



# Field Notes

Cedar Creek's Education and Community Engagement Newsletter

## A Wolf Den and An Opportunity

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by Stephanie Xenos. Originally printed on the U of M College of Biological Sciences blog, December 2017.

It all started a few years ago when Jim Krueger noticed some large, dog-like tracks on a walk with his wife at Cedar Creek Ecosystem Science Reserve. Krueger serves as buildings and grounds supervisor at the field station in East Bethel, which has an international reputation for ecological research. He'd heard from a neighboring property owner who thought he'd spotted a wolf on adjacent land, put two and two together and decided to investigate.

A scientist by training and an avid naturalist by disposition, Krueger is a keen observer of the land with a special interest in trees and an obvious enthusiasm for the diversity of life present at Cedar Creek. He regularly traverses the property and has photographed more than 55 species of mammals and birds including bobcats, red and gray foxes, cranes, swans and many



A wolf pup at Cedar Creek Ecosystem Science Reserve.

photo by J. Miller

other birds. On a spring day in 2015, he added wolves to that list. "I walked up to a den in a clearing and three pups popped their heads up," says Krueger. He went to work documenting their presence at the station. "I ran into them a half dozen times that year. I even witnessed a group of them chasing a deer."

Spotting wolves so close to the Twin Cities isn't unheard of. Lone wolves can travel for thousands of miles. But it's the first time in a century that a den with a litter of wolf pups has been found so far south, which means the wolves were likely staying in the area for a while. For the last decade or so, breeding wolves have stayed north and east of Pine City up to Baudette according to leading wolf expert Dave Mech. Cedar Creek

is the closest to the Twin Cities a den has been found in living memory. Mech, lion expert Craig Packer, and Cedar Creek researchers Forest Isbell and Caitlin Potter, launched a study this fall with funding from the Legislative-Citizen Commission on Minnesota Resources.

The hunt Krueger described has potential implications far beyond the fate of the deer, as it turns out. In fact, it's one of the reasons the scientists are so interested in studying the wolves. Wolves and other predators can have a major effect on prey behavior, which, in turn, can reshape the environment. This effect is described as creating a "landscape of fear."

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## Coordinator's Corner

It's 2018 already! When did that happen? 2017 at Cedar Creek sped by in a flurry of celebrations, new projects and initiatives, and oodles of visitors. So many exciting things happened that it's hard to even know where to start (that's why you can find most of the education updates on page 7!). We reached more than 10,000 people through field trips, public events, citizen science projects and other special programs. We celebrated 75 years of science, launched a membership program, ran several successful educator professional development workshops, and had our scientific work shared in a variety of high-profile journals. Incredible! It's been an honor to share Cedar Creek's research and landscape with so many interested people. If you're a regular recipient of this newsletter, you've probably been following along with these developments. If not, I'd encourage you to check out the newsletter archives on our website! It's inspiring to see our community grow and thrive.

As we look towards 2018, there are many more wonderful things on the horizon. Read about two of our newest research projects - on bison and on wolves - in this edition of the newsletter. Plan your next outing from the list in the Upcoming Events section. Bring friends and family out for a hike at Fish Lake. Take a photo next time you're out on the property and share it on the Cedar Creek facebook page. Volunteer on a project. The opportunities are endless! We hope you'll find new, rewarding ways to get involved with the Cedar Creek community in the new year.

And as always, get in touch if you have Cedar Creek stories or photos to share!

Sincerely,  
Dr. Caitlin Barale Potter  
612-301-2602, [caitlin@umn.edu](mailto:caitlin@umn.edu)

## Bison in East Bethel

by Forest Isbell and Caitlin Potter

As many of you may have heard, Cedar Creek is starting up a new project in 2018 which will bring a small herd of bison to our oak savannas. This exciting opportunity is funded by Minnesota's Environment and Natural Resources Trust Fund, which helps maintain, restore and enhance Minnesota's environment and natural resources.

Oak savanna is Minnesota's most threatened ecosystem, and scientists at Cedar Creek have been investigating how to preserve, restore and maintain this unique environment since the 1960s. Specifically, we have been examining the role of fire on these landscapes. We've found that burning about 4 to 7 times per decade eliminates shrubs and non-savanna tree species and restores prairie grassland species, but that these frequent and intense fires also prevent oaks from regenerating. Our savanna research has partially restored the second largest stand of oak savanna in Minnesota, but it's becoming increasingly clear that fire on its own is leading to the slow conversion of the savanna into a grassland. When you walk along the public nature trail at Fish Lake, you can see this result with your own eyes – in the most "savanna-like" areas, there are few small- and medium-sized oak trees, only mature adults.

Bison may help support the regeneration of oak trees. Bison are known from other research to be important for restoring grasslands, but little is known about their role in savanna ecosystems. In grasslands, bison promote plant coexistence and diversity by preferentially grazing the grasses that otherwise dominate the landscape. In our new experiment, we hope to find out if this same preferential grazing will take place in the savanna. Grasses are the primary

fuel for fires in the savanna, and also compete with oak seedlings for light and resources. If bison preferentially eat these grasses, it could help young oaks in two ways – by reducing both the intensity of fires and the abundance of competitors. Our research has the potential to uncover an effective new strategy for restoring and maintaining a unique and vanishing Midwest ecosystem.

This research will also provide an opportunity for Minnesotans to look into the past, to a time when both bison and savannas were common in our state. We will offer multiple opportunities throughout the growing season for visitors to learn about the research, meet the lead scientists, and view the bison. This research and the bison themselves will also be the focus of new field trip opportunities for local school groups.

An FAQ is available on our website ([cedarcreek.umn.edu/conservation/bison](http://cedarcreek.umn.edu/conservation/bison)). If you have other questions, please contact Forest Isbell via email ([isbell@umn.edu](mailto:isbell@umn.edu)), attend our next question and answer session in May, or visit us at other public events throughout the summer! We hope you'll join us in celebrating this new research project!





# Minnesota's Changing Climate

by Sam Potter

One of the difficulties in discussing global warming is putting it in terms that have meaning to people who do not have an encyclopedic knowledge of local weather station data. Newspaper articles discussing global warming often use global, national, or state level ‘annual average temperature’ to describe the scale of warming. For example, 2016 was Earth’s warmest year on record and 2017 will very likely be the 2nd warmest. This number, however, has no meaning for any person’s day-to-day life and makes it hard to wrap one’s head around what, exactly, global warming means for your part of the world. This article is an attempt to meaningfully describe how global warming has changed Minnesota’s temperatures up to the present day and how it might change Minnesota’s temperatures in the future.

## Part 1: Patterns of average Minnesota temperature change

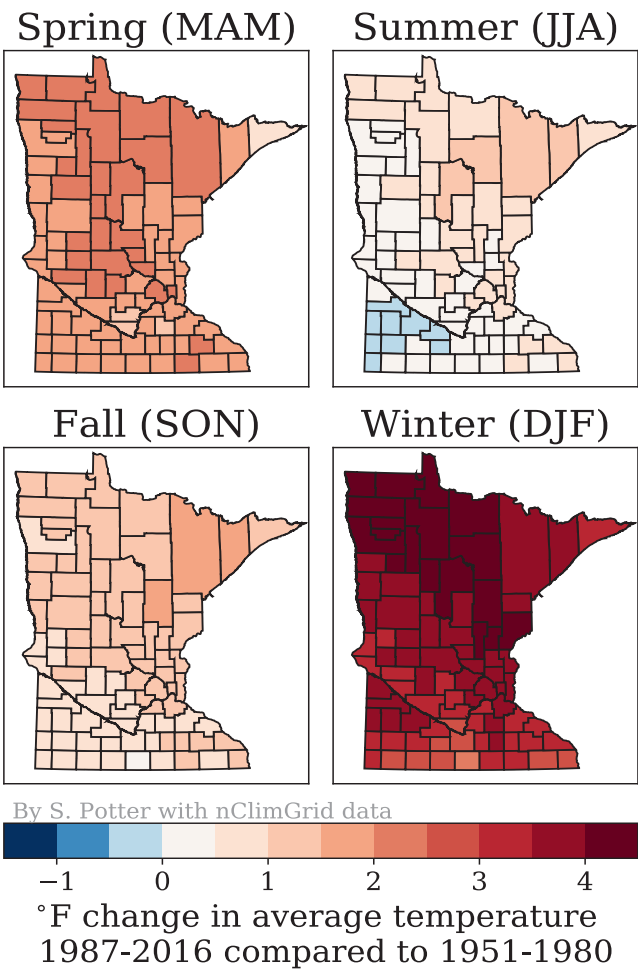


Figure 1 is a county-by-county map of temperature changes in Minnesota in the modern era (1987-2016) compared to a standard historical era (1951-1980)

using NOAA’s nClimGrid dataset. The historical era is roughly the climate that baby boomers grew up in, while the modern era is roughly the climate that millenials grew up in. Over these time periods, Minnesota as a whole has warmed 1.8°F. Minnesota’s winter has warmed the fastest, with many northern counties warming more than 4°F. The only cooling has occurred in the summer for a handful of counties in southwest Minnesota, where it is likely that an increased use of large-scale irrigation has acted to cool the hot afternoon temperatures over agricultural land (e.g. Mueller et al. 2015: “Cooling of US Midwest summer temperature extremes from cropland intensification”).

## Part 2: Extremes of Minnesota temperature change

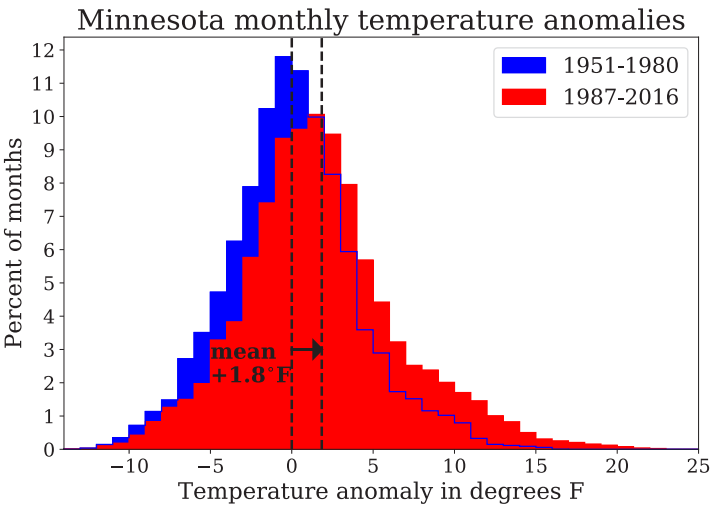


Figure 2

Figure 2 shows another view of how Minnesota has warmed over the last 60 years. This is a histogram of monthly temperature differences from the historical (1951-1980) average. It shows the percentage of months that were above or below historic average temperatures. The blue bars and line show the historic era, where monthly temperatures varied between about 13 degrees below average to 15 degrees above average. The red bars show the modern era, where months have varied between about 12 degrees below average to more than 21 degrees above average. While the modern era had a few months almost as cold as the historical era, there is a long “tail” of extremely warm months that have come at the cost of many cold and very cold months.

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## Wolves at Cedar Creek



A wolf print in the sand.

(continued from page 1)

For example, the return of wolves to Yellowstone National Park in the mid-1990s turned out to be a boon for scavengers, beavers and other animals, and changed the land itself as elk numbers dropped by 50-75 percent, and elk vacated more open areas seeking to better protect themselves against wolf predation, allowing plants to thrive in places they had not before. The research team hopes to track the Cedar Creek wolves' movements to determine whether they reduce deer numbers and create a "landscape of fear" by driving changes in prey behavior.

### From the Serengeti to the oak savanna

Craig Packer studies a decidedly different kind of predator — the African lion. Packer brings vast experience with large carnivores. He also knows a lot about collecting and analyzing data using camera traps, which he's done on an unprecedented scale through his ambitious Snapshot Serengeti project. The project has yielded more than a million photos of Serengeti wildlife to date.

Thousands of "citizen scientists" around the world then identified the animals and their behaviors.

"Snapshot Serengeti relies on statistical analysis of a large-scale camera grid which has revealed how various different mammalian species in the Serengeti interact with each other and how prey balance their risks of predation with food intake rates across various time scales," says Packer. "The Cedar Creek grid will take all this to the next level, as any changes in the

distribution of deer in response to the influx of wolves into the reserve will be likely to affect the abundance of their preferred food plants — and Cedar Creek has phenomenally good data on plant growth and species composition."

Packer is interested in the contrast between wolves and lions. He points out that while lions are ambush predators wolves make less effort to conceal themselves, which means deer and elk don't need to worry as much about areas with taller brush. "The landscape of fear is quite different for these two species — with different impacts on the vegetation," says Packer. "Whereas we would predict that restoring lions to an ecosystem would cause brushy areas to get brushier, the return of wolves to our part of Minnesota might not have a similar impact."

### Tracking an elusive subject

This fall and winter, Isbell and Potter set up more than 100 cameras at spots around the station to document the movements of whatever wolves may still be in



photo by J. Miller

A curious wolf pup in the grass.





the area. The resulting images will also be used to create Snapshot Cedar Creek, a new online citizen science project designed to engage community members and local students in learning about Minnesota wildlife. "I've already had a number of educators express interest in using Snapshot Cedar Creek as part of their teaching, and will be developing lessons and activities for our local K-12 classrooms," says Potter, Cedar Creek's education and outreach coordinator.

While most of the original litter of wolves has either moved on or been eliminated, the researchers believe at least one wolf uses the area. As winter snows descend on Cedar Creek, Mech will get to work looking for tracks. When he first heard about the presence of a litter of wolves at the station he began driving the roads around the station in search of the telltale signs of wolf

crossings. "Seeing a wolf track at Cedar Creek is really something," Mech says.

The fact that the den turned up at Cedar Creek is an auspicious accident. "Cedar Creek is an ideal site to study the ecological impacts of wolf recolonization because of its decades of comprehensive ecological research," says Isbell, who is leading the study. "We have data

from thousands of plots in dozens of multi-decade studies across the property. It's a really unique opportunity to understand what the reintroduction of wolves means ecologically and socially." The proposed research will combine existing long-term data with new data on the local abundances and spatial distributions of animals, plants, and soil nutrients.



The wolf den.

# Minnesota's Changing Climate

(continued from page 3)

Historically, 10% of months were ‘very cold’ (at least 5 degrees below average) and 10% of months were ‘very warm,’ (at least 5 degrees above average). Using the same definition only 6% of months in the modern era have been very cold while 20% of months have been very warm. These numbers are summarized in the first two rows of Table 1. The number of very cold months has been almost halved, while the number of very warm months has doubled.

Era	Very Cold Months (at least 5° below average)	Very Warm Months (at least 5° above average)
Historical Data		
1951-1980	10%	10%
1987-2016	6%	21%
Model Projections		
2045-2064	2%	48%
2080-2099	0.5%	73%

Table 1

Many Minnesotans have their own anecdotal sense of global warming, and hopefully these numbers are intuitive in a way that jibes with your personal experiences. The rise in very warm months manifests itself in our everyday lives: Decembers where your heating bill is not as high as you remember, May days where you try not to turn on the AC, February days where you barely need a sweatshirt, mosquitoes in October, August days where you wonder when you moved to Louisiana, November days with rain instead of snow...

### Part 3: Possible extremes of future Minnesota

Figure 3 shows the possible future of Minnesota’s temperatures. The blue and red bars and lines are historical and modern temperatures, respectively. The green shows a simulation of possible mid-century (2045-2064) climate, while the purple shows a simulation of possible late-century (2080-2099) climate. The future numbers are an average of 17 climate models simulating a future where humanity’s continued fossil fuel use leads to CO2 rising rapidly in the atmosphere for most of the 21st century, until eventually stabilizing around the end of the century (this scenario is called RCP6.0 if you would like to research it further).

By the middle of the 21st century, these models project Minnesota’s annual average temperature to increase 4.9°F above the historical average. Only 2% of months fall within the ‘very cold’ category, while almost half of all months are very warm. By the end of the century, these models project Minnesota’s annual average temperature to increase 8°F above the historical average. Less than 1% of months are very cold, while more than 70% are very warm. It is hard to internalize numbers like these. Perhaps you can take the warmest summer or winter day in your memory, and extend that warmth to a week, a month, a season, or decades.

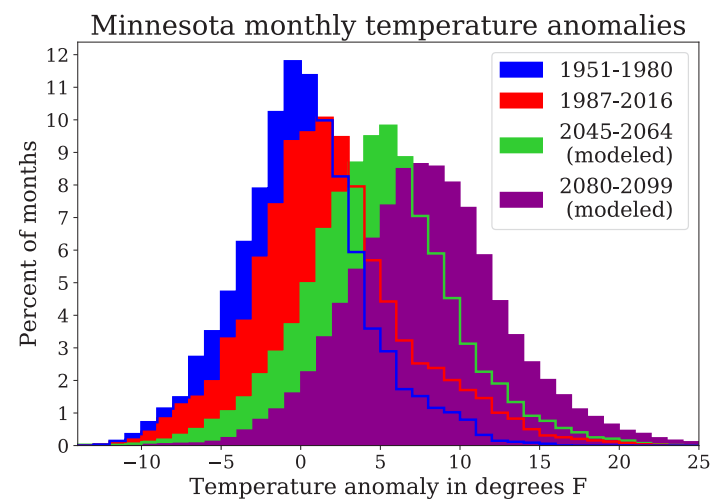


Figure 3

In some ways, Minnesota may escape the worst impacts of global warming. We do not have to worry about the direct effects of sea level rise, we will likely not suffer from the scale of droughts coming for the desert Southwest, and unlike some parts of the tropics, it will not get so hot in Minnesota that it will be literally unlivable. A world with unchecked warming will, however, still lead to untold harm and suffering to Minnesotans in all walks of life and incredible, irreversible damage to Minnesota’s natural world.

Part of the reason Cedar Creek Ecosystem Science Reserve was set aside is because it sits at a rare ecological triple point where the deciduous forest, prairie, and coniferous forest biomes meet. Visitors to Cedar Creek can take a guided hike through examples of all three on the Cedar Bog Lake Trail. In a warmer future, however, they might be told that this unique triple point has moved well north of the Minnesota-Canadian border. It is worth asking ‘What makes Minnesota, Minnesota?’ now, before it is too late.



# Education and Community Engagement Wrap-up

by Caitlin Potter

2017 was my first full year heading up Cedar Creek's education and community engagement programs, and what an adventure it was! New schools, visitors and programs....it was a year truly overflowing with curiosity and exploration. Here are a few highlights:

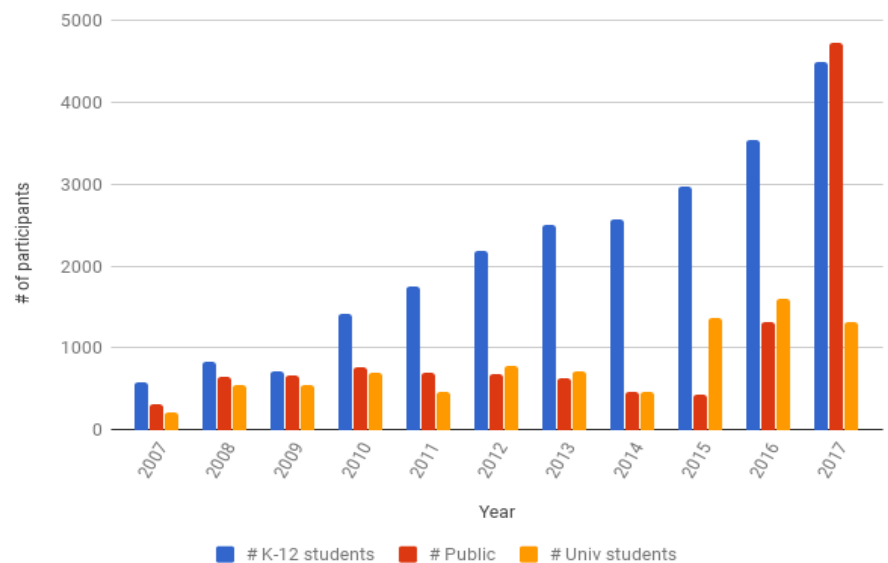
## K-12 programs...and beyond

This year, we reached nearly 4500 K-12 students through our field trip and in-classroom programs, an increase of 27% relative to 2016 and more than 680% since 2007! We had visitors in every grade level from kindergarten through high school. Classes from local community colleges and four-year colleges and universities also visited or hosted Cedar Creek scientists on their campus. These post-secondary programs reached an additional 1300+ students this year! In total 5806 students from 10 counties participated in our programs, and brought with them a wealth of questions, observations and perspectives on the world around them. This year, we also offered new adult education programs, including a 40+ hour Master Naturalist certification course and multiple educator professional development courses in partnership with the MN DNR and the U of M Extension.

## Expanded field trip offerings

One thing I've been particularly proud of is the work we've done this year on expanding the topics classes can cover on their field trips. Teachers can now select from a menu of options, including investigations on insects, community ecology, water quality, macroinvertebrates, biodiversity, experimental design, savanna ecology and more. Students learn how to collect data with quadrats or on transects, with thermometers and binoculars, sweep nets and soil corers. Each investigation ties (continued on page 10)

Participants by category over time



## Citations for "Minnesota's Changing Climate":

The nClimGrid dataset is described here: <https://www.ngdc.noaa.gov/docucomp/page?xml=NOAA/NESDIS/NCDC/Geoportal/iso/xml/C00332.xml>

Model output was downloaded here:

[https://gdo-dcp.ucllnl.org/downscaled\\_cmip\\_projections/dcplInterface.html](https://gdo-dcp.ucllnl.org/downscaled_cmip_projections/dcplInterface.html)

The full citation can be found on Sam's website: <https://sites.google.com/view/minnesota-climate-education/>

**Interested in learning more about climate science and the impacts of a changing climate on Minnesota? See the Upcoming Events section for information on Sam's February class, "An Intro to Climate Science for Minnesotans".**



## Caught on Camera!



photo by C. Potter

Sunset along the new bison fence.



photo by T. Mielke

Fall technicians collecting soil for analysis.



photo by J. Miller

A wintry fall morning on Cedar Creek.



photo by J. Krueger

Beaver cutting up food for winter.  
Note the chewed log in the back!



photo by C. Potter

5th graders from Oxbow Creek  
collecting data on a field trip.



photo by C. Potter

A bug's eye of the prairie in November.



## Caught on Camera!



photo by J. Krueger

Curious buck checking out a trail camera.



photo by F. Isbell

Winter wonderland at Cedar Creek.



photo by C. Potter

Cedar Creek education staff prep for a school program on watersheds.



photo by T. Mielke

Staff clearing brush for a new research project.

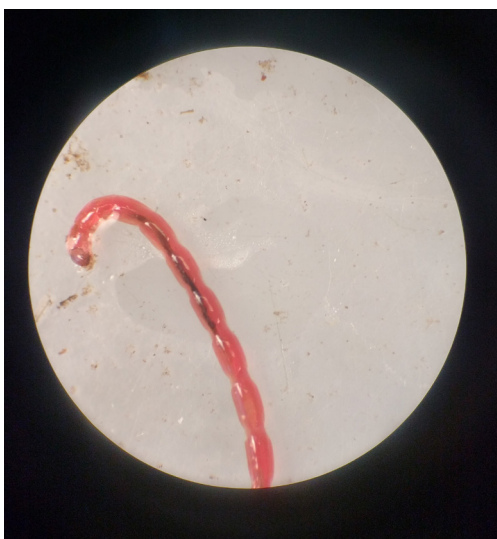


photo by M. Lauzon

Midge larva from a student water sample.



photo by C. Potter

Jackson Middle School student scooping for macros.



photo by C. Potter

Baby red-bellied snake.



# Education and Community Engagement Wrap-up

(continued from page 7)  
directly into research being conducted on site by professional scientists, and most involve a visit to the corresponding "real" experimental area. The vast majority of these new additions were proposed, conceptualized and developed by Cedar Creek's seasonal naturalist staff - a testament to the dedication and expertise of the folks leading our onsite programs!

community. We offered programs, talks and guided hikes on a variety of topics, and you all attended - more than 4700 of you. Wow!

## Looking ahead

We are hitting the ground running in 2018! The wolf and bison research projects described earlier in this newsletter have strong education and community engagement connections, so keep an eye out for ways to get involved as they get

and the education and community engagement programs are no exception. The work we do would not be possible without the support of the College of Biological Sciences (particularly the Dean's Office) and our many community partners, the guidance and input of the leadership at Cedar Creek, the tireless work of the buildings and ground staff, the blood, sweat, tears and smiles of the naturalists, and the all-around camaraderie (snacks, equipment, fire meetings...) of the research coordinators, information managers, interns, graduate students and postdocs. And finally, a huge and heartfelt thank you to all you Cedar Creek supporters who keep visiting to learn, explore and inspire us! I feel very lucky to have ended up in such a wonderful job in such a wonderful place, surrounded by such a wonderful community. Happy New Year!



photo by C. Potter

## New opportunities to connect

Thanks to increasing interest from the community, we also expanded the ways in which the general public can engage with Cedar Creek. Volunteers from around the state assisted with a swath of citizen science projects, collecting data on birds, bees, mammals and plants (see the fall 2017 newsletter for a recap). They also helped organize and run public events, assisted with grounds and building projects, and represented Cedar Creek at local events. Nearly 100 people contributed more than 2500 hours in 2017! We had a table at the Minnesota State Fair for the first time ever this year. We celebrated our 75th Anniversary with an open house and field tours for the

up and running. We are expanding our in-school programs to the elementary schools in the St Francis school district (ISD 15), thanks to a new partnership for strengthening science education and getting kids outdoors in our local area. We are working with community partners on a few youth summer programs to keep the science learning going when school's out. We'll continue to offer our field trips, tours and public programs as well, of course. And we're leaving enough space on the calendar to say YES to other great opportunities that come our way! It's going to be another busy year!

## Starting 2018 with gratitude

Everything at Cedar Creek is a collaboration in one way or another,

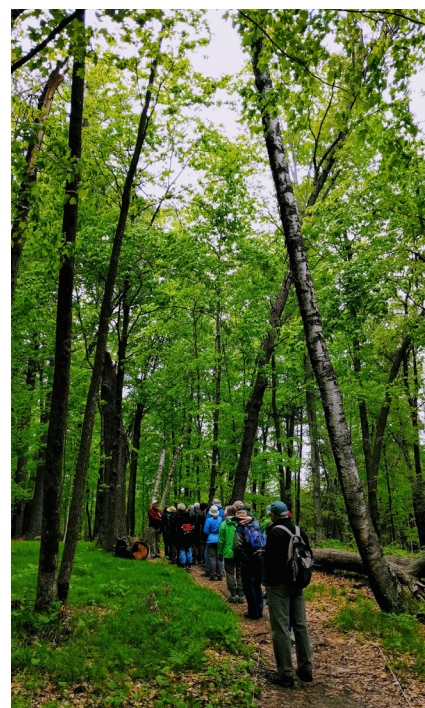


photo by C. Potter



## Become a Member at Cedar Creek!



Cedar Creek Ecosystem Science Reserve is synonymous with ecosystem ecology -- and for good reason. Since 1942, Cedar Creek has played a critical role in advancing our understanding of how we are affecting the environment and how we might protect it.

The unique convergence of Minnesota's biomes and our world-famous long-term research make Cedar Creek Ecosystem Science Reserve a place unlike any other. It's why researchers and graduate students come here from around the world -- and keep coming back. Cedar Creek also offers the public a unique opportunity to both learn about and experience these ecosystems first hand. Each year, thousands of children have their first hands-on encounter with ecology here.

Be part of this incredible legacy by becoming a member! Your membership at Cedar Creek supports research, education and outreach, including K-12 in-school programs and science field trips, public events, classes and citizen science initiatives, research opportunities for young scientists, and conservation and restoration of threatened ecosystems.

Enjoy member benefits that keep you connected to Cedar Creek Ecosystem Science Reserve. Memberships are annual. Contributions are 100% tax deductible.

**\$25 level:** Cedar Creek's quarterly newsletter "Field Notes" and an invitation to an annual members-only event.

**\$50 level:** all of the above, plus discounts on fee-based outreach programs and a set of Cedar Creek greeting cards.

**\$150 level:** all of the above, plus a personal staff-led tour of Cedar Creek.

Join online at [z.umn.edu/cedarcreekmembership](http://z.umn.edu/cedarcreekmembership)  
or pick up a membership brochure onsite!

## Upcoming Events

**January 10th, 6:30 - 8pm: Ecology Book Club at Cedar Creek.** Kick off 2018 by joining the Cedar Creek Ecology Book Club for a discussion of Peter Wohlleben's book "The Hidden Life of Trees." This book is about the complex social life of the forest - the connections, communication and relationships that trees share with one another. No need to have finished the book to join in and no science background necessary. (free, adults recommended)

**February 6th and 8th: An Intro to Climate Science for Minnesotans.** Interested in learning about the science behind climate change? Join atmospheric scientist Dr. Sam Potter for a two-night class to deepen your understanding of the climate system! The class will cover the basics of climate science, both historically and in the present day, and the impacts of climate change on Minnesota. All topics will be presented for a general audience and no science degree is necessary. REGISTRATION REQUIRED - register on the MN Master Naturalist website. (\$30, adults only).

**February 10th: Cedar Creek Wildlife Survey winter survey day.** Join your fellow trackers and citizen scientists for our winter survey. We'll be out on the property in teams looking for track and sign and documenting what animals are using our natural areas! Dress warmly and bring a lunch. (Bad weather back-up: February 17th) PLEASE RSVP TO CAITLIN (caitlin@umn.edu) OR JONATHAN (poppele@umn.edu) (free, adults recommended).

**February 17th, 9am - 12pm: Winter StoryWalk with the Anoka County Library.** Come celebrate winter with your friends and neighbors! Cedar Creek education staff will team up with Anoka County Library librarians to share some favorite winter books, arts and crafts, and hot drinks! Our StoryWalk will feature a short self-guided walk through the snow following the pages of Over and Under in the Snow by Kate Messner. (free, families welcome)

**February 26th, 6 - 7:30pm: Nature Talk with Cedar Creek: Minnesota's Native Plants (OFFSITE).**

Join Cedar Creek scientist Kate Freund at the Johnsville Library in Blaine to learn about native Minnesotan plants and pollinators. Meet at the library: 12461 Oak Park Blvd NE, Blaine, MN 55434. (free, adults recommended)

**March 10th, 1pm - 3pm: Community Symposium on Wolves. Co-hosted by the International Wolf Center.** Learn about wolf conservation, research and human-wildlife relationships in this community-oriented program. A panel discussion and open Q+A will be followed by an interactive program put on by educators from the International Wolf Center and Cedar Creek. (free, families welcome)



## Upcoming Events

### March 19th, 2pm - 3:30pm: End of Winter Hike

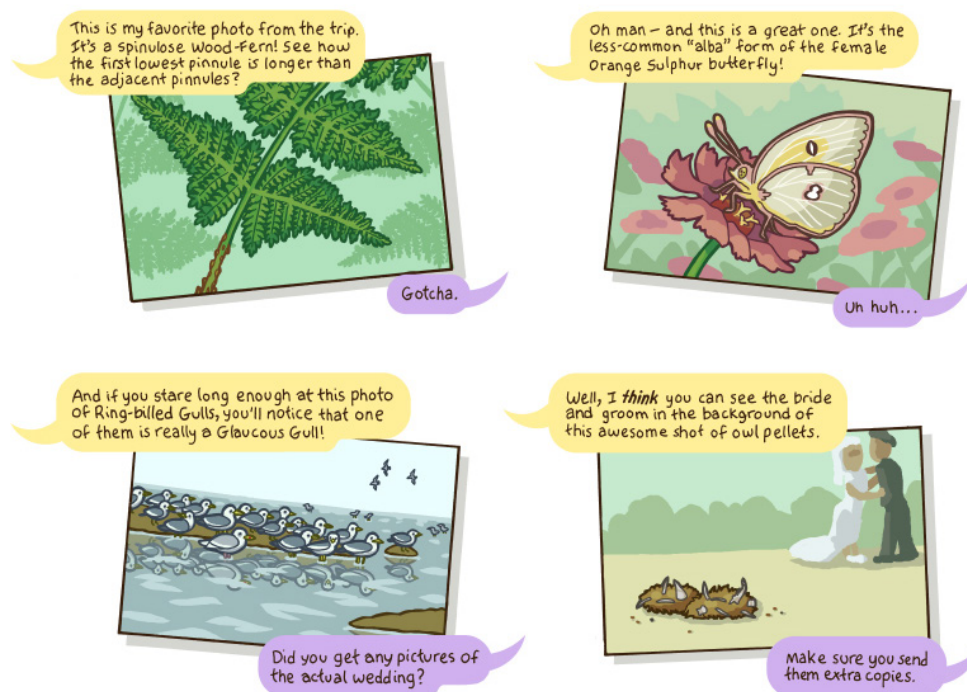
Play hooky for an afternoon and celebrate the eve of the Spring Solstice with a hike! Meet at the Lindeman Center for a hike out to Cedar Bog Lake. We'll be looking for skunk cabbage and other early bloomers, checking on the lake's ice cover, keeping an eye out for wildlife tracks, and watching the world begin to wake up from winter. Hike is about 1 mile in total - please wear solid shoes and layers to keep yourself warm! (free, families welcome)

### April 9th, 6 - 7:30pm: Nature Talk with Cedar Creek: The Rum River Watershed (OFFSITE).

Come learn about water! Did you know that scientists at Cedar Creek have been intensively studying Anoka County's local creeks and lakes since the 1930s? The presenters will discuss our local watershed, how and why scientists study aquatic systems, and the historical and current research conducted in one of the Rum River's tributaries. Weather permitting, we will hopefully spend some time outside at the river itself. Meet at the park building: 23100 Rum River Blvd NW, St. Francis MN. (free, families welcome)

### April 14th, 9am - 2pm: Red-headed Woodpecker Recovery Project annual volunteer training.

Attend the yearly training to become a part of Cedar Creek's longest-running citizen science project, now in its 10th year! As a member of the project, you'll help monitor and study Cedar Creek's red-headed woodpecker population and contribute to the conservation of this incredible species. During the training, you'll learn about the history of the project, our plans for 2018, and specific projects you can get involved with. Lunch provided by the Red-headed Woodpecker Recovery Project leadership team. Please RSVP to Caitlin ([caitlin@umn.edu](mailto:caitlin@umn.edu)). (free, adults recommended)



biologist vacation photos

[birdandmoon.com](http://birdandmoon.com)

Let us know if you can attend by contacting Caitlin  
at [caitlin@umn.edu](mailto:caitlin@umn.edu) or 612-301-2602

## Upcoming Events

**April 27 - 29th: City Nature Challenge.** Join fellow nature nerds to document the diversity of life in urban Minnesota! A coalition of environmental organizations in the greater Metro area is partnering to document urban biodiversity using the free iNaturalist app. Details will be coming soon, but plan for some time outdoors at Cedar Creek and around the Metro exploring the forests, prairies, savannas and wetlands while looking for and photographing interesting plants and animals! Help MN compete for the most observations with other metro areas like Chicago, San Francisco, Berlin and Sydney. (free, families welcome)

**May 4th, 6:30 - 8pm (nature walk at 5:45pm): "Conservation on the Northern Plains" lecture and discussion. Co-sponsored by the Cedar Creek Ecology Book Club.** Here's a unique opportunity to learn about plains and prairie conservation from a trio of local authors and scientists! "Conservation on the Northern Plains: New Perspectives" is a compilation of essays that examines the ecology, land use and conservation of one of North America's largest biomes. Raymond Lindeman, an early Cedar Creek scientist, features prominently in one of the chapters. Join us for short walk at 5:45, followed by a lecture and discussion at 6:30. (free, adults recommended)

**May 5th, 10am - 2pm: 4-H Environmental Fun Fair at Springbrook Nature Center (OFFSITE).** Come look for the Cedar Creek table at the 2nd annual 4-H Environmental Fun Fair at Springbrook Nature Center! We're excited to participate in this youth-led event for the second year in a row. Arts and crafts, live animals, youth projects, interpretive hikes, and more. (free, family friendly)

**Early June, date TBA (check facebook page and website!): Meet the bison!** Visit Cedar Creek's oak savannas for a chance to see our new bison herd, learn from scientists and naturalists at the new viewing gazebo, and take a self-guided walk on the new walking trail! Meeting area will be the small parking area at East Bethel Blvd and 229th Ave NE. Please carpool! (free, family friendly)

**June 16th, 10am - 2pm: Red-headed Woodpecker Day. Co-sponsored by the Red-headed Woodpecker Recovery Project.** Come join project members and fellow bird enthusiasts for hikes behind the fences to see the largest known breeding population of red-headed woodpeckers in Minnesota in their natural habitat! Walking tours to a variety of locations in the oak savanna will run during the day, citizen scientists will be on hand to discuss their research and monitoring work, and we'll be working on a day-long bird list. Come learn about this incredible community-driven project and see some woodpeckers! (free, families welcome)