

MONTANA

Fall 2013

Naturalist

**The Dirt
on Dirt**

**Keeping our
Urban Forest
Healthy**

Kids: Natural Scientists

**Fall Art
Projects
and More**

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Montana Natural History Center
Connecting People with Nature

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

MONTANA Naturalist

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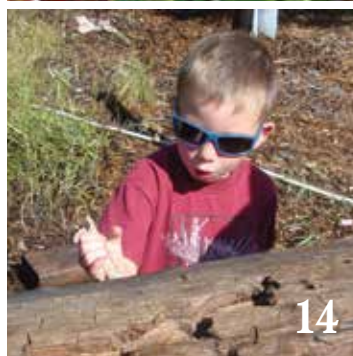
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Cover – A monarch butterfly dries in the early autumn sun after emerging from its chrysalis. While monarchs are not common in Montana, they may be found in areas where milkweed grows. Monarchs cycle through three or four generations each year; those born in the fall live longest, migrating south to California or Mexico to winter in warmer climates. In early spring, they will mate, lay their eggs, and die, leaving the next generation to journey north.

Photo by April Van Rys, a Midwestern photographer who captures a wide variety of images. She has a passion for nature and feels beauty can be found in every landscape. See more of her work at www.aprilvanrysphotography.com.

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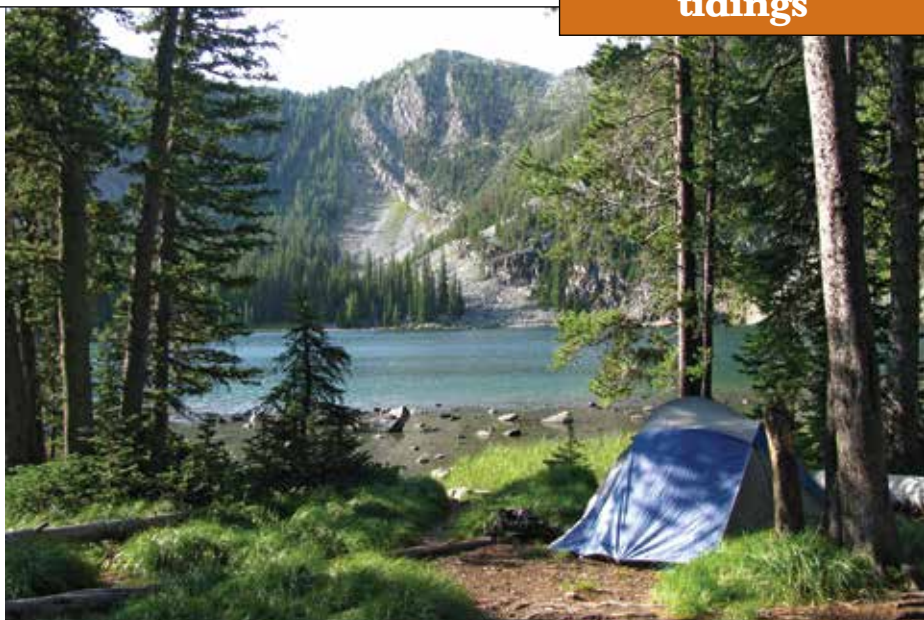


Photo by Allison De Jong

A quiet morning on Edith Lake in the Anaconda-Pintler Wilderness.

Late August 2013. Fall is right around the corner—the days are, almost imperceptibly, getting shorter, the angle of the light longer, and we're getting some clouds and refreshing splatterings of rain. We're embarking on another season, which can be as much a time of new beginnings as the first of January.

In this issue we look at the enthusiasm children have for nature (page 14), at humans' innate desire to interact with and learn about the world around us (page 4). Sometimes, as we mature, this curiosity gets squelched a little—but I like to think that even when it does, it's not too far beneath the surface. And spending time with children can help remind us how intricate and mesmerizing even the simplest things are—monarch butterflies and crow feathers and Norway maple leaves and a handful of dirt.

Curiosity about dirt led Ylva Lekberg to become a soil ecologist, studying the complex relationships between the roots of plants and microscopic fungi (page 6). A love of trees inspired Karen Sippy to work for the health of Missoula's urban forest through education and advocacy (page 13). Hundreds of adults have taken the Montana Master Naturalist Course, sometimes drawn by an almost childlike curiosity to learn more about their place (page 17).

As the season shifts, this may be a good time to ask:

Where does your curiosity lead you?

What places draw your imagination?

What discoveries do you want to make this fall?

Happy exploring!

Allison De Jong

Editor

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Born to Explore:

How the Scientific Process Helps Us Understand Our World

By Leah Grunzke



It's midsummer, and the morning sun rises on a western Montana grassland. White-tailed deer saunter past stalks of late-season wildflowers, tawny and perse. A coyote skirts clumps of arrowleaf balsamroot, long ago set to seed. A mischief of deer mice scurry through patches of *Delphinium bicolor*, gathering the protein-rich larkspur seed in preparation for the coming season. Overhead, a red-tailed hawk circles, watching.

Given a basic understanding of foodweb ecology, the patterns in an ecosystem like this seem pretty straightforward. If the hawk, a top predator, swoops to catch and consume the deer mouse, the seeds that mouse would have gathered will be left on the ground. Fewer seeds lost to predation means more plants next season. Lots of hawks = fewer mice = more plants. Right?

Of course, the dynamics of an intricate food web are much more complex than this simple tale of cause and effect would suggest. We're lucky in Montana, to have so many amazing natural places to explore how such systems work. Scientists like

the University of Montana's John Maron, who studies grassland ecosystems in the Blackfoot River valley, are eager to know more (see sidebar).

A logical question might be: Why? Why is it important to know more about how nature works? What are the practical applications of research like this, and who is going to hear about the results? Land managers and ecologists can certainly use data on the effects of biodiversity losses. But is it also enough to say, "We practice science for its own sake. We want to know more because we need to understand our world . . ." ? Maybe—if we're helping other people understand their world as well. Part of the joy of science is sharing what you learn. Research projects like Maron's, being conducted in wild places right here in our backyard, are a great way to teach everybody how nature works, and how science is practiced in the real world. The chance to see research taking place, and talk to the scientists behind it, gives people (adults and children alike) a better understanding of the issues that affect the land, wild creatures, and people around us.

Photos (top & left) by Leah Grunzke; (right) by Rose Dickson

Connecting with Kids

We begin the scientific process before we can walk, talk, or understand the experiments we're conducting.

Pick something up. *Hot!* Drop it.

Pick up something else. *Not hot* . . .

Put it in your mouth.

Bitter? Spit it out. *Sweet?* Pick up another one . . .

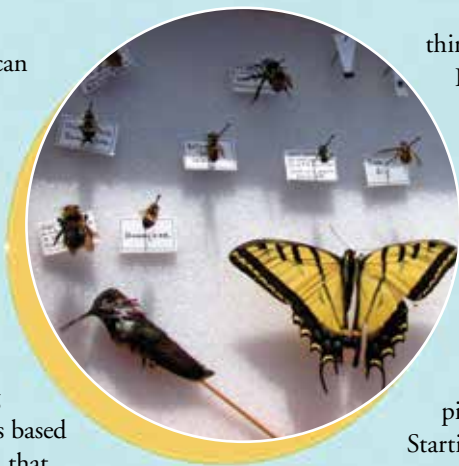
From earliest childhood we're constantly forming hypotheses, adjusting variables, interpreting outcomes, modifying our expectations and tweaking our methods based on our observations. It goes to follow, then, that kids are natural scientists, and can especially benefit from living in a community filled with people and organizations that study our environment. The research being conducted by people in the professional scientific community is often highly complex and filled with advanced concepts, however. The challenge is to find ways to connect kids with the scientific process itself, and help them understand the basic concepts behind how plant and animal communities interact, survive and reproduce.

The best learning experiences often come in the form of play. There is no better way to get intimately acquainted

with a meadow than to crawl through it on your belly. Sneaking through tunnels of shady leaves might be the best way to discover a hidden nest, or a sparkling rock, or the source of a spring. And it only takes one unfortunate fort

to teach you the difference between a log and a log full of fire ants. Simply being present in wild places, with the freedom to follow any interesting whimsy that comes along, is a chance to be a scientist, exploring patterns and developing creative interpretations of the world. Given the opportunity to observe and discover nature first-hand, kids can also develop a more in-depth understanding of natural processes through organized games and physical activities. It is one thing to listen to someone explain the basics of predator-prey interactions; it is quite another to play the role of a ground squirrel, trying to gather diminishing resources while dodging other children playing the roles of coyotes and badgers.

We can also encourage kids to think scientifically in the way they collect and classify



Nature is a ready-made science lab and classroom, and kids are born to experiment.

when I really came to understand how they fit into the world. An insect or rock collection is transformed into a science project by labeling and categorizing your specimens—that isn't just a bug, but a western tiger beetle or a great spangled

fritillary. Learning to identify and differentiate between the things you find in nature can mark the beginning of a lifelong treasure hunt to find out more.

Nature is a ready-made science lab and classroom, and kids are born to experiment.

Simply by getting kids outside,

we are helping them build a connection with advanced concepts like population dynamics, food web ecology, water cycles, nutrient processing, and countless others. By practicing observation, classification, experimentation, creativity and critical thinking, they gain invaluable experience in the scientific process.

Programs that allow young people to observe the real-world research that's taking place locally are icing on the cake. The chance to meet and interact with professionals in the scientific community is a chance to better understand ecological processes as well as issues that affect our wild places. With this familiarity, young people will be better equipped to become stewards of the land and informed members of the community as their own lives unfold. There's inherent value in fostering the inquisitive scientific nature in all children—and who knows? Perhaps some of them will grow up to do valuable scientific research like John Maron and so many others.

—Leah Grunzke is a botanist and educator, and it is her continuing mission to help people find new avenues of exploring the natural world. She studies backyard wildlife gardening, native plant ecology and pollinator conservation in the wild places of western Montana.

things. As a youngster, I would come home from nearly every outing with pockets full of interesting bits I'd found—wisps of lichen, a rock with a hole in it, a couple of pinecones, a beetle.

Starting to learn the names of these scraps was

John Maron's Real-World Research

John Maron is an ecologist with the University of Montana's Division of Biological Sciences. He studies the biology of exotic plant species and food web ecology. In the Blackfoot River valley, he's looking at how assemblages of top predators like coyotes, hawks, and weasels affect the populations of their herbivore prey (mice, voles and ground squirrels), and how this in turn affects plant communities. Do top predators really have a cascading effect down the food chain? What other factors are involved? By studying large areas over the course of several years, he seeks to understand the long-term impacts of changing predator-prey interactions, not just on individual species, but on the grassland ecosystem as a whole.



Maron's research also includes an outreach component designed to connect the real-world science taking place with education programs in the community. Through these efforts, youth in the Montana Natural History Center's summer camps and the Flagship After School Program are able to participate in nature-based discovery programs at the Native Plant Garden at Fort Missoula. Kids explore predator-prey interactions, build mini naturalist museums, practice scientific journaling, perform seedling experiments and participate in service learning activities. Unique partnerships like these allow kids to cultivate their inner scientist, learn about Montana's environment, and have fun exploring the wild world around them.

Common as dirt. Dead as dirt. Duller than dirt.

Not one of these familiar phrases is arguably true about the thing most of us also refer to as ground, soil, earth.

Certainly topsoil, the stuff essential for growing things, is not common at all. With an average depth of only a few feet, it's a thin veneer over a mere 10 percent of the planet's surface (what's at the bottom of the oceans and other large bodies of water is not the same thing). You might think of soil as Earth's placenta, a source of sustenance equally important to our survival as air, water and sunshine. But an inch of new topsoil takes anywhere from several to 1,000 years to form, depending on weather, topography, type of parent material and what life lives on and in it. And we are losing productive soil at an unprecedented rate, through erosion and removal as we cut down forests and pave over the landscape.

Most dirt isn't dead, either. It's chock full of a truly astounding array of living things. There are mammals that excavate spaces underground in which to give birth and to survive winter's cold or summer's heat. Almost all insects and many other arthropods spend at least part of their life cycles in soil, munching away on plant and other organic material. Earthworms surf through the soil, breaking it up so it can hold more air and water, and leaving it further fertilized in their digestive wakes. Meanwhile, the most common macroscopic organism in soils—nematodes, or roundworms—are important decomposers as well as parasites of plants and animals, themselves prey to legions of microscopic fungi. And, perhaps most importantly of all, soil contains a universe of microorganisms—bacteria, protozoa, fungi and viruses—so intricately connected that it's hard to tell where one leaves off and another begins.

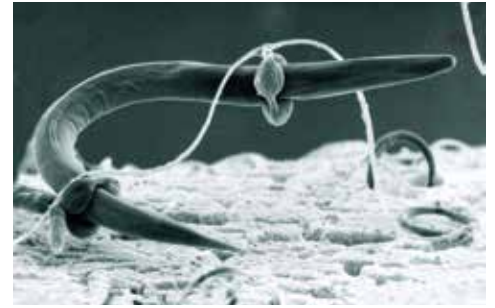


Photo by George L. Barron Ph.D. D.Sc.

All these organisms are engaged in producing and consuming, breaking down and recycling the chemicals and energy stored in once-living plants and animals. It's been said that a shovelful of dirt contains more individual organisms than all the humans that have ever lived, and that soil is both the source and product of the great cycle of life and decay.

So, is dirt dull? Not once you start looking closely at it. And here in western Montana, soil ecology in particular is a topic of much practical concern for the future of healthy forests and grasslands.

Ylva Lekberg is a soil ecologist working on the MPG Ranch in the Bitterroot Valley. To her, dirt is a source of endless fascination as she tries to untangle the sometimes

Dirt(y) Secrets:

What Goes on Underground?

By Caroline Kurtz

Above: A nematode captured by the constricting rings of a predatory fungus. The rings are made up of three cells and are triggered by touch—when a nematode's head or tail goes through a ring, the cells quickly expand, trapping the hapless nematode, which will be digested by the fungus within a matter of hours.

contradictory-seeming connections between certain types of soil fungi and aboveground plants, especially some non-native types that arrive here and explode in number.

Sometimes they burgeon in overall plant size as well. On a field trip to Turkey with Dean Pearson from the Rocky Mountain Research Station this summer, Lekberg observed plant species that are native there but are exotic (and sometimes invasive) here in Montana. One such,

Carduus nutans, commonly known as nodding or musk thistle, is abundant in Turkey but the individual plants are not very big.

"Here they grow up to five times the size," she says, pointing to more than a dozen grocery bags filled with cut-up parts of just one specimen from the MPG ranch.

Why do some exotic plants become invasive? What is behind their explosive growth habits? Is it a lack of natural enemies here, things that eat the plants or attack them in some way in their native range? Is it because they no longer have to invest so much of their resources in defense? Or is something going on underground, in the soil, that affects their growth?

It's well known that the favorite habitat of soil microbes—bacteria and fungi, primarily—

is near, on or even inside the roots of plants; up to 100 times more live in this "rhizosphere" than elsewhere in soil. Eighty percent of all plants have so-called mycorrhizal associations ("myco," referring to fungi, "rhizal" referring to roots). The spruce, pine and fir trees of Montana forests literally depend on varieties of ectomycorrhizal fungi that, as the name suggests, form a living sheath on the outside and in between the cells of their roots. Hair-

like fungal mycelia permeate forest soils, sometimes erupting in visible spore-dispersing bodies—mushrooms—

that are choice food for many animals, including people.

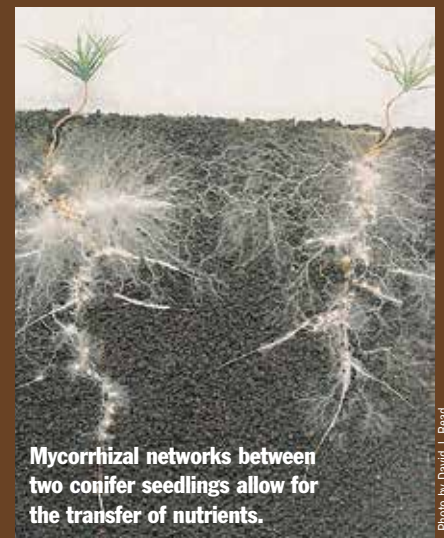
Lekberg, however, studies a type of mycorrhizae called arbuscular mycorrhizae (AM), which is a symbiosis formed between microscopic AM fungi and mostly herbaceous plants. These AM fungi are invited to live inside the cells of plant roots and cannot survive long without a living host. AM fungi colonize roots of most plants, including garden favorites such as tomatoes and corn. These fungi help the plant acquire needed nutrients, such as phosphorus and nitrogen, in return for

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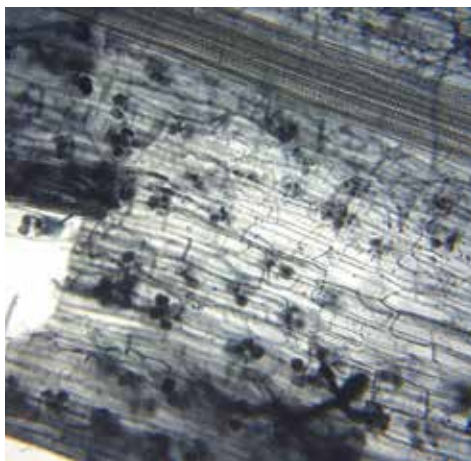


A comparison of *Carduus nutans*: in Turkey (top), where it's native, plant size is small—1-2 feet high. In Montana, where it's exotic, musk thistle can grow up to five feet tall; this enormous specimen grew on the MPG Ranch.

Right: Ectomycorrhizal relationships form between fungi and about ten percent of plant families, including birch, rose, and conifers. Here you can see the thick sheath, called the mantle, that the fungi form on the surface of the roots, and the branching structures called hyphae that can reach several centimeters into the soil, aiding in water and nutrient intake.



Mycorrhizal networks between two conifer seedlings allow for the transfer of nutrients.



Arbuscular mycorrhiza in flax root cells seen under a microscope.

carbon. This mutual living arrangement evolved over 400 million years, Lekberg says, “and probably helped plants colonize land in the first place.”

Out on the previously heavily used range of the MPG Ranch, Lekberg is trying to understand how communities of soil microorganisms change in the presence of invasive plant species. From her research and that of others it is becoming clear that invasive forbs—non-grasses such as knapweed, thistle and spurge—can have a positive effect on the number and abundance of some soil microbes, including AM fungi, which increase the availability of nutrients in the soil and the invaders’ access to them. In general, forbs—native or not—with their coarser taproots, have a much higher dependence on AM fungi

than grasses—native or otherwise—that have much finer, hair-like roots. “AM fungi love knapweed, and they don’t seem to care if they get their carbon from a native or invasive plant as long as they get it,” Lekberg says.

The affection seems to be mutual. When knapweed is only competing with itself, as in established invasions, it doesn’t appear to be very dependent on AM fungi, Lekberg says. However, research conducted by Ray Callaway’s group at the University of Montana has shown that knapweed competes better with native bunchgrasses when it is mycorrhizal. Native grasses naturally do not make as much use of AM fungi and have adapted to the generally nutrient-poor soils on our hillsides and valleys.

“Native grasses are conservative nutrient users,” says Lekberg, “whereas many invaders are ‘plastic’ in their response. They see available nutrients and are quick to take advantage of them for growth,” which may help them outcompete the native grass. To reduce the availability of these nutrients and in turn increase the competitiveness of native plants against invaders, scientists have experimented with adding such strange things as sawdust and regular store-bought sugar to the soil—trying to find substances to bind up the extra nutrients—during restoration.

But what about native forbs? What happens with blanketflower and yarrow in the presence of invaders? Here in western Montana, says Lekberg, our rangelands are grass-dominated and our native forbs have

been decreased due to repeated forb-specific herbicide use. Tordon may be effective at killing knapweed, but it also eliminates these “good” forbs. Invasive grasses like bulbous bluegrass (*Poa bulbosa*) and cheatgrass (*Bromus tectorum*) are unaffected by spraying and move in, reducing the overall abundance of AM fungi, as grasses are not such good hosts. Lekberg speculates it is possible that lower fungal abundance may make it much more difficult to get native forbs, which *are* good hosts and *do* need fungi, to come back. Further study in this area may have implications for restoration.

Trying to predict what approaches to rangeland restoration might have the best success raises the question: what do we want from the land, anyway? If it is primarily used for grazing, does it matter to livestock if the habitat is full of native plants or exotic ones, such as crested wheatgrass? What about wildlife?

“Add to this the issue of climate change,” Lekberg muses. “Plants that were here 100 years ago may not grow so well in the next 50. Do we need to be importing plants from places like Utah to use in restoration instead?”

So many big questions with global implications, stemming from a discussion of humble dirt and the tiniest of organisms that live in it. Dull, indeed! 🐦

—Caroline Kurtz is the former editor of Montana Naturalist. She continues to learn and write about nature and issues that relate.

Some plants, like pinedrops (*Pterospora andromedea*) and Indian pipe (*Monotropa uniflora*), are saprophytic: unable to manufacture their own food, they tap into the rich network of mycorrhizal relationships in the soil, gleaning the nutrients they need from fungi. But unlike most of the plants that have mycorrhizal relationships with soil fungi, these plants are parasites—they give nothing in return, essentially “cheating” the system to obtain nutrients. Saprophytic plants do not photosynthesize, and thus have neither leaves nor chlorophyll: they are not green, but whitish or reddish or yellowish in color, and can be found in the deep shade of coniferous forests.

Want to get more of the dirt on dirt? Check out:
www.school.discoveryeducation.com
www.commtelab.msu.edu
www.doctordirt.org
www.eduplace.com
www.mpganch.com



Pinedrop photo by Walter Siegmund; Indian pipe by Magellan NH



Do You Know Your Berries?

Autumn: a time of harvest, both in our gardens and in the wild world beyond. There are lots of berries out there, some delicious, some not (but still edible), and some that aren't good for us at all (but are often safe for birds or other animals to eat). Do you know which are which? (And remember, never eat wild fruit unless you know for certain that it is safe!)

A. Baneberry (*Actaea rubra*) blooms in pretty white flower clusters at the ends of 1-3 foot stalks, which produce rounded clusters of bright white or bright red berries that are highly toxic (as are the foliage and roots). Eating as few as two berries can cause vomiting, so leave this plant alone and look for some of Montana's edible fruits!

B. Chokecherry (*Prunus virginiana*) produces clusters of shiny, red to purple or black fruits, which are edible but very sour. Add a little sugar, and they make delicious jellies, wines, and syrups. Just make sure to remove the pit before eating—the hydrocyanic acid in the pit can cause nausea and other digestive troubles.

C. Golden currant (*Ribes aureum*) can be found in riparian habitats, and produces one of the few pleasant-tasting fruits in the currant/gooseberry genus—none are toxic, but there are many that you wouldn't want to sample. The orangeish-red fruit has a mealy texture but a hint of sweetness, and, like chokecherry, makes a delicious jelly.

D. Huckleberry (*Vaccinium sp.*) is a plant—and fruit—with which many Montanans are familiar; we look forward to these sweet purply-blue morsels appearing on shady hillsides in mid to late summer, and they taste delicious plucked right off the plant with our purple-stained fingers. For those with willpower enough to actually bring some home, they can be used in myriad ways—pies, jams, wine, pancakes, muffins, smoothies...

E. Blue elderberry (*Sambucus caerulea*) has cream-colored blossoms that produce powdery-blue berries hanging in almost grape-like clusters, though the individual fruits are small, only ¼ inch in diameter. The fruits are edible, easily collected, and can be made into pies, jams, jellies, and wine.

F. Rocky Mountain Juniper (*Juniperus scopulorum*) is a shrubby conifer, sometimes tree-like, sometimes sprawling, with grey-tinged blue "berries"—which are not berries at all, as gymnosperms don't produce fruit. The berry-like cones are not particularly palatable, though the cones of some species are used to flavor gin or as seasoning in food.

G. Kinnikinnick (*Arctostaphylos uva-ursi*) is a low, evergreen shrub in the heath family with pink, urn-shaped blossoms. Its fruits are round, bright-red berries, ¼-½ an inch wide, edible, but mealy and bland-tasting. Also known as bear berries, they remain on the plants into the winter, providing food for bears, birds, and other wildlife.

H. Oregon Grape (*Mahonia repens*) is an evergreen shrub with glossy, spiny leaves. It blooms in whorls of bright yellow flowers, and then, in late summer, produces clusters of deep bluish berries. The berries are edible but tart, another fruit that's probably better mixed with sugar and made into jelly—or left as food for the many species of mammals and birds that eat it.

FOR FURTHER READING:

Edible and Medicinal Plants of the West
by Gregory L. Tilford

Edible & Medicinal Plants of the Rockies
by Linda Kershaw

The Rocky Mountain Berry Book by Bob Krumm

I. Serviceberry (*Amelanchier alnifolia*) is a large shrub or small tree, whose white, five-petaled flowers fill the air with sweet smells in early summer. The fruits are deep purple and look like tiny apples, and are edible with a hint of sweetness. Serviceberry fruits also made a good jam or jelly.

J. Snowberry (*Symphoricarpos albus*) is a mid-sized shrub that produces clusters of bright white berries that last through the winter. While they are an important source of winter food for birds, these berries are not good for human consumption—the Native American name for the plant means "ghost berries" or "corpse berries."

K. Thimbleberry (*Rubus parviflorus*) is closely related to raspberry, but has much larger, maple-shaped leaves and no thorns. The fruit is raspberry-like: bright red and domed, but juicier, and, as you discover when you pick the fruit, a little more fragile and prone to crumble in your hands—so pop it in your mouth quickly and savor its sweetness!

ANSWER:
FIRST ROW: K. Thimbleberry, I. Serviceberry, A. Baneberry, H. Oregon Grape
SECOND ROW: C. Golden currant, E. Blue elderberry, J. Snowberry, G. Kinnikinnick
THIRD ROW: F. Rocky Mountain Juniper, D. Huckleberry, B. Chokecherry

Photos by Jim Dexter (thimbleberry), Meggar (serviceberry), El Grato (baneberry), Nuck Perla (golden currant), Walter Siegmund (elderberry), H. Zell (snowberry), Stan Porse (kinnikinnick), D.E. Hermon (juniper), Klopfer (huckleberry), Bottaville (chokecherry), and Allison De Jong (huckleberry hands).

September Gallery all month. **Wendy Evans:**
Plants, Flowers, and Trees of Montana.

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

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

September 7 **Saturday Kids' Activity**,
2:00-3:00 p.m. Daytime Astronomy with the
Western Montana Astronomical Association.
\$3; \$1 MNHC members.

September 10 **Ecology Walk and Picnic**,
12:00-1:30 p.m. \$5 suggested donation;
free if you bike, walk or bus.

September 12 **Native Plant Gardens Program**,
8:15-10:00 p.m. Bat Walk with Kristi Dubois at
the Fort Missoula Native Plant Gardens. \$5.

September 18 **Glacial Lake Missoula Chapter
Meeting**, 4:00 p.m. Free and open to
the public.

September 22 **Glacial Lake Missoula Field Trip
and Dinner**, 1:00-8:00 p.m. \$ TBA.

September 25 **Volunteer Naturalist Training**,
3:30-5:30 p.m. VNS Field Trip Training. Learn
how to teach kids about the flora and fauna
of western Montana during the October
VNS school field trips. No prior experience
necessary.

September 26 **Native Plant Gardens Program**,
5:30-7:30 p.m. Soup and Spud Fest! at the
Fort Missoula Native Plant Gardens. \$5.

September 28 **Naturalist Field Day**,
9:00 a.m.-5:00 p.m. Local Geology with Bruce
Baty. \$80; \$70 MNHC members.

October Gallery all month. **Stephanie Frostad**,
MNHC Muralist.

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

October 3 **Native Plant Gardens Program**,
5:30-7:30 p.m. Basketry and Cordage. \$5.

October 4 **First Friday Gallery Opening
and Mural Unveiling**, 4:30-6:30 p.m.

October 11 **Fall Celebration and Auction**,
5:00-9:00 p.m. at the DoubleTree Hotel. Bid on
exciting trips and experiences in our live and
silent auction, enjoy a delicious dinner, and
celebrate with us a year of accomplishments
and fun!

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

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

October 17 **Native Plant Gardens Program**,
5:30-7:30 p.m. Spooky Centerpieces. \$5

October 26 **Saturday Kids' Activity**,
2:00-3:00 p.m. Do You Sense That? with
Animal Wonders Inc. \$5; \$3 MNHC members.

November Gallery all month. **Lee Silliman:**
Yellowstone's Fossil Forests.

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<div>September</div> <div> <div> <div> <div>  Volunteer Naturalist Training. Introduction to volunteering, 4:00-5:00 p.m. </div> <div>4</div> </div> <div> <div>  miniNaturalists Pre-K Program, 10:00-11:00 a.m. </div> <div>5</div> </div> <div> <div>  September Gallery, all month. Wendy Evans: Plants, Flowers, and Trees of Montana. </div> <div>6</div> </div> <div> <div>  Saturday Kids' Activity. Daytime Astronomy, 2:00-3:00 p.m. </div> <div>7</div> </div> </div> </div>						
<div> <div> <div>MNHC Hours: Tuesday-Friday, 9 a.m. - 5 p.m. and Saturday noon - 4 p.m.</div> <div> <div>Admission Fees: \$2/adults, \$1/children under 12 (maximum \$6) Free/children under 3 and MNHC members</div> </div> </div> <div>8</div> </div>	<div> <div>9</div> </div>	<div> <div> <div>  Ecology Walk and Picnic, 12:00-1:30 p.m. </div> <div>10</div> </div> </div>	<div> <div>11</div> </div>	<div> <div> <div>  Native Plant Gardens. Bat Walk, 8:15-10:00 p.m. </div> <div>12</div> </div> </div>		
<div>15</div>	<div>16</div>	<div>17</div>	<div> <div>  Glacial Lake Missoula Meeting, 4:00 p.m. </div> <div>18</div> </div>	<div>19</div>	<div> <div>  Naturalist Field Day. Local Geology, 9:00 a.m.-5:00 p.m. </div> <div>28</div> </div>	
<div> <div>  Glacial Lake Field Trip and Dinner, 1:00-8:00 p.m. </div> <div>22</div> </div>	<div>23</div>	<div>24</div>	<div> <div>  Volunteer Naturalist Training. VNS Field Trip Training, 3:30-5:30 p.m. </div> <div>25</div> </div>	<div>26</div>	<div>27</div>	<div>28</div>
<div>October</div>			<div> <div>  miniNaturalists Pre-K Program, 10:00-11:00 a.m. </div> <div>3</div> </div>	<div> <div>  Native Plant Gardens. Basketry & Cordage, 5:30-7:30 p.m. </div> <div>3</div> </div>	<div> <div>  October Gallery, all month. Stephanie Frostad, MNHC Muralist. First Friday & Mural Unveiling, 4:30-6:30 p.m. </div> <div>4</div> </div>	<div>5</div>
<div>29</div>	<div>30</div>	<div>1</div>	<div>2</div>	<div> <div>  Fall Celebration and Auction, 5:00-9:00 p.m. </div> <div>11</div> </div>	<div>12</div>	<div>19</div>
		<div>8</div>	<div> <div>  Glacial Lake Missoula Meeting, 4:00 p.m. </div> <div>16</div> </div>	<div> <div>  miniNaturalists Pre-K Program, 10:00-11:00 a.m. </div> <div>17</div> </div>	<div>18</div>	<div> <div>  Saturday Kids' Activity. Do You Sense That? 2:00-3:00 p.m. </div> <div>26</div> </div>
<div>20</div>	<div>21</div>	<div>22</div>	<div>23</div>	<div>24</div>	<div>25</div>	<div>26</div>
<div>27</div>	<div>28</div>	<div>29</div>	<div>30</div>	<div>31</div>	<div> <div>  November Gallery, all month. Lee Silliman: Yellowstone's Fossil Forests. First Friday, 4:30-6:30 p.m. </div> <div>1</div> </div>	<div>2</div>

Jerry A. Payne, USDA Agricultural Research Service, Bugwood.org

USFWS Photos

November

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
3	4	5	6	7	8	9
10	11	12	13	14	15	16
		19	20	21	22	23
		26	27	28	29	30


 **Winter Speaker.**
Lee Silliman,
7:00-8:00 p.m.

 **miniNaturalists Pre-K Program,**
10:00-11:00 a.m.

 **Native Plant Gardens Program.**
November Night Skies,
5:30-7:30 p.m.

 **Winter Speaker.**
Scott Samuels,
7:00-8:00 p.m.

 **Winter Speaker.**
Clark Fork Native
Plant Society,
7:30-8:30 p.m.

 **Saturday Kids' Activity.**
Paper Insect
Pinning,
2:00-3:00 p.m.

*Peak of
mule deer
mating
season*

 **Glacial Lake Missoula Meeting,**
4:00 p.m.

 **miniNaturalists Pre-K Program,**
10:00-11:00 a.m.

December

1	2	3	4	5	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	31	1	2	3	4

 **Volunteer Fall Fiesta,**
4:30-6:30 p.m.

 **Winter Speaker.**
Ladd Knotek,
7:00-8:00 p.m.

 **Winter Speaker.**
Kylie Paul,
7:00-8:00 p.m.

 **Glacial Lake Missoula Meeting,**
4:00 p.m.

 **Trivia Night,**
7:00-8:30 p.m.

 **miniNaturalists Pre-K Program,**
10:00-11:00 a.m.

 **Native Plant Gardens Program.**
Conifer Garlands,
5:30-7:30 p.m.

 **December Gallery,**
all month.
Lee Silliman

 **Saturday Kids' Activity.**
Wild Gift Workshop,
2:00-3:00 p.m.

*Spruce
trees shelter
owls, snow-
shoe hares,
grouse*

*Elk forage
at lower
elevations*

November 1 **First Friday Gallery Opening,**
4:30-6:30 p.m.

November 6 **Winter Speaker,** 7:00-8:00 p.m.
Lee Silliman, gallery artist. \$4 suggested donation; MNHC members free.

November 7 **miniNaturalists Pre-K Program,**
10:00-11:00 a.m. \$3; \$1 MNHC members.

November 7 **Native Plant Gardens Program,**
5:30-7:30 p.m. **November Night Skies** with the
Western Montana Astronomical Association at
the Fort Missoula Native Plant Gardens. \$5.

November 13 **Winter Speaker,** 7:00-8:00 p.m.
Scott Samuels, UM Biological Sciences.
\$4 suggested donation; MNHC members free.

November 14 **Winter Speaker,** 7:30-8:30 p.m.
Clark Fork Native Plant Society. Free.

November 16 **Saturday Kids' Activity,**
2:00-3:00 p.m. **Paper Insect Pinning.**
\$3; \$1 MNHC members.

November 20 **Glacial Lake Missoula Chapter Meeting,**
4:00 p.m. Free and open to the public.

November 21 **miniNaturalists Pre-K Program,**
10:00-11:00 a.m. \$3; \$1 MNHC members.

December **Gallery** all month. **Lee Silliman.**
(No First Friday this month.)

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

December 4 **Winter Speaker,** 7:00-8:00 p.m.
Ladd Knotek, Fisheries Biologist. \$4 suggested
donation; MNHC members free.

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

December 5 **Native Plant Gardens Program,**
5:30-7:30 p.m. **Conifer Garlands.**
\$10; \$5 MNHC members.

December 11 **Winter Speaker,** 7:00-8:00 p.m.
Kylie Paul, Defenders of Wildlife.
\$4 suggested donation; MNHC members free.

December 18 **Glacial Lake Missoula Chapter Meeting,**
4:00 p.m. Free and open to the public.

December 18 **Trivia Night,** 7:00-8:30 p.m. \$4
suggested donation; MNHC members free.

December 21 **Saturday Kids' Activity,**
2:00-3:00 p.m. **Wild Gift Workshop.**
\$3; \$1 MNHC members.

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



Adult Program



Youth Program



Volunteer Opportunity

Found
objects
mandala

Fall Art Projects

With its burst of gorgeous colors, fall is a perfect time to get creative with natural objects. Here are a few ideas:

Create natural sculptures à la Andy Goldsworthy, a British artist whose canvas (and paint) is the natural world. Goldsworthy creates beautiful pieces of art from anything and everything he finds in nature—leaves, sticks, rocks, feathers, petals, snow. Though this kind of project is ephemeral, you can easily keep a record of your creations by photographing them! To see examples of Goldsworthy's work, do a Google image search, check out his books from the library, or watch the award-winning documentary *Rivers and Tides*.



Create an animal from natural objects! Look around outside and collect colorful leaves, stones, twigs, feathers, acorns, seeds—whatever captures your eye. If you need to, use scissors to shape your pieces, then arrange them into whatever animal strikes your fancy—butterfly, grizzly bear, eagle, moose—and glue them onto a piece of paper. How many different animals can you make?



Make a leaf lantern with pretty fall leaves, a glass jar or vase, and Mod Podge: First, collect some colorful fall leaves, and press them for at least 36 hours (you can do this in a plant press or simply between pieces of waxed paper in a thick book, or beneath a stack of thick books). Then cover the outside of a glass jar with Mod Podge, place a leaf on the jar, and cover the leaf with Mod Podge. The leaves can be layered on top of each other as long as they're coated with Mod Podge (this way they'll be preserved and won't crumble). After the leaves dry, put another layer of Mod Podge over the entire jar to seal the leaves. Put a candle in the jar, and voila! A beautiful leaf lantern to light the autumn nights. (Many thanks to Lisa Whitesell for this idea—check out more great nature activities for kids on her blog at www.5orangepotatoes.com).



Book Corner:

Fall Reading List

As the weather gets cooler and the days get shorter and the rain starts falling (we hope!), here are some books to curl up with:

The Sound of a Wild Snail Eating

by Elisabeth Tova Bailey

Cosmos by Carl Sagan

The Orchard by Adele Crockett Robertson

The Animal Dialogues: Uncommon Encounters in the Wild by Craig Childs

Ship Fever by Andrea Barrett

The Meadow by James Galvin

Animal, Vegetable, Miracle by Barbara Kingsolver

The Botany of Desire by Michael Pollan

In the Shadow of Man by Jane Goodall

The Lost Grizzlies by Rick Bass

Two in the North Country by Margaret Murie

Cadillac Desert by Marc Reisner

The Earth Moved: On the Remarkable Achievements of Earthworms by Amy Stewart

A Sand County Almanac by Aldo Leopold

A Big Year for Beargrass

While you were out hiking in the western Montana mountains this summer, you may have noticed that there was a little more beargrass (*Xerophyllum*

tenax) blooming than usual. Beargrass, a member of the Melanthiaceae family (closely related to the lily family), is rhizomatous, and each plant may consist of many clumps of wiry, grass-like leaves (what look to be individual plants) on a connected root system. Each clump, or rosette, blooms only once, in a rounded cluster of small white flowers at the end of a tall stalk. While it's possible that a plant may bloom every year, beargrass blooming en masse usually occurs every 5–10 years, when conditions are ideal; this includes the right amounts of spring rain and moisture in the soil. And what a treat for us when the conditions are right!



Photo: National Park Service

Found object critters by Allison De Jong

Photo by Allison De Jong; mandala made by Allison De Jong & Kara Robinson



Photos by Allison De Jong

Trees for Missoula: A Voice for Our Urban Forest

By Allison De Jong

Walk down any street in one of Missoula's older neighborhoods, and you can't help but notice the big, lovely trees that create a shady canopy over the asphalt. If you look closer, you may also notice that many of these trees are not only about the same size, but the same species: we have a lot of Norway maples of a similar age in Missoula. Many are boulevard trees—i.e., in the city right-of-way—and many were planted 80 to 100 years ago. That's pretty old for a Norway maple, and even those that are well cared for won't last forever . . . and that means it's time to start planning for the future.

Fortunately, there's a new group in Missoula that is researching and providing education about our urban trees: Trees for Missoula (TFM), a non-profit advocacy group whose mission is to promote a larger, healthier urban forest through community planting, stewardship, education and advocacy. TFM was created in 2011 and began a comprehensive inventory of Missoula's street trees, a task that has been made easier this year with a DNRC grant it received jointly with the Urban Forestry Division (UFD) last October. The grant enabled the hiring of two interns to assist the UFD for the summer, using GPS units donated by Trees for Missoula



“So often we take our trees for granted, but we've been left this beautiful legacy, and we need to honor the people who planted these trees. We need to continue that legacy.”

to accurately perform the tree census: logging the location and condition of every city street tree, of which there are an estimated 30,000-50,000.

Karen Sippy, chair of Trees for Missoula, is very excited about the census and its potential impacts. “The census will tell us the state of our urban forest,” she says, “and will help create a management database so the city can perform efficiently and effectively in maintaining our forest's health.” This includes replacing trees that have been removed with trees that will reach a similar size and shape in maturity, but in a variety of species whenever possible, since the current lack of diversity is one of the problems of Missoula's urban forest. But if the Missoula community plans—and plants—well now, we'll be able to create a healthy urban forest that will be enjoyed for generations to come.

Another of TFM's goals is educating citizens about our urban trees, both public and private—for instance, care of public boulevard trees is the responsibility of the homeowner. And it's important that people know not only where to plant trees and what kind of trees to plant, but how to care for those trees. TFM plans to start holding seasonal workshops to train community

members on best practices for watering, pruning, and keeping trees healthy in general. “[Urban] trees rely on human beings, especially when surrounded by concrete and asphalt,” says Sippy. “So often we take our trees for granted, but we've been left this beautiful legacy, and we need to honor the people who planted these trees. We need to continue that legacy.”

DID YOU KNOW?

- The soil of newly-planted trees shouldn't dry out during the first year. One good solution is placing irrigation bags, which release water slowly, around young trees.
- Established trees need care, too: mulch, nutrients, and water, especially in the hot, dry summer months.
- Trees need pruning. A well-pruned young tree will have fewer problems as it grows. Older trees should be examined regularly for dead branches, pests, and other problems, and pruned for both health and shape in the early spring or late fall while the tree is dormant.
- Trees for Missoula is looking for volunteers for a plethora of opportunities, from simply planting trees to creating marketing materials to doing education and outreach. For more information, go to www.treesformissoula.org.

Above: Missoula arborist Mary Poole evaluates a silver maple.

Below: Logging tree location on the GPS.





Photo by Lynda Deberry

Reflections from a summer camp instructor

Story and photos by Rose Dickson

Going into this summer as a camp instructor for the Montana Natural History Center, I was excited by the prospect of being able to introduce kids to the wonders of the natural world around them. Having a connection to the place you live is vital, and I was eager to begin helping the kids find meaning and adventure in the areas around Missoula.

I worked with the youngest age group, kids from three to six years old. Because they were so young we often did not make it very far away from the Center. At first I was concerned that they would miss out; I worried that I would not be able to show them things that would spark their interest and get them excited about their place. But I soon realized that they had a lot to teach me, a person who has spent her entire 22 years in Missoula, about what it means to appreciate the place we live.

This realization started in the first week as I overheard a five-year-old politely ask his fellow campers, “Can we please be quiet so I can listen to nature, because it is music to my ears?”

We may have been right in the center of the city walking down the bike path, but for my campers we were on an Adventure. They asked if there might be bears in the tunnel under Orange Street bridge and were excited by the water skippers in the shallows of the Clark Fork. They stopped walking for a beetle or an ant, and every interesting leaf needed to be passed around and shared with everyone.

I realized I had discounted these smaller things and these parks in the middle of town because they did not feel “wild” enough or “natural” enough or somehow interesting enough to be considered. I certainly was not convinced that they would provide eight weeks’ worth of opportunities for learning and exploring. It was the kids who showed me just how many moments we can find in our daily lives that connect us to the natural world and teach us about the place we live.

We do not have to go far from the city—or even leave at all!—to watch an osprey catch fish or see cliff swallows disappear into their little mud nests. The kids marveled that they had seen wild animals up close when a pair of white-tailed deer crossed the path in front of us, and

“Can we please be quiet so I can listen to nature, because it is music to my ears?”



You never know what you might find in an old log or a few scoops of creek water—and it's always worth investigating!

they were equally as excited by the mallard ducks and eastern fox squirrels that we saw. Every day presented a new, thrilling discovery.

One day they found a crayfish under a rock; another time they spotted an empty bird's nest, and we examined it and admired the craftsmanship. They were always ready to explore: touching and picking and smelling. They admired the fuzzy leaves on the yarrow plant and the different colors of grasshoppers, and their enthusiasm made me look again at the places and things I had brushed aside as uninteresting. I also came to be amazed by the variety of colors in a leaf and the way a squirrel's bushy tail flicked, and I began to appreciate more fully and deeply these little natural wonders that were all around me right in the middle of town.

As the weeks passed, I was continually reminded that kids have so much to teach us when it comes to developing a sense of place and being aware of our surroundings. Here are just a few of the lessons my summer camp kids taught me:

Slow Down

Little kids are never in a rush to go anywhere, and, try as you might, you are never going to move quickly with fifteen pre-schoolers. The slower pace was nice, because it gave us a chance to notice things that we may have just walked right by: a giant silver beetle crawling across the path, a yellow warbler flitting in the branches of a nearby aspen, a rock shimmering with flecks of mica, or a speckled feather nestled in the grass. In our fast-paced society most of us are in such a hurry to make it to the next part of our day that we pass by things without noticing them, too often missing the moments the trees begin to lose their leaves or the ice crystals begin to form on the river. By slowing down and refusing to rush we are able to see things we may have never noticed before.

Look Closer

Get down lower to the ground. Imagine seeing the world as though you are small again. Everything seems fresh and new when you look at it from a different perspective. Try


lying on your back and looking up at a tree or roll onto your stomach and get eye level with the grass. I asked the kids how many shades of green they could see and if they could imagine how many leaves are on a single cottonwood. Sometimes when we were sitting down for lunch, we would look at the blades of grass around us and imagine what they looked like if one was the size of an ant or a ladybug.

Adventures Are Everywhere!

The most mundane things can seem more wondrous with the right mindset. Channel your inner childhood curiosity and imagination: look at the places you see every day *expecting* to see something new and amazing. When walking through Fort Missoula near the Bitterroot nature trail one day, the kids were amazed by a boggy area where they saw three turtles sunbathing on a log and dragonflies swooping all around. I had been near this place quite a few times—usually hurrying on to avoid the mosquitoes—but for the kids it was a fascinating swamp filled with unknown creatures and ample opportunities to investigate. Every day we would review what we had seen, and every week the campers would tell us their favorite camp adventure. Although the kids in my camp were too little to write, one way to make this adventurous mindset a habit is to keep an explorer's

Seeing children's enthusiasm for spending time in easily-accessible places like city parks and trails and nearby ponds and creeks—or seeing what they notice when just walking down a street or through a parking lot!—is a good reminder that there are myriad possibilities for outdoor exploration and discovery.

journal where you write down one new thing you noticed each day.

Wherever you happen to live, there is always something new to learn about to deepen your sense of place. For me, teaching summer camp was a great reminder that we do not always have to go very far to see unusual, exciting things. Many times they are waiting to be discovered in places we pass every day—if only we pause to notice them. 

—Rose Dickson is a senior at the University of Montana where she is studying Environmental Studies and English Education. She grew up in Missoula and feels lucky to have spent her childhood surrounded by mountains and rivers.





MNHC Photos

Our Exterior Metamorphosis is Nearly Complete!

If you've been by MNHC lately you may have noticed some significant changes. (And if you haven't been by lately, come visit!) Last summer we had chain-linked fence around the front of the building, protecting us from the exterior renovations that were underway. This summer we were thrilled to kick off summer camp by welcoming our campers through our beautiful new entrance! Our exterior renovations are nearly complete. The final ingredient is our commissioning of a fine art piece, inspired by our mission, to fill the 16' x 16' space on the front of our building. This summer we launched a public art campaign and opened up our request statewide. We had 34 submissions and our selection committee narrowed it down to four finalists, from which we chose the winner, Missoula artist Stephanie Frostad. Stay tuned this fall for our mural unveiling, which we plan to do as part of First Friday on October 4th.

But the momentum doesn't end there! Our interior renovations to build our new classroom with video-conferencing technology, offices and storage space are underway this fall, thanks to Kim Reineking of Reineking Construction and a generous grant from the M. J. Murdock Charitable Trust. With matching funds from our dedicated donors we are able to complete this final phase of our building project. We're already thinking ahead about ways to use our new classroom space and video-conferencing technology. Thanks to the Steele-Reese Foundation for supporting us in developing programming to reach teachers in rural areas across the state to provide scientific literacy and nature education training.

Thank you to all who have supported us on this journey! We wouldn't be here without you. We would love to have you visit and see all our great changes!

Questions? Contact Whitney Schwab, Development and Marketing Director, at 327-0405 or wschwab@MontanaNaturalist.org.

A big thank you to our mural committee:

Beth Cogswell, Five Valleys Land Trust
Laura Millin, Missoula Art Museum
Arnie Olsen, MNHC
Kim Reineking, Reineking Construction
Whitney Schwab, MNHC
Dr. Stephen Speckart, MNHC Board Member
Pam Volkmann, Five Valleys Land Trust Board Member

Stephanie J. Frostad of Missoula has been chosen to design the mural art for MNHC. She studied at Studio Art Center International in Italy, the Maryland Institute, and the University of Montana. She has exhibited nationally and abroad in Canada, China, Italy and New Zealand. As a narrative painter, Frostad strives to present the essential elements of story: a character or two, a sense of place, a moment of contact, action or contemplation. See more of her work at www.stephaniefrostad.com.



Come Out and Celebrate!

MNHC's Fall Celebration & Auction is coming up on Friday, October 11th, 2013, at the DoubleTree Hotel. Join us for dinner, conversation, and the opportunity to bid on an exciting variety of nature excursions, travel packages, artwork and more in both our live and silent auctions. Reserve your tickets today by calling 327.0405, emailing office@montananaturalist.org or going online to www.MontanaNaturalist.org. \$50 per person.

Master Naturalist Program Goes Statewide

OUR MASTER NATURALIST PROGRAM HAS BEEN EXPANDING!

Since 2009, we've graduated 20 classes of Master Naturalist students, including several from areas across the state—Billings, Bozeman, and Glacier National Park.

Hundreds of Montanans have received their Master Naturalist certification in the past few years, and to maintain that certification from year to year, Master Naturalists need to spend 40 hours each year volunteering with natural history or environmental organizations. Since the certification course was first offered four years ago, dozens of Master Naturalists have volunteered thousands of hours in their communities. They do everything from leading natural history field trips for school kids to counting butterflies, flowers, or birds for various citizen science projects. Some Master Naturalists do restoration work, maintaining native plant gardens, participating in river clean ups, or pulling invasive weeds. Others help with fundraising, office work, and event planning. Need some volunteers who know about natural history? Master Naturalists are always looking for

new ways to get involved in and help out their communities. Contact Allison De Jong, MNHC Volunteer Coordinator, at 327.0405 or adejong@montananaturalist.org to find volunteers for your project.

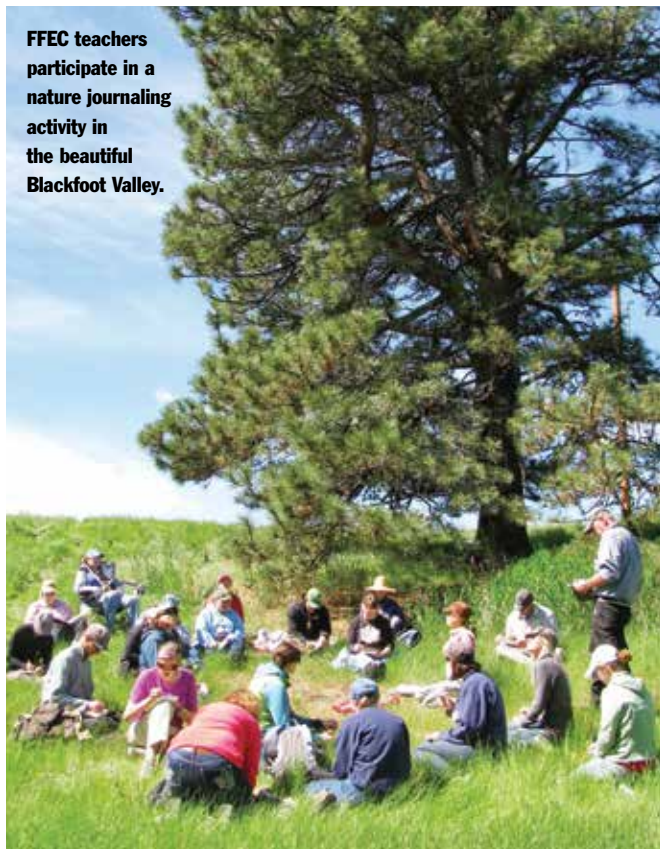
With growing numbers of Montana Master Naturalists, we've begun offering "advanced" Master Naturalist opportunities in addition to our regular certification course: Naturalist Field Days on topics from geology to dragonflies, and intensive (but always fun) Field Weekends on birds and plants. This past summer we offered our first weekend session on alpine wildflowers, which was attended by an enthusiastic group of Master Naturalists who had a great time camping overnight at the West Fork Butte Lookout; learning about some of Montana's more common plant families from UM biology professor Greg Peters and MNHC naturalist Brian Williams; and, with their help, keying out several plants to species, from Indian paintbrush (*Castilleja miniata*) to pinedrops (*Pterospora andromedea*) to mountain arnica (*Arnica latifolia*).



Taking a closer look at a western sweet vetch during the Alpine Wildflower Weekend.

Keep a lookout for future Field Days and Field Weekends (Local Geology with Bruce Baty is coming up on September 28th). You don't have to be a Master Naturalist to attend, just have an interest in delving deeper into the natural world with an engaging group of fellow naturalists!

FFEC teachers participate in a nature journaling activity in the beautiful Blackfoot Valley.



Forest for Every Classroom currently accepting applications

In partnership with the Forest Service, Montana DNRC, Montana Forest Restoration Committee, Montana Environmental Education Association and others, MNHC will be offering a third year of A Forest For Every Classroom, a dynamic professional development program for educators focused on place-based approaches to education. Open to K-12 educators in every discipline, FFEC is currently accepting applications for the 2014-2015 program, which will begin next April. The application deadline is January 8th, 2014. For more information, visit www.montanaeea.org/professional/AForestforEveryClassroom.htm or contact Lisa Bickell, MNHC Education Director, at 327.0405 or lbickell@montananaturalist.org.

Forest for Every Classroom 2014-2015 Schedule

Session	Dates	Location
Spring Session	April 25-26, 2014	Albion Gorge area
Summer Session I	June 19-20, 2014	Blackfoot Valley
Summer Session II	June 23-25, 2014	Bitterroot Valley
Fall Session	September 19-20	Seeley-Swan Valley
Winter Session	January 23-24, 2015	Lubrecht Experimental Forest




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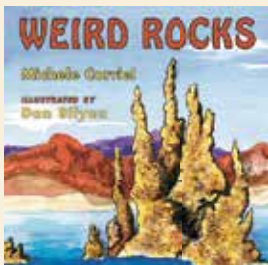
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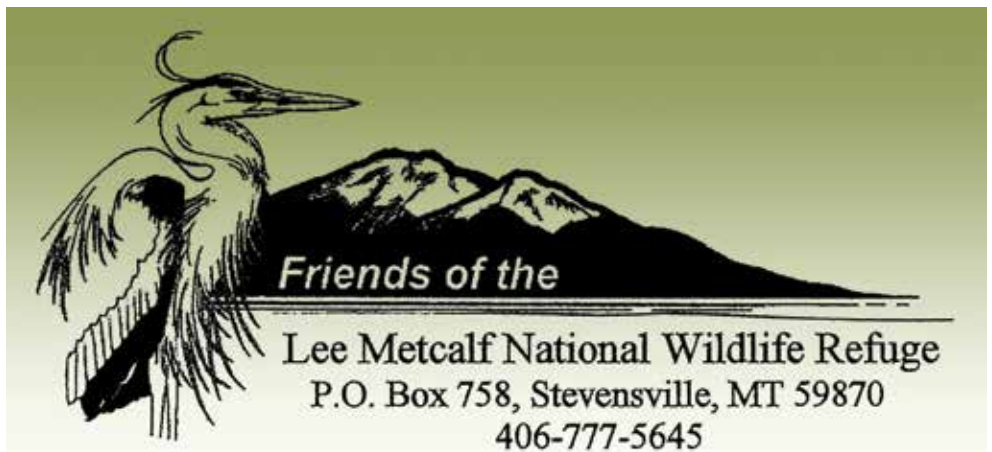


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Volunteer with our Visiting Naturalist full-day field trips!

Spend a day (or three) outside with 4th and 5th grade students teaching them about our big, beautiful world!

Field trips run every school day in October.

To volunteer or for information,
contact Allison De Jong, Volunteer Coordinator, at 3270405
or adejong@montananaturalist.org.





Silver-studded Blue
(*Plebejus argus*)



Great Blue Heron
(*Ardea herodias*)

Western Skink (Immature)
(*Eumeces skinkianus*)

Mountain Bluebird ♀
(*Sialia currucoides*)



Faunal Caprice Blue by Stephanie J. Frostad 2011



Montana Natural History Center

Connecting People with Nature

120 Hickory Street
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www.MontanaNaturalist.org

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Montana Natural History Center trips are permitted on the Lolo National Forest (Clause VII.B).

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

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Fill out and mail to Montana Natural History Center, 120 Hickory Street, Missoula, MT 59801 or Fax: 406.327.0421

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

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