kids' work in every issue in our "Kids' Corner"—and here's your chance for that work to be yours! Send submissions to Allison De Jong, Editor, at 120 Hickory Street, Missoula, MT 59801 or by email to adejong@MontanaNaturalist.org.

get outside calendar

MNHC Hours:
Monday-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

April 19 **miniNaturalist Pre-K Program,** 10:00-11:00 a.m. Program free with admission.

April 26 **miniNaturalist Pre-K Program,** 10:00-11:00 a.m. Program free with admission.

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

May 10 **miniNaturalist Pre-K Program,** 10:00-11:00 a.m. Program free with admission.

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

May 19 **Saturday Kids' Activity,** 2:00-3:00 p.m. **Family Nature Walk at Lee Metcalf NWR.** Registration required. Free.

May 31 **miniNaturalist Pre-K Program,** 10:00-11:00 a.m. Program free with admission.

May 31 **Community Discovery Day,** 4:00-6:00 p.m. **Birding at the Fort Missoula Native Plant Garden.** Free.

June 9 **Drop-in Nature Hikes in Pattee Canyon,** 10:00 a.m.-2:00 p.m. Fourth graders and their families are invited to join naturalists from the Missoula Insectarium, the Montana Natural History Center, and the Lolo National Forest for a 1-hour guided nature hike starting from the Pattee Canyon Recreation Area, Group Picnic Site. Meet at Pattee Canyon or get a free ride; transportation runs from 9:40 a.m.-2:30 p.m. from Silver Park, with continuous return trips. Free.

June 28 **Community Discovery Day,** 4:00-6:00 p.m. **BioBlitz at the Fort Missoula Native Plant Garden.** Free.

Adult Programs

April 17 **Grateful Glass at Western Cider,** 12:00-9:00 p.m. $1 from every glass goes to MNHC. Enjoy a delicious cider (or two) while supporting MNHC!

April 18 **Glacial Lake Missoula Chapter Meeting,** 3:30 p.m. Free and open to the public.

April 20-22 **Naturalist Field Weekend: Sage Grouse Experience.** Registration required.

April 24 **Grateful Glass at Western Cider,** 12:00-9:00 p.m. $1 from every glass goes to MNHC. Enjoy a delicious cider (or two) while supporting MNHC!

April 25 **Evening Program,** 7:00 p.m. **Hunting and Gathering Lecture Series: Foraging the Mountain West with Thomas Elpel.** $5 members; $10 non-members; students FREE.

May Gallery, all month. **Homeschool Naturalists: Inspired by Nature.**

May 3-4 **Missoula Gives,** 5:00 p.m. Thursday-10:00 p.m. Friday. Support MNHC during Missoula's largest community-wide fundraiser! Donate online at missoulagives.org.

May 4 **First Friday Gallery Opening,** 4:30-6:00 p.m. **Homeschool Naturalists: Inspired by Nature.**

SUN	MON	TUE	WED	THU	FRI	SAT
April		Grateful Glass at Western Cider, 12-9 p.m.	Glacial Lake Missoula Chapter Meeting, 3:30 p.m.	miniNaturalist Pre-K Program, 10-11 a.m. Volunteer Naturalist Training, 4-5:30 p.m.	Naturalist Field Weekend: Sage Grouse Experience. April 20-22.	Naturalist Field Weekend: Sage Grouse Experience. April 20-22.
15	16	17	18	19	20	21
Naturalist Field Weekend: Sage Grouse Experience. April 20-22.		Grateful Glass at Western Cider, 12-9 p.m.	Evening Program, 7 p.m. Hunting and Gathering Lecture Series: Foraging the Mountain West with Thomas Elpel.	miniNaturalist Pre-K Program, 10-11 a.m.		*Osprey nesting*
22	23	24	25	26	27	28
		May May Gallery, all month. Homeschool Naturalists: Inspired by Nature.		miniNaturalist Pre-K Program, 10-11 a.m. Missoula Gives, 5 p.m. Thursday-10 p.m. Friday.	Missoula Gives, 5 p.m. Thursday-10 p.m. Friday. First Friday Gallery Opening, 4:30-6 p.m. Homeschool Naturalists.	
29	30	1	2	3	4	5
		*Western Meadowlarks trill*		miniNaturalist Pre-K Program, 10-11 a.m.		Science Workshop for Teachers, 8:30 a.m.-4 p.m.
6	7	8	9	10	11	12
			Glacial Lake Missoula Chapter Meeting, 3:30 p.m.	miniNaturalist Pre-K Program, 10-11 a.m. Sixth Annual Women's Luncheon to support the Summer Camp Scholarship Fund. 11:30 a.m.-1 p.m.		Saturday Kids' Activity, 2-3 p.m. Family Nature Walk at Lee Metcalf NWR.
13	14	15	16	17	18	19
	MNHC closed May 21-25 for exhibit installation.		Evening Program, 7 p.m. Sip & Sketch with Nancy Seiler: Feathers.			*Cutthroat trout lay eggs*
20	21	22	23	24	25	26
			Glacial Lake Missoula's Spring Fling, 7 p.m.	miniNaturalist Pre-K Program, 10-11 a.m. Community Discovery Day, 4-6 p.m. Birding at the Fort Missoula Native Plant Garden.	**June**	Naturalist Field Day: Native Grasses with Peter Lesica, 9 a.m.-4 p.m.
27	28	29	30	31	1	2
					Volunteer Thank You Breakfast, 8:30-10 a.m.	Drop-in Nature Hikes in Pattee Canyon, 10 a.m.- 2 p.m.
3	4	5	6	7	8	9
Summer Outdoor Discovery Camps Nature's Engineers *June 11-15*		*Watch for salmonfly hatch*	Summer Montana Master Naturalist Class, 8 a.m.-4 p.m. June 13-15.	Summer Montana Master Naturalist Class, 8 a.m.-4 p.m. June 13-15.	Summer Montana Master Naturalist Class, 8 a.m.-4 p.m. June 13-15.	
10	11	12	13	14	15	16

MNHC PHOTOS

Programs and events held at MNHC - 120 Hickory Street - unless otherwise noted.

Summer Outdoor Discovery Day Camps

See Imprints for details, page 16.

SUN	MON	TUE	WED	THU	FRI	SAT
	Summer Montana Master Naturalist Class, 8 a.m.-4 p.m. June 18-19.	Summer Montana Master Naturalist Class, 8 a.m.-4 p.m. June 18-19.	Glacial Lake Missoula Chapter Meeting, 3:30 p.m.		Naturalist Field Weekend: Naturalist 101. 4-8 p.m.	Naturalist Field Weekend: Naturalist 101. 9 a.m. -5 p.m.
	Animal Olympics *June 18-22* 18	19	20	21	22	23
Naturalist Field Weekend: Naturalist 101. 9 a.m. -3 p.m.				Community Discovery Day, 4-6 p.m. BioBlitz at the Fort Missoula Native Plant Garden.		
	Outstanding Outdoor Skills *June 25-29* 25	26	27	28	29	30
	July					
					Mountain bluebirds re-nest	
	2			5	6	7
	Fantastic Fish and Where to Find Them *July 9-13* 9	10	11	12	13	14
			Glacial Lake Missoula Chapter Meeting, 3:30 p.m.	*Berries begin to ripen*		
	Super Scientists *July 16-20* 16	17	18	19		21
	Extraordinary Explorers *July 23-27* 23	24	25			
			August			
	The Art of Nature *July 30-August 3* 30	31	1	2	3	4
		Fireweed in peak bloom				*Swallows gather to migrate south*
	EcoHeroes *August 6-10* 6	7	8			11
			Glacial Lake Missoula Chapter Meeting, 3:30 p.m.		Naturalist Field Day: Medicinal Plants with Elaine Sheff,, 9 a.m.-4 p.m.	
	Rockin' Rocks and Fabulous Fossils *August 13-17* 13	14	Evening Program, 7 p.m. Hunting and Gathering Lecture Series: Medicinal Plants. 15	16	17	18

May 12 **Science Workshop for Teachers,** 8:30 a.m.-4:00 p.m. For K-12 teachers and other educators. Learn to do easy and authentic field research with your K-12 class! Free, but registration is required. OPI credits available.

May 16 **Glacial Lake Missoula Chapter Meeting,** 3:30 p.m. Free and open to the public.

May 17 **Sixth Annual Women's Luncheon to support the Summer Camp Scholarship Fund.** 11:30 a.m.-1:00 p.m. $100. For more info and to purchase tickets, visit MontanaNaturalist.org.

May 21-25 **MNHC CLOSED all week for exhibit installation.** *But we will be OPEN on Saturday, May 26th, as well as Memorial Day!*

May 23 **Evening Program,** 7:00 p.m. **Sip & Sketch with Nancy Seiler: Feathers.** $30; $25 MNHC members. Registration required.

May 30 **Evening Program,** 7:00 p.m. **Glacial Lake Missoula's Spring Fling.** $5 suggested donation; MNHC/GLM members free.

May 31 **Community Discovery Day,** 4:00-6:00 p.m. **Birding at the Fort Missoula Native Plant Garden.** Free.

June 2 **Naturalist Field Day,** 9:00 a.m.-4:00 p.m. **Identification and Ecology of Native Grasses with Peter Lesica.** $80; $70 MNHC members. Registration required.

June 13-15 and 18-19 **Summer Montana Master Naturalist Class,** 8:00 a.m-4:00 p.m. $425; $395 MNHC members.

June 20 **Glacial Lake Missoula Chapter Meeting,** 3:30 p.m. Free and open to the public.

June 22-24 **Naturalist Field Weekend: Naturalist 101,** 4:00-8:00 p.m. Friday, 9:00 a.m.-5:00 p.m. Saturday, 9:00 a.m.-3:00 p.m. Sunday. Led by naturalists Christine Morris and Pat Jamieson, this beginner-level class is perfect for anyone interested in learning more about the ecology of our area and the stories and science behind our flora and fauna. $185; $165 MNHC members. Registration required.

June 28 **Community Discovery Day,** 4:00-6:00 p.m. **BioBlitz at the Fort Missoula Native Plant Garden.** Free.

July 18 **Glacial Lake Missoula Chapter Meeting,** 3:30 p.m. Free and open to the public.

August 15 **Glacial Lake Missoula Chapter Meeting,** 3:30 p.m. Free and open to the public.

August 15 **Evening Program,** 7:00 p.m. **Hunting and Gathering Lecture Series: Medicinal Plants with Elaine Sheff.** $5 members; $10 non-members; students FREE.

August 18 **Naturalist Field Day,** 9:00 a.m.-4:00 p.m. **Medicinal Plants with Elaine Sheff.** $80; $70 MNHC members. Registration required.

Volunteer Opportunities

April 19 **Volunteer Naturalist Training,** 4:00-5:30 p.m. **Visiting Naturalist in the Schools Field Trip Training at MNHC.** Learn how to teach kids about the flora and fauna of western Montana during the May VNS school field trips for 4th & 5th grades. Field trips run from April 24-June 6. No prior experience necessary.

June 8 **Volunteer Thank You Breakfast,** 8:30-10:00 a.m. Drop in and enjoy good food and conversation with MNHC staff and your fellow MNHC volunteers in appreciation of your time and effort in helping us out with our May VNS field trips and many other programs!

Family-Friendly Camping Spots

Ah, summer in Montana. There are so many ways to enjoy the warm days and cool nights and glorious wild places, and camping is high on the list. Here are a few family-friendly places to get you started:

PHOTOS BY ALLISON DE JONG

Rock Creek: For an easy overnight or weekend trip, the Rock Creek area is just 20 miles east of Missoula on I-90 and has several Forest Service campgrounds, where the camping fee is just $6 per night. Rock Creek runs through a gorgeous valley with some lovely hiking spots (the Welcome Creek Wilderness is a great place to start). The campground options, all in forested areas with vault toilets, picnic tables, fire rings, and drinking water (unless noted) include: **Norton Campground** (11 miles south along Rock Creek Road; 13 sites), **Grizzly Campground** (11.5 miles south along Rock Creek Road, then one mile east on Ranch Creek Road; 9 sites), **Dalles Campground** (14.5 miles south along Rock Creek Road; 10 sites), **Harry's Flat Campground** (17 miles south along Rock Creek Road; 15 sites), **Bitterroot Flat Campground** (23 miles south along Rock Creek Road; 15 sites), and **Siria Campground** (28 miles south along Rock Creek Road; 4 sites; no drinking water available; camping is free).

Charles Waters Campground: This is another great destination for an easy overnight or weekend camping trip, just 26 miles south of Missoula on Highway 93, then west two miles on Bass Creek Road. The campground has vault toilets, picnic tables, fire rings, and drinking water; there are 26 sites, and the cost is just $10 per night ($5 per extra vehicle). The area can accommodate RVs and trailers up to 70 feet. Charles Waters is near the Bass Creek Recreation Area, which has a large group site (reservable through recreation.gov), an interpretive nature trail, picnic sites, and several trailheads—everything a family needs for a great weekend outdoors!

Lee Creek: Just 26 miles west of Lolo on Highway 12 and six miles below Lolo Pass, the **Lee Creek Campground** is a lovely spot in the mountains, tucked amongst the trees near a creek. Cost is $10 per night ($4 per extra vehicle), with vault toilets, picnic tables, fire rings, and drinking water. It accommodates trailers up to 30 feet. The campground also has a nearby hiking trail, interpretive signs, and easy access to the Lewis & Clark/Nez Perce National Historic Trail, as well as the Lolo Pass Visitor Center just up the road.

Seeley Lake: On hot summer days, there's nothing like camping by a lake and being able to swim, fish, and get out on a boat! Seeley Lake, just an hour from Missoula, has several popular Forest Service campgrounds, all costing $10 per night ($5 per extra vehicle), and all with an on-site volunteer campground host. Choose from **Seeley Lake Campground** (4 miles northwest from Seeley on Boy Scout Road; 29 sites), **River Point Campground** (3 miles northwest from Seeley on Boy Scout Road; 26 sites), or **Big Larch Campground** (1 mile north of Seeley on Highway 83; 48 sites). Big Larch Campground also has two reservable group sites, a nature trail, and summer evening interpretive talks.

Interested in a slightly wilder family camping experience? The **Rattlesnake Recreation Area**, five miles north of downtown Missoula, allows camping beyond a three-mile radius from the main trailhead. Hike or bike in and find a quiet camping spot amongst the Douglas-firs and ponderosa pines! The **Blue Mountain Recreation Area**, six miles southwest of downtown Missoula, allows camping in the west area, between miles 4.5 and 11 off Forest Service Road 365 (a detailed map is available online at fs.usda.gov/internet/fse_documents/stelprdb5447235.pdf).

Happy camping!

PHOTOS COURTESY ROB DOMENECH

Top: **A group of young visitors gets hands-on education as they help Rob process a young Golden Eagle.**
Center: **A good look at the vivid orange eyes of an adult female Northern Goshawk.**
Bottom: **Rob releases a newly-tagged young Golden Eagle back into the wild.**

Research, Education, and Conservation:

The Good Work of Raptor View Research Institute

BY ALLISON DE JONG

Imagine a cool, breezy fall day on Rogers Pass along Highway 200, and a group of kids watching in awe as Rob Domenech, Executive Director of Raptor View Research Institute (RVRI), places a wing tag on a massive Golden Eagle. Then he lets it go. The bird spreads its enormous wings and flies upward, catching the wind and disappearing into the blue distance. Someday, perhaps next year, perhaps in five years, someone in British Columbia or Mexico or Idaho will re-sight this eagle, and RVRI will have that much more data on Golden Eagle migration.

RVRI has been capturing and banding Golden Eagles since its inception in 2004 (with more than 350 eagles banded to date), but Rob Domenech has been chasing raptors for much longer than that. RVRI was born from Rob's lifelong fascination with nature, raptors in general, and Golden Eagles in particular. When he moved to Missoula from New Jersey in 1991 and found there was no local raptor migration work being done, he began scouting around for migration sites himself, putting thousands of miles on his '84 Subaru as he scoured western Montana from the southern Bitterroot Valley to Lincoln.

Fourteen years after its humble beginnings RVRI is still capturing and banding raptors, but its scope has expanded from Golden Eagles to include Osprey, Red-tailed Hawks, Goshawks, Swainson's Hawks, and more. It's now collaborating with a multitude of partners, from local western Montana groups like the MPG Ranch and the Montana Osprey Project to national—and international—organizations. RVRI continues to monitor migration, reveling in new ways of banding and tracking the birds, particularly the use of satellite transmitters to learn exactly where certain raptors are traveling each year. And it's also continuing to educate kids of all ages, bringing them out into the field to experience the wonder of raptor migration and scientific research for themselves.

Having kids (and adults) share these experiences is essential. "You can't really have conservation if you don't have education," Rob says. "You can do all the research in the world, share it with your peers, but you need to get your message out to the public. There needs to be more awareness of the role that these birds play in the ecosystems...an appreciation, and a sense of awe."

"You can't really have conservation if you don't have education. You can do all the research in the world, share it with your peers, but you need to get your message out to the public."

Rob's sense of awe is evident as he recounts stories of RVRI's work. Some of the birds they've banded have been re-sighted five or more times over the years, from Alaska to Nicaragua and everywhere in between. Some birds have an 11-year interval between being banded and re-sighted. By attaching transmitters to an increasing number of raptors, RVRI has been able to learn even more about raptor migration, observing some birds changing their migratory behavior from year to year, and others showing elliptical migration—traveling a different route in the spring than they took in the fall. RVRI's research has also uncovered some disturbing but important facts, such as elevated lead levels in 90

percent of the eagles tested in the Bitterroot Valley, data that emphasizes even more the importance of conservation education.

"There are so many things people may have never thought about," says Rob. Birds crashing into windows, for example, or Osprey getting tangled in baling twine, or eagles ingesting meat killed with lead bullets. Helping raptors can be as simple as putting up garden netting in front of windows, cleaning up baling twine, and hunting with non-lead bullets. "The number one reward is being able to see the impact that your work has had on the community," says Rob, from the appreciation that people of all ages come to have for raptors to the benefits for the wild creatures themselves. "It's so worth it."

imprints

2018 Summer Outdoor Discovery Day Camps

Jump into nature this summer with MNHC's week-long day camps featuring unique learning opportunities, field trips to local natural areas, and small group sizes!

Nature's Engineers
June 11th-15th

Animal Olympics
June 18th-22nd

Outstanding Outdoor Skills
June 25th-29th

Fantastic Fish and Where to Find Them
July 9th-13th

Super Scientists
July 16th-20th

Extraordinary Explorers
July 23rd-27th

The Art of Nature
July 30th-August 3rd

EcoHeroes
August 6th-10th

Rockin' Rocks and Fabulous Fossils
August 13th-17th

Each week, all camps will focus on the same nature-related topic, but students will be divided into age groups, and activities will be geared towards students in a specific age range (Pre-K-K, grades 1-2, and grades 3-5). Camps are designed for students entering the grade levels noted in the fall of 2018.

To learn more and to register, visit **MontanaNaturalist.org/summer-camps**.

SPOTLIGHT: Welcoming our new Front Desk Associates, Alyssa Cornell and Nikola Davis!

Our fabulous Office Manager, Holly Klier, retired this spring, and is already enjoying spending lots of time with her grandchildren. We miss her and wish her well (and are glad she still stops by MNHC sometimes)! Taking her place are not one but two new faces, so that our front desk is fully staffed during all our open hours, Monday-Friday, 9 a.m.-5.p.m., and Saturday, 12-4.p.m. (Yes, we are now open on Mondays!)

Alyssa Cornell grew up in Livingston, Montana, which afforded her the opportunity to explore local hiking trails and the Yellowstone River, as well as frequently boat, fish, and hunt for obsidian arrowheads with her friends and family at Hebgan Lake. When not outdoors, she could be found reading, enjoying athletics, or playing with her family's dogs, Raider and Tyson. Thanks to her father, reading, and an internship at the Yellowstone Gateway Museum, history became her passion. She received her B.A. in History at Arizona State University and M.A. in Public History from Arizona State University. Internships at the Arizona Historical Society Museum as well as the Scholar-Baller Initiative helped deepen her love for history, giving back to the community, the outdoors, and education. She is excited to be a part of an organization that connects people to nature through education and looks forward to learning as much as possible through the MNHC.

Nikola Davis spent her childhood in the Czech Republic, adolescent years in Slovakia, and early adulthood in Ireland. In Ireland she studied English and subsequently earned a B.A. in International Human Rights Law, Spanish, and Sociology & Political Studies. As a part of her studies, Nikola spent two semesters in Nicaragua working for a human rights NGO. While traveling in Central America she met Brett, who would become her husband. After two years of moving between the U.S. and Europe, they finally settled down in Missoula. In her free time Nikola likes to hike, take pictures, and scuba dive, but most of all she enjoys traveling and learning about diverse cultures.

Welcome, Alyssa and Nikola!

MNHC PHOTOS

SATURDAY, SEPTEMBER 29TH
5:00-9:00 p.m.
University Center Ballroom

Join us to support and celebrate the Montana Natural History Center with dinner, drinks, conversation, and our fabulous live and silent auctions!

Remembering Sherri Lierman

1945-2017

The Montana Natural History Center lost a dear friend this past December. *Sherri, we miss you!*

VNS PHOTO: MERLE ANN LOMAN

Visiting Naturalist in the Schools students from Stevensville Elementary enjoying their spring field trip at Lee Metcalf NWR.

As To The Mission

The Importance of Friends

Friendships are vital. And not only in our personal lives, but in other spheres as well. This is certainly the case for nonprofits and educational institutions. As in life, it's important for these groups to make friends. And not just with each other, but with other economic sectors like commercial businesses, agriculture, services industries, and arms of government. The Montana Natural History Center depends on these kinds of friendships. Friends are there for you. They're a sounding board, and of course friends support each other. Today I'd like to shine a light of recognition on our friends who are funding and working in conservation and restoration.

A shining example is the Friends of the Lee Metcalf National Wildlife Refuge (LMNWR). Like the Montana Natural History Center, the Friends' mission is all about fostering appreciation and stewardship of nature. The Friends have been engaged in conservation since 2003, achieving their mission by quietly but effectively providing financial support for projects in and around the LMNWR.

MNHC is one of many recipients of the Friends' funding, and we have directed this support towards our Summer Outdoor Discovery Day Camps and Visiting Naturalist in the Schools programs—both of which bring elementary school-aged children to the LMNWR and other natural spaces in the Bitterroot, Clark Fork, Blackfoot, and Mission Valleys to learn about nature.

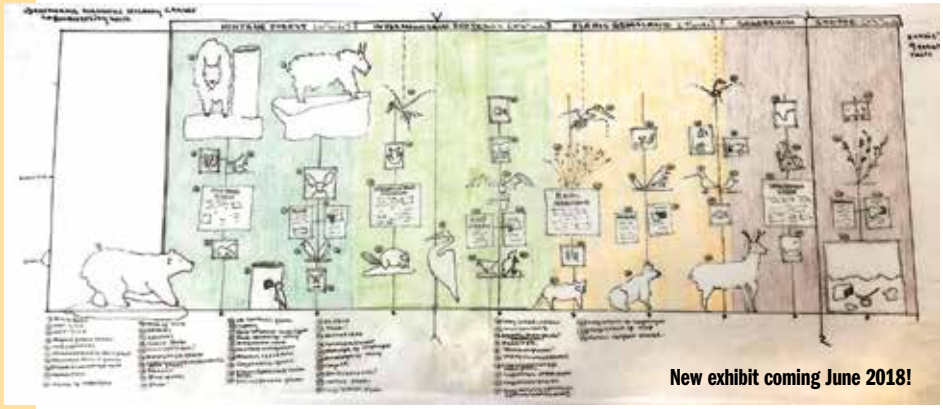
In addition to supporting MNHC's work with youth and schools, the Friends have also provided financial support to the Bitter Root Land Trust—helping to ensure the water quality in and around the LMNWR by protecting the Burnt Fork drainage from development.

The Friends raise money for these projects through membership and donations—but also through the sale of their beautiful Montana license plate, which features a striking Great Blue Heron against the backdrop of the LMNWR.

My hat is off to the Friends of the Lee Metcalf and all of the amazing and dedicated conservation groups supporting and doing work in our area. They are great friends and we couldn't do what we do without them (nor would we want to!).

Thurston Elfstrom,
Executive Director

For more information and to contact the Friends of the LMNWR, call 406.777.5645.



New exhibit coming June 2018!

CONCEPTUAL DRAWING BY OLIVIA GORDON.

MNHC Exhibits:

Come Check Out Our Interior Metamorphosis!

The staff and board at the Montana Natural History Center have spent the fall and winter squirreling away ideas and weaving plans to make the Center's exhibits more engaging, educational, and fun. The first phases of the project are underway! We have a new Magic Planet exhibit in place that features rotating exhibits from a tour through the solar system to visual demonstrations of how climate change affects the planet. But stay tuned—we are just getting started! More changes are on the way!

Magic Planet

New window art by Stephanie Frostad.

PHOTOS COURTESY STEPHANIE FROSTAD

MUSEUMS *for* ALL

Museums for All

The Montana Natural History Center, along with the Children's Museum, Missoula Insectarium, and spectrUM, are now a part of the national Museums for All program, an initiative of the Institute of Museum and Library Sciences. All of Missoula's Museums for All participants offer free admission to individuals and families receiving food assistance, who simply need to show their EBT card and a photo ID. MNHC is excited to be a part of this program, which makes it easier for all people to enjoy high-quality museum experiences! Please come and visit!

Become a Member of the Montana Natural History Center!

MNHC members get all kinds of great benefits: free admission to our Center; an annual subscription to *Montana Naturalist* magazine; discounts on MNHC classes, programs, and summer camps; and, through our participation in the Association for Science-Technology Centers' passport program, reciprocal admission to more than 300 science centers in North America. Check out astc.org for a complete list of participating centers. We offer three membership levels: $35 individual membership, $60 family membership, and our $75 grandparent membership, which is a great option for the whole family—it includes you, your children, grandchildren, and any other family/visitors.

Join us...renew your membership or become a member today!

Join Us for Our 2018 Lecture Series!

Hunting & Gathering: Learning to Read the Landscape

Join us for an exploration of the tradition of hunting and gathering, from food and medicine to the naturalist's habit of creating collections. Each of our six speakers will share their expertise, from identification and use of the object of the hunt to identifying the landscape or phenology clues that will help hunters and gatherers to find what they're looking for.

Upcoming Speakers:

Thomas Elpel, April 25th: **(Sold Out!)** Edible Plants: Foraging the Mountain West

Elaine Sheff, August 15th: Medicinal Plants: Nature's Medicine Cabinet

Ted Antonioli, September 19th: Early Mining for Flint and Gold

Tim Wheeler, October 10th: Edible Fungi: From Forest Floor to Fine Cuisine

$5 members; $10 non-members; students FREE.
For more information and to purchase tickets, visit:
MontanaNaturalist.org/hunting-and-gathering

Want to dig even deeper into these topics? Join us for our Naturalist Field Days: **Medicinal Plants with Elaine Sheff** on August 18 and **Lichens with Tim Wheeler** on October 13. $70 members; $80 non-members.

GOOD FOOD STORE

The Montana Natural History Center
thanks the
Good Food Store
for Sponsoring our 2018 Lecture Series -
Hunting and Gathering:
Learning to Read the Landscape

volunteer spotlight

PHOTO COURTESY STEPHANIE FISHER

Stephanie Fisher: Master Naturalist, Volunteer, and Intern

Stephanie has been involved with MNHC since she took the Master Naturalist course in the summer of 2014. "Learning about Montana's flora, fauna, and insects," she says, "created a sense of wonder for my new surroundings, and sparked childlike curiosity and excitement for my new home. I experienced connection to place in a new light after becoming a Master Naturalist." Over the next year Stephanie donated many hours to updating and developing new curriculum for our Glacial Lake Missoula traveling trunk. Next, as she worked toward her master's degree in Environmental Studies, she researched and developed interpretation for an alpine exhibit.

Then, in the spring of 2017, she began a year-and-a-half-long internship at MNHC, focusing primarily on filming our climate change lecture series, interviewing each of the speakers, and creating a climate change curriculum that teachers can use in their classrooms. The curriculum includes video interviews with five University of Montana experts discussing climate change from a number of angles—biodiversity, geologic history, ethics, business, and more—as well as discussion questions, vocabulary lists, how the lessons align to Next Generation Science Standards, and links to a wide range of further educational resources. (Check out the curriculum at MontanaNaturalist.org/climate-change/.)

Stephanie is grateful for the time she's been able to spend at MNHC. "The Montana Natural History Center has provided me with amazing opportunities to learn, grow, and share with others the many wonders of Montana!" And we are so grateful for Stephanie's dedication and hard work, and that she chose to lend her time, talent, and experience to MNHC over these past four years. Thank you, Stephanie!

Blackboard Mortar Chronicles

BY KENNETH C. WALCHECK

A warm early April sun bathed my face as I sipped hot coffee from a tin cup at our turkey hunting campsite in the rugged and remote Missouri River Breaks country. As I rested my back against a ponderosa pine while watching a Red-tailed Hawk circling high above me, one of my hunting companions trudged into camp to share an interesting observation. He'd stumbled across an abandoned, weathered log cabin that had all kinds of interesting notes written on the cracked and seasoned mortar used to fill the chinks between hand-hewn logs.

When I questioned him further, he elaborated on some of the notations he could recall. Most of the references focused on biological events that had occurred around the homestead, such as "saw first blue birds," "heard first toad," "cottonwood buds busting out," and "500 geese went south." Dates ranging from 1928-1962 were included with some, but not all, of the recordings.

I didn't get to visit the cabin during that spring hunt, but I vowed to return at a later date to document the "blackboard" mortar chronicles written by a man who apparently had a deep appreciation for the Breaks country, a place where a person can encounter a haunting and serene quiet, a place where one can feel at home with ancient and mysterious rhythms, a place that offers a museum of living complexities and wonders. It was two years later that I was finally able to fulfill that promise.

There are degrees of history in viewing old homesteads. Some old houses, such as this one, cock an eye at you and say, "There's a story waiting for you here." Conservationist, ecologist, and wilderness advocate Aldo Leopold once wrote,

DRAWING BY KATE WALCHECK

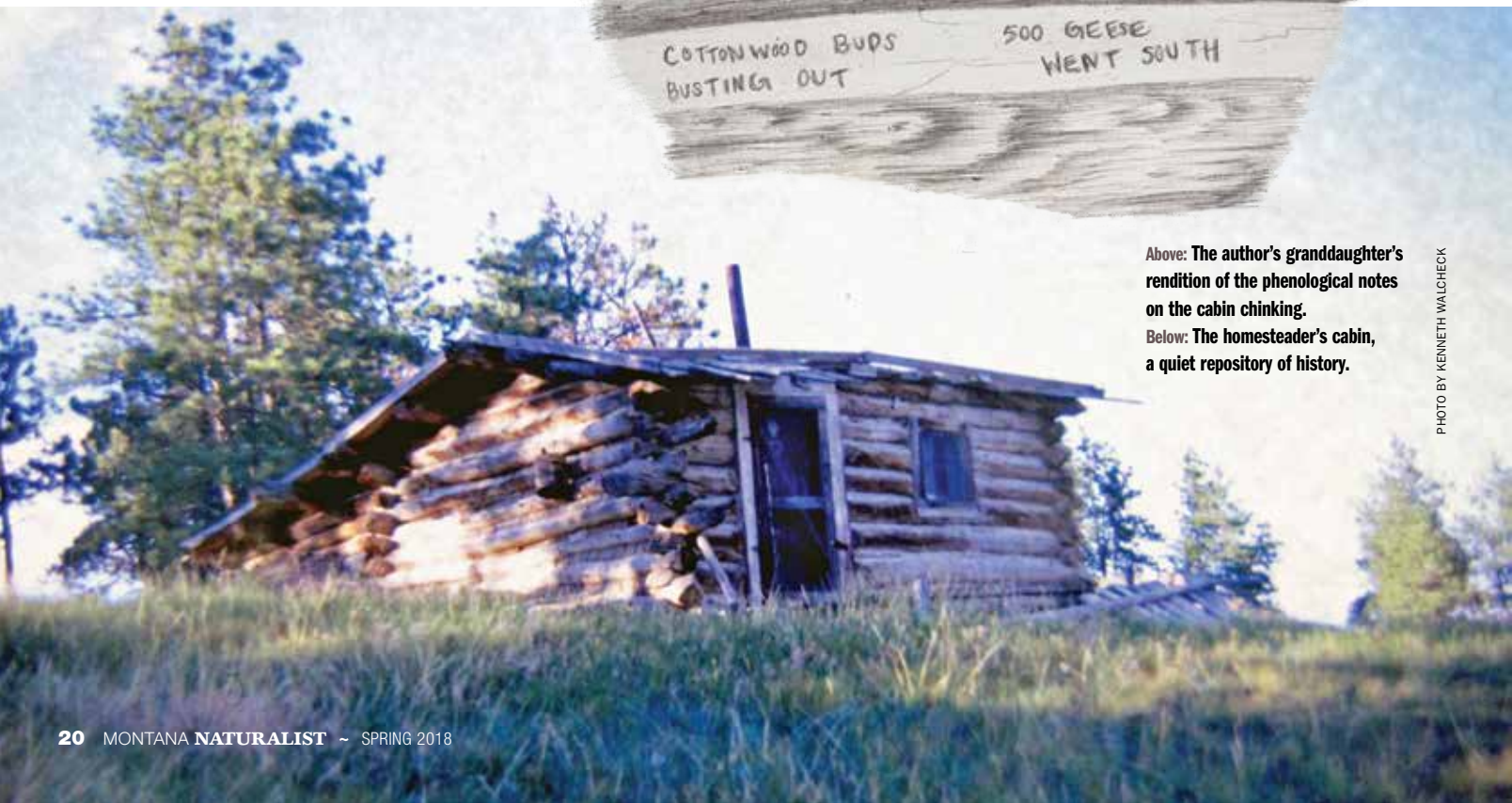


PHOTO BY KENNETH WALCHECK

Above: **The author's granddaughter's rendition of the phenological notes on the cabin chinking.**
Below: **The homesteader's cabin, a quiet repository of history.**

PHOTO BY MATT GREEN, FLICKR.COM

The rugged, open landscape of the Missouri River Breaks country, looking much as it did a century ago.

> "There is much confusion between land and country. Land is the place where corn, gullies, and mortgages grow. Country is the personality of land, the collective harmony of its soil, life, and weather. Country knows no mortgages, no alphabetical agencies, no tobacco road; it is calmly aloof to these petty exigencies of its alleged owners."

It was apparent from the homesteader's penciled notations that he knew the difference between land and country. He was undoubtedly well aware that "his" country was a place that offered a wealth of living complexities and wonders, a Charlie Russell-type country.

The rustic cabin, tucked away on a hillside, walled in by ponderosa pines, offers spectacular views to a dissected country that lifts in great swells to the open horizons. As I stepped through the cabin's open doorway, a pungent smell of rodent droppings and mold spewed from the darkened interior. Stepping further into the cabin, I felt the history of the place, felt a desire to look through the clues left by the homesteader to get as full of a glimpse as I could into this window of the past. As I examined the homesteader's penciled notations on the mortar, I felt a new appreciation for historical documentations. Words such as these, captured and tightly held over the passage of time and distance until another human found and read them, are extremely valuable in giving one a better understanding of past biological happenings.

The former occupant was not aware that he was dabbling in a later-developed branch of science known as phenology that deals with the relationship between climate and seasonal biological phenomena such as the seasonal timing of flowering and fruiting of plants and migration of birds. The following are a modest sampling of the occupant's attentiveness to this subject:

1954

APRIL 5 – SAW FIRST BLUE BIRDS
APRIL 7 – FIRST ROBIN
APRIL 8 – FIRST MEADOWLARK
APRIL 10 – YELLOW BUTTERCUP BLUE CROCUS BLUMED
APRIL 12 – HEARD FIRST TOAD
APRIL 28 – WILD CHERRIES BLOSSOMED
MAY 10 – LITTLE REN FAITHFULLY RETURNED
JUNE 3 – WILD ROSE NOW IN BLUME
JULY 15 – PRICKLEY PEAR NOW IN FULL BLUME AND NOW ABUNDANT

The homesteader also recorded other items which I found interesting.

"FIRST AIR PLANE FLEW OVER THIS PLACE OCTOBER 31, 1928 THER WAS BLIZZARD NEXT DAY"
"PUT STEEL ROOF ON HOUSE – 1939"
"STARTED BURNING COAL FALL OF 1953"
"FIRST HELICOPTER FLEW OVER THIS PLACE SEPT. 26, 1953 ABOUT 10 O'CLOCK IN FORENOON, IT WAS GOING WEST"

One of the requisites for understanding the term "natural history" is an understanding of ecology—which does not necessarily require formal education. In fact, a basic understanding of ecology may come more readily outside of formal classes and educational institutions. Observation and perception cannot be purchased with either dollars or advanced degrees. Like all real treasures of the mind, ecological perception of one's surroundings is something that comes from within a person.

I regretted not being able to meet and talk with this Breaks homesteader who obviously had a deep connection to his place. I would have been fascinated to hear about his background, a full-spun history of the area, and his deep ecological understanding formed from years of observing the surrounding landscape. Yet I am grateful for the clues he left that allowed me, decades later, a glimpse of his life, his place, the past.

—Kenneth Walcheck is a retired wildlife information biologist, and currently remains active in researching Montana natural history documentations with a main focus and interest in the Lewis and Clark journals and the explorers' natural history discoveries.

Life, Underneath

BY ELLERY GERMER MILLS

**Under the cold winter
nights, blizzarding snow,
rain ice,
repeat,
cold, wintery
weather takes place,
the birds in their
tight homes
get going to warmer
places, rotating
again and again
each year, but
underneath
the ice, and
many inches
of snow,
there's life,
despite the cold, winter
nights, the
moss gets ready to
grow, dandelions
ready to sprout,
there's sweet too,
sweet tree trunks,
despite the bitter
cold snowy pockets
of ice on the outside,
but in the spring the
cold tree will turn into
something beautiful in the spring,
when you step you can see little pockets
of spring, only to be covered
by an icy sheet of snow
the next day, underneath the
blanket, animals, mice, moles, and such,
scurry about, bears
sleep in a snowy cave,
plants begin to grow,
life is cold but it's
everywhere, waiting for
the warm rain to come**

Ellery Germer Mills is a student in Kelli Van Noppen's fourth-grade class at Paxson Elementary.

PHOTO: MERLE ANN LOMAN, AMONTANAVIEW.COM

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