

**PHENOLOGY
CALENDAR
2022**



ARTWORK AND WRITING BY OWL'S CLASS OF 2026

FOREWORD

In 7th grade at Open World Learning Community (OWL), students explore the question, “What makes a community thrive or suffer?” The Community Expedition integrates learning in social studies, English Language Arts, art, and science. Although many Community Expedition projects focus on the human communities of Saint Paul, this project, the phenology calendar, focuses on Minnesota’s wild species. By studying the plants, animals, and fungi of our state, students broaden their understanding of community to include the natural world.

In a normal school year, we kick off the ecological dimension of the Community Expedition with a bevy of nature-based field work experiences. In the 2020-2021 school year, however, the coronavirus pandemic eliminated all field work. For most of the school year, students studied from home, connecting with their classmates and teachers through Google Meets. Normally, 7th graders select the Minnesota species they will study in the forests of Belwin, the streams at Audubon Center of the North Woods, or the prairies of Katherine Ordway Field Station. This year, 7th graders had a Google Folder full of articles and some instructions for guided nature explorations in their home neighborhoods. That’s all they had before it was time to select a species to study and render an image of it in art class this fall. In the spring when it was time to

write about the impacts of climate change on their species, many students were still at home – and those who were attending in-person school still couldn’t do any field work. Despite the constraints of distance learning, the 7th graders dug into the work and learned so much about what makes Minnesota species thrive or suffer. I was truly astounded by the incredibly high quality of their work, and I think you will be, too.

In gratitude to the parents who supported and guided their students through distance learning and beyond, to art teacher Kristin Moeller for facilitating such beautiful depictions of Minnesota species, and to Principal Dave Gundale for setting aside the funding to print this calendar, I present to you the 2022 Phenology Calendar, produced by the intrepid and creative OWL Class of 2026.

Dr. Megan Olivia Hall
Science & Agriculture Teacher
FIRST LEGO League & FIRST Robotics Competition
Coach



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David Gundale, principal

The artwork and paragraphs showcased in this year’s Phenology Calendar were made by the 2020-2021 7th grade Life Science students of OWL. Each student researched and illustrated one Minnesota species, paying attention to how their species was impacted by climate change. In the process, the Class of 2026 discovered the phenology, or seasonal events, of their chosen species.

Special Thanks To Leo Bickelhaupt, Megan Hall, Kristin Moeller, and Preston West

Layout by Violet and Hazel Wright, Class of 2024

Cover Art Red Fox (*Vulpes vulpes*), by Olivia Fiebich

Art and Paragraphs by August Cheney, Sonali Dimayuga, Jensina Eccles, Lillie Eiken, Olivia Fiebich, Kate Gooder, Wyatt Hanson, Kate Houle, Henry Karre, Pain Kyaw, Nina LaFerla, Anson Lind, Maddie Linstad, Elinor McAlpine, Elani Muenchow, Birhane Nord, Ian Oberheide, Lucia Romero-Guillot, Lana Stevens, Valentine Thao, Rayne Van Guilder, Alice Weiland, Grant Weyandt, Lexi Windingstad, Amya Wright, and Lillypa Xiong

STUDENT WORDS

“Learning these things from home was a good experience, I liked being able to choose and use my own materials and learn about the community in my neighborhood. I don’t know what would be different if it were in person but I still enjoyed it.” - Alice Weiland

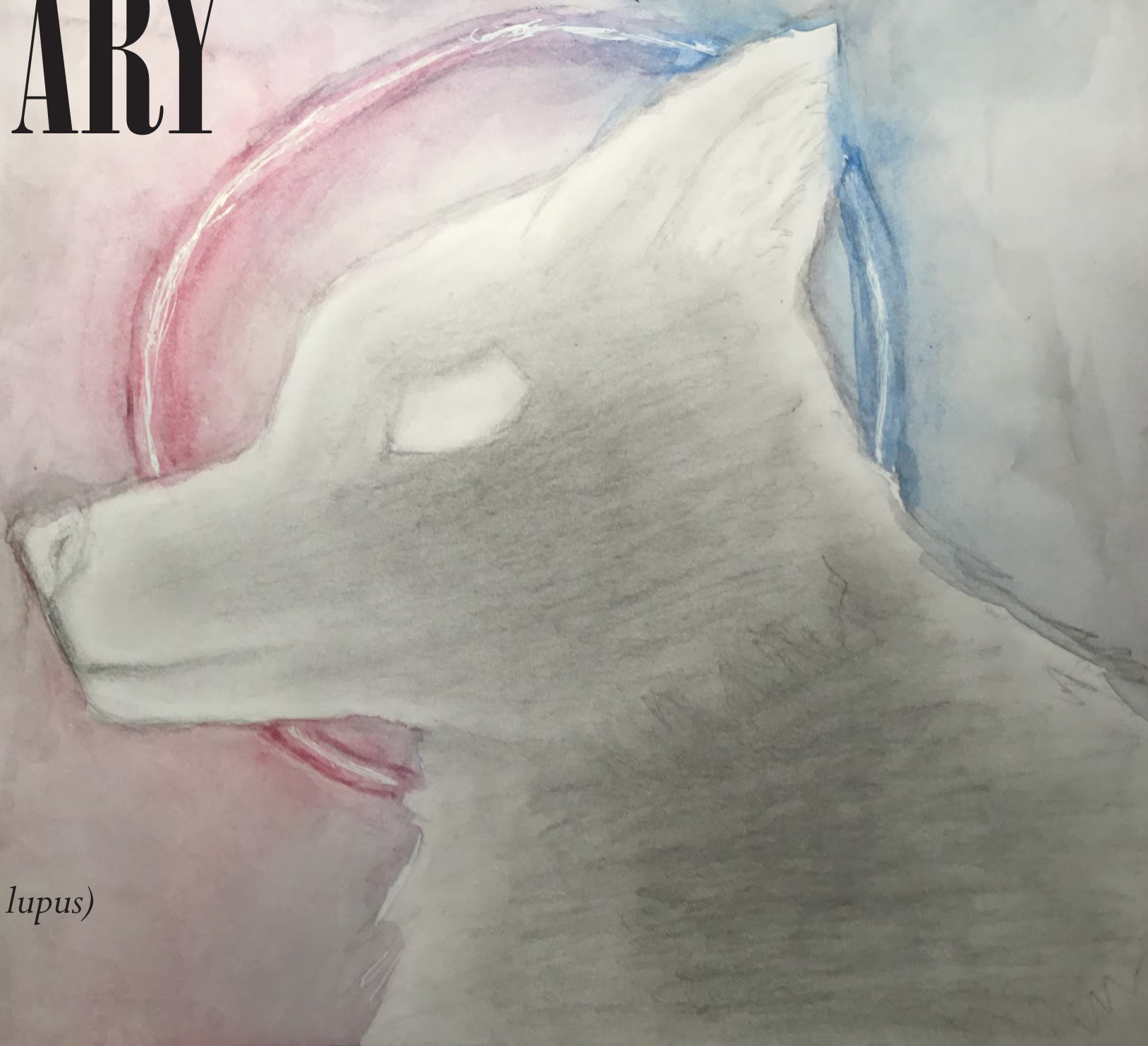
“It’s crazy to think that we studied our communities without leaving our house. I loved learning about local species though, cause on the rare occasions I went outside I could see our science assignments in real life! Even if we didn’t get all the opportunities most classes would, I think we have a deep understanding of what it means to be a community because we all had to come together in this insane year.” - Kate Houle

“It was a whole new experience and a very different way of learning. I remember working on a community-related assignment, and finishing it without leaving my room the whole day!” - Maddie Linstad

“It was definitely harder to study this year, with less fieldwork opportunities, but I did get to go on lots of bike rides studying the community.” - Anson Lind

“It was definitely a lot harder with the studying, but it was also nice because you didn’t have to get ready every morning super early. You could just be at your own house.” - Amya Wright

JANUARY



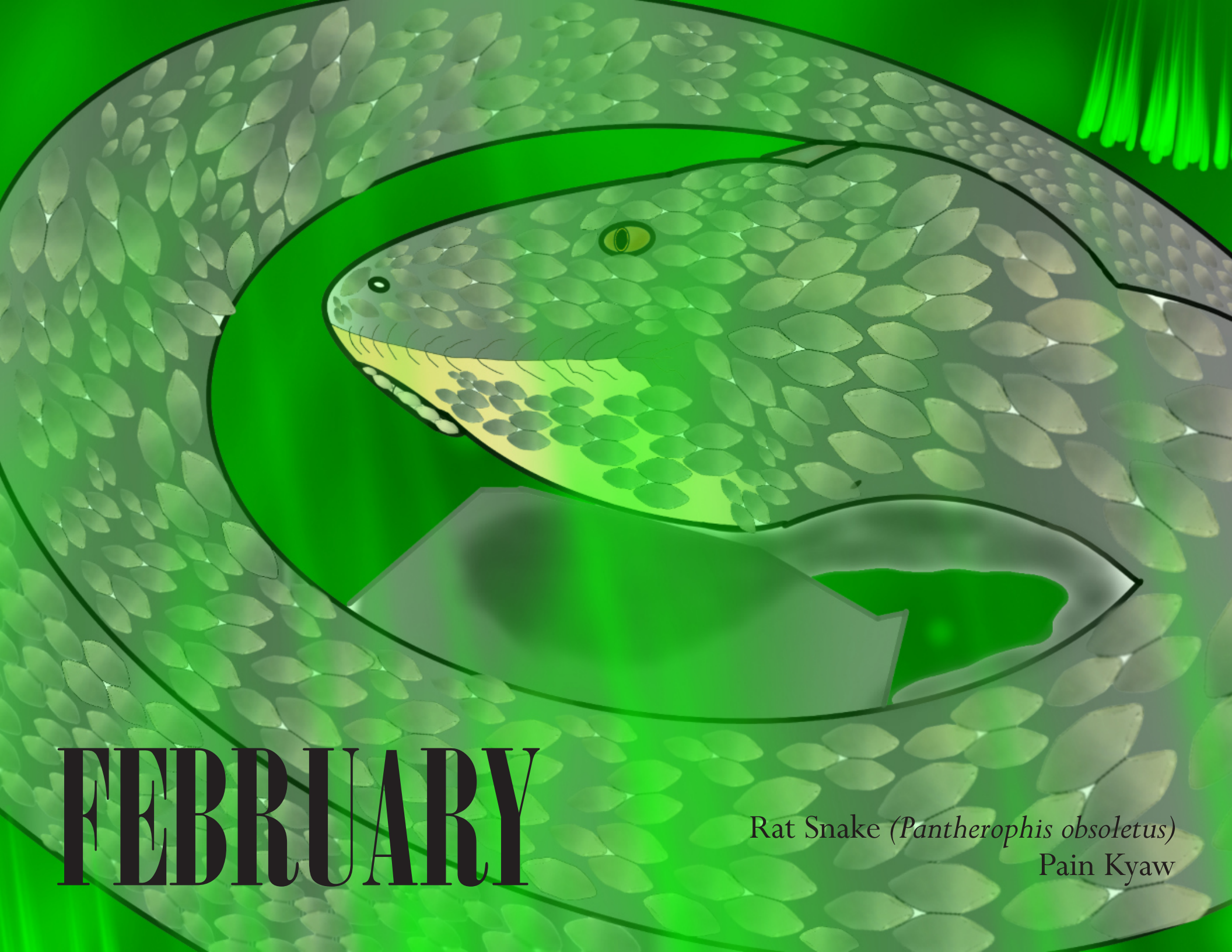
Gray Wolf (*Canis lupus*)
Birhane Nord

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Brittle Prickly Pear (*Opuntia fragilis*) by Anson Lind

The brittle prickly pear is the hardiest of only three species of cactus that live in Minnesota. Sadly, these plants will be harmed by the rising climate. As temperatures increase, most animals native to Minnesota will begin moving north to stay in a cooler climate. Since the brittle prickly pear spreads seeds by sticking them to the fur of animals, brittle prickly pears will begin popping up further and further north as Minnesota's migrating animals take the seeds with them. One of Minnesota's rare cactus species may soon vanish from the North Star State as animals move north.





FEBRUARY

Rat Snake (*Pantherophis obsoletus*)
Pain Kyaw

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Western Grebe (*Aechmophorus occidentalis*) by Alice Weiland

Those bright red eyes looking at you, that long yellow beak, those beautiful black and white feathers describe a bird, and that bird is a western grebe. Which is now losing areas of habitat, mainly along the Pacific coast, to climate change. Climate change is causing destructive wildfires and sweltering heat waves in the spring, which endangers young grebes and destroys habitats. As their scorched environment can't recover as wildfires burn and spring heat waves come and go, the enticing western grebes lose areas to live along the Pacific coast.



Gray Treefrog (*Hyla versicolor*)
 Amya Wright

MARCH



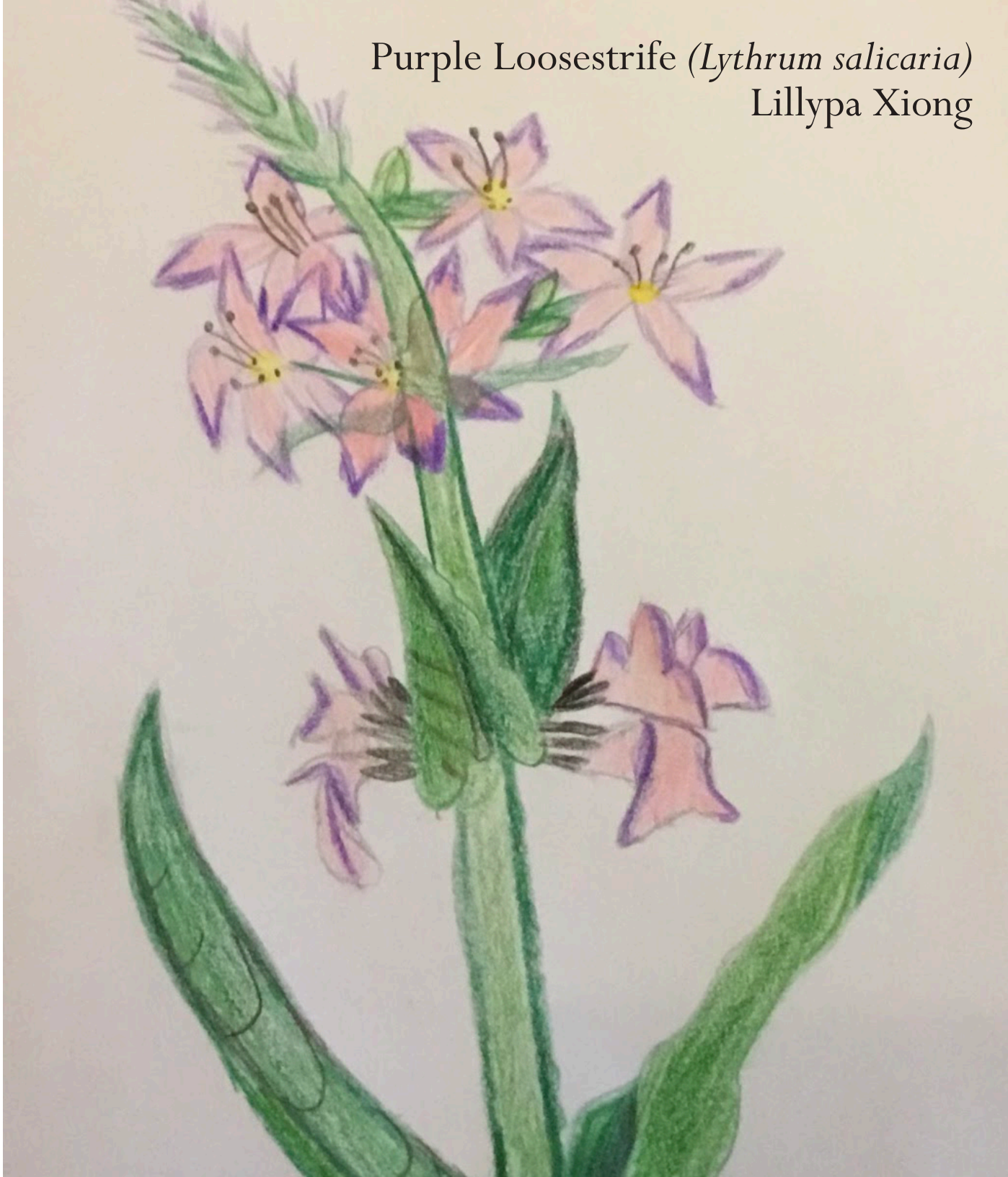
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Mink (*Neovison vison*) by Grant Weyandt

Minks are one of the small creatures that live here in Minnesota. The mink likes to burrow in the snow during winter. Global warming makes it so there's not as much snow. The minks are leaving Minnesota, because of global warming and climate change their home is being destroyed.



Purple Loosestrife (*Lythrum salicaria*)
Lillypa Xiong



APRIL

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Red Bellied Snake (*Storeria occipitomaculata*) by Ian Oberhide

Red bellied snakes are the smallest snake in Minnesota, and only grow to about 20 centimeters, about the size of a big worm. But climate change affects these helpful insect hunters negatively. Climate change is warming the temperature by 1 to 3 degrees Fahrenheit and making their territory uninhabitable with wildfires, heatwaves, and sudden cold fronts going on around them. This forces them to either stay and adapt to the warming climate or migrate away north forever.



MAY



Bullfrog (*Lithobates catesbeianus*)
Sonali Dimayuga

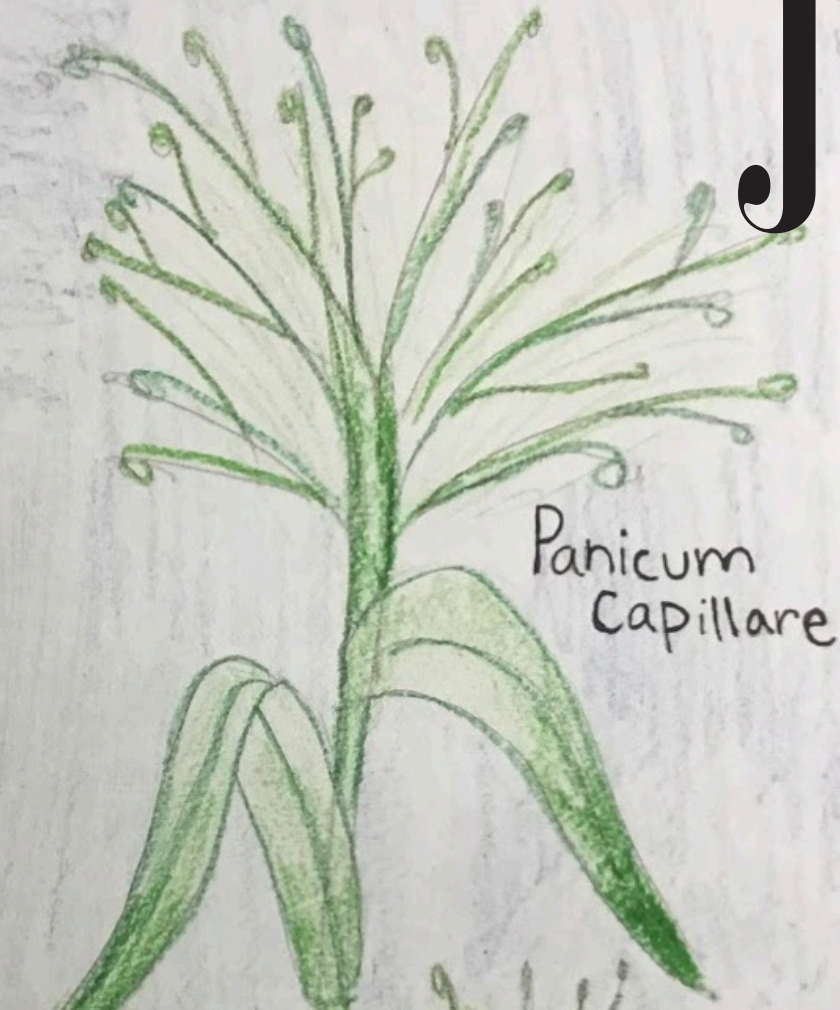
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Gray Fox (*Urocyon cinereoargenteus*) by Henry Karre

Climate change affects many aspects of our lives, but it's effects on the lives of animals and plants is often overlooked. One such animal is the gray fox, native to much of the northern US and Canada. The gray fox is being forced to go farther north for a better habitat due to climate change. Gray foxes have their litters in spring because of the easy hunting and warm conditions, making spring a great time to raise pups. Since the gray foxes prey is moving north because of climate change, the gray fox is being forced to move as well, which is reflected in population estimates showing increasing populations in northern states.



JUNE



*Panicum
Capillare*

Witchgrass (*Panicum capillare*)
Valentine Thao



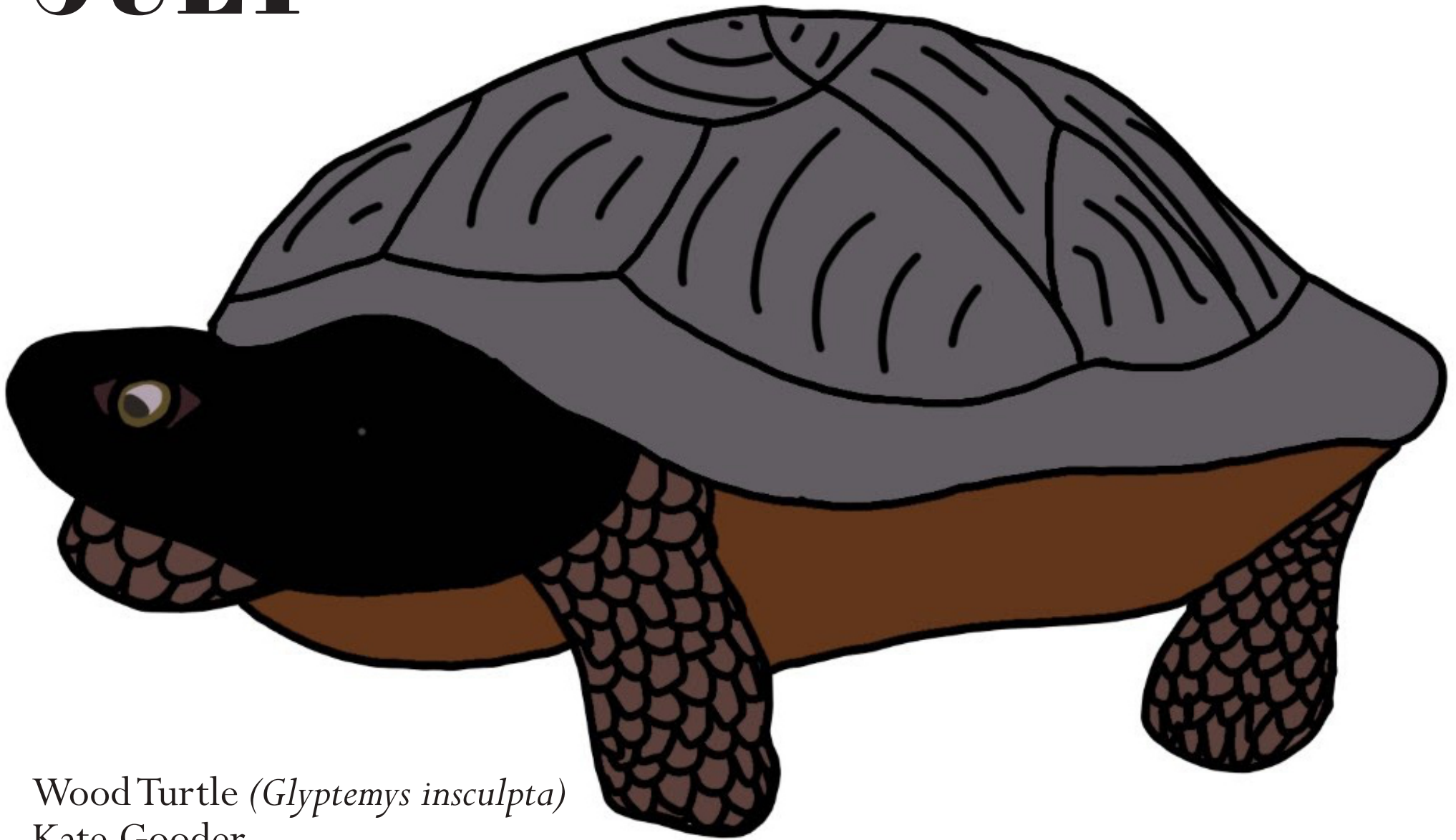
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Wood Duck (*Aix sponsa*) by Elinor McAlpine

There are many types of duck, however one of the most beautiful is the wood duck. Native to Minnesota, the male birds are very colorful and have iridescent wings, while females are duller. In Minnesota, there have been lots of negative effects on wood ducks due to climate change. Heat waves and wildfires destroy lots of habitat and harm baby birds, and the urbanization that threatens most creatures is often located in the places the birds need to survive. Birds all over Minnesota and the country are being threatened by these events.



JULY



Wood Turtle (*Glyptemys insculpta*)
Kate Gooder

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Bullet Ant (*Paraponera clavata*) by August Cheney

Climate change could really affect bullet ants, which usually live in humid lowland rainforests, a large target for climate change. Bullet ants feed on many of the small animals of the lowland rainforests. About half of their prey animals could be vulnerable to rising temperatures caused by climate change, which can cause a shortage of food. These ants are lucky that their native habitat doesn't usually have cold winters so they don't have to stock up on food. Bullet ants are an invasive species, but while they may be seen badly, they provide important food for many rainforest species.



Bluegill (*Lepomis macrochirus*)
Jensina Eccles



AUGUST

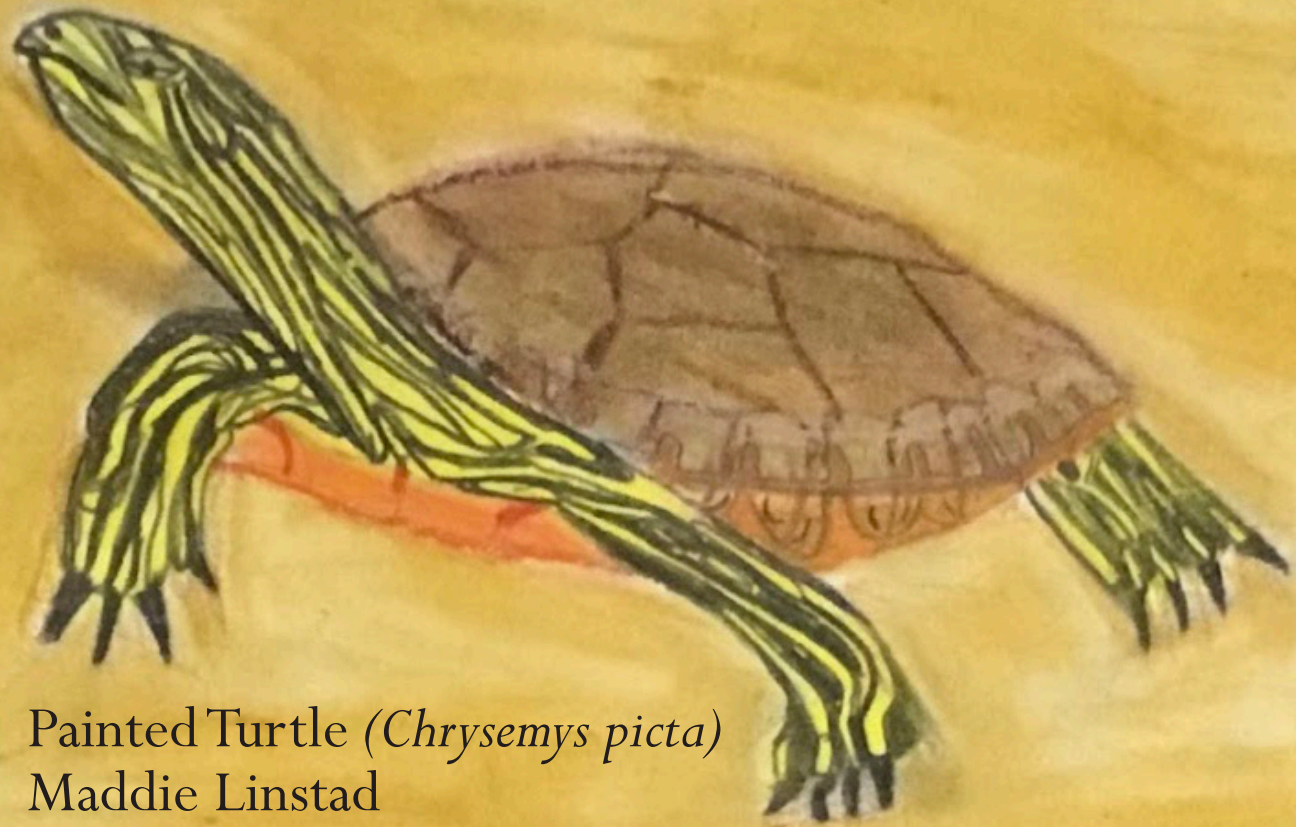
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Garter Snake (*Thamnophis sirtalis*)
by Wyatt Hanson

Garter snakes are at risk of disappearing. As the summers get hotter and the winters get colder, garter snakes are not safe. Even with their adaptability, all over North America garter snake populations are shrinking and leaving urban areas. But although garter snake populations can likely survive, they are still vulnerable to attack. More populations get smaller each year. This gives a clear sign that they are affected by climate change. So next time you see a garter snake don't kill it, let it be. Or it might be the last one you see.



SEPTEMBER



Painted Turtle (*Chrysemys picta*)
Maddie Linstad

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Common Loon (*Gavia immer*) by Meara Gunderson

Minnesota is coming too close to losing this beautiful bird known as the loon. Climate change is negatively affecting common loons in Minnesota. Loons like to live in the northern part of the state, on lakes with cool, clear water. Climate change will heat the lakes up and that could mean more insect parasites that harm loons and more carp that can fill up their fishing waters. It is predicted that loons may go further north to breed and nest. As the temperatures rise, more and more loons will go north.



OCTOBER

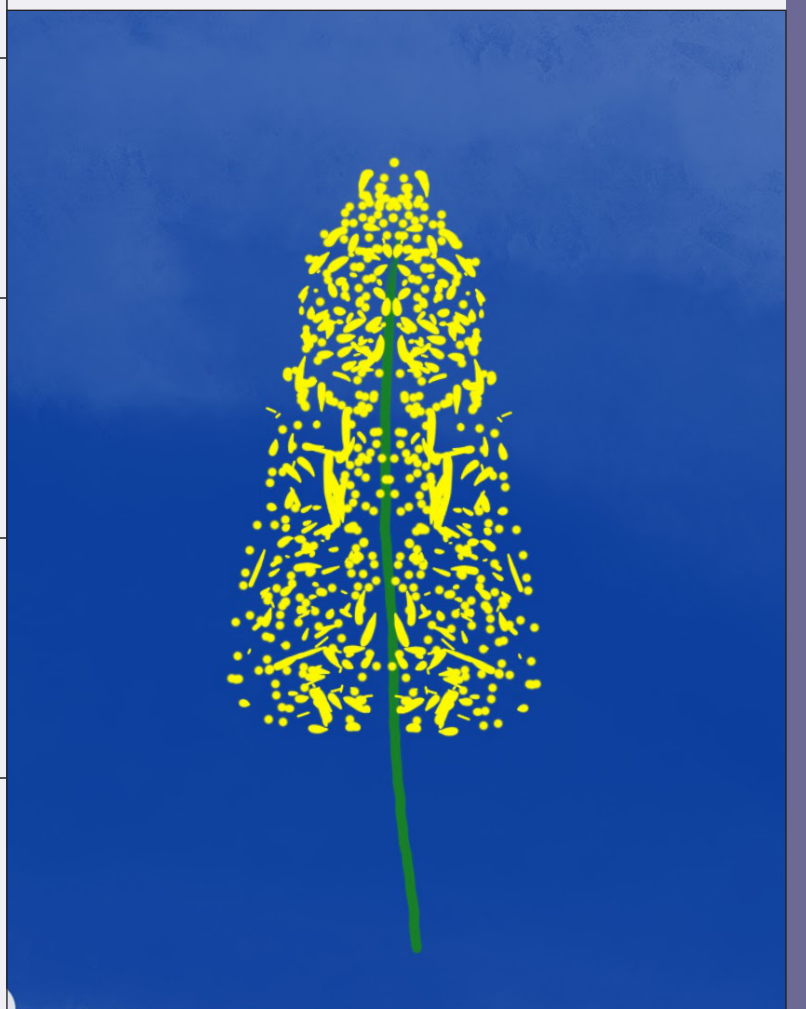


Red Fox (*Vulpes vulpes*)
Lana Stevens

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Sweet Grass (*Hierochloe odorata*)
by Lucia Romero-Guillot

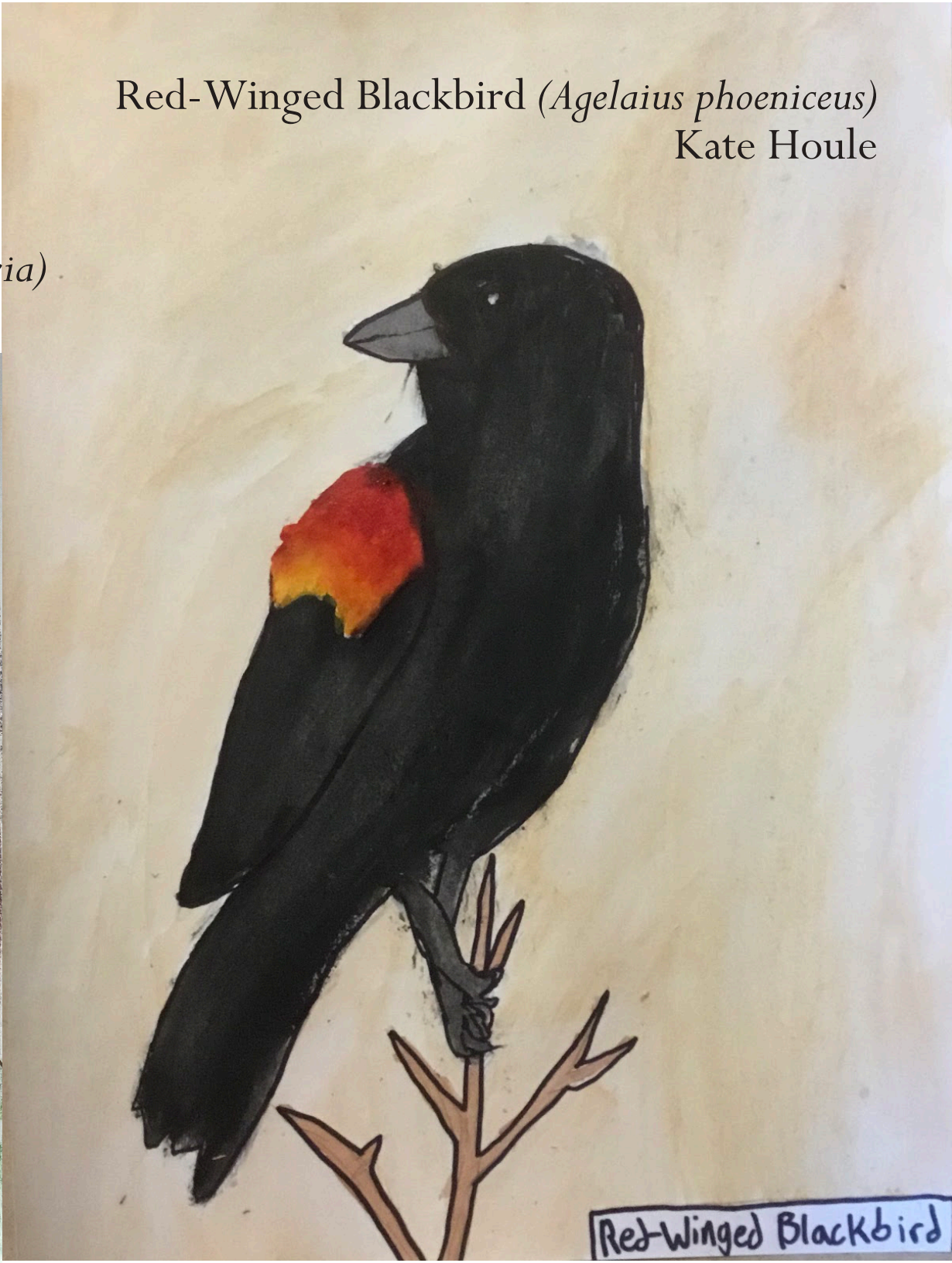
Sweet grass is devastatingly being affected by climate change. Because climate change is causing wildfires which are demolishing sweet grass. The more wildfires that happen the more we lose sweet grass.



NOVEMBER

Red-Winged Blackbird (*Agelaius phoeniceus*)
Kate Houle

Fly Agaric Mushroom (*Amanita muscaria*)
Nina LaFerla



Red-winged Blackbird

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Virginia Opossum (*Didelphis virginiana*) by Elani Muenchow

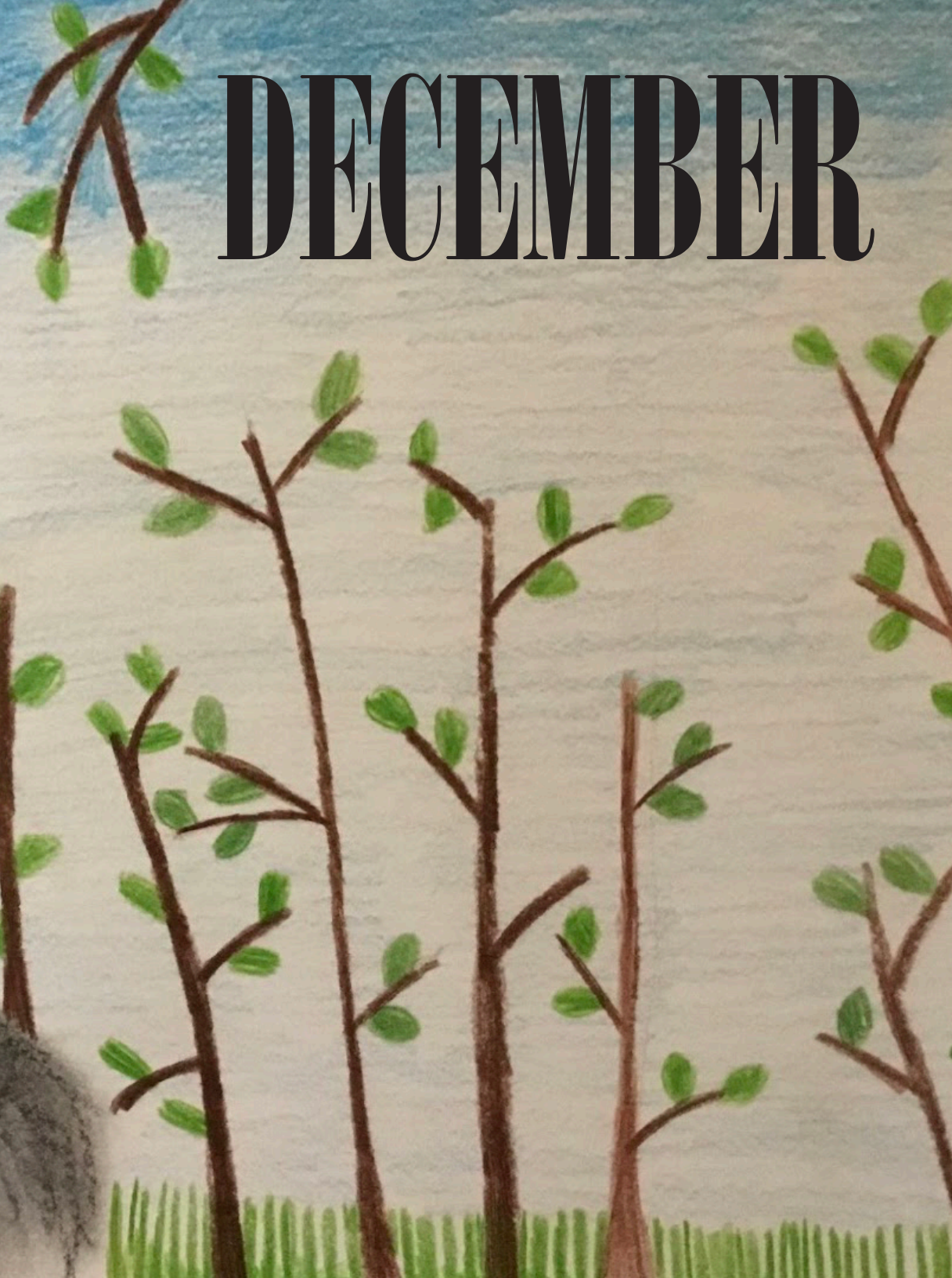
Opossums are not going to be just playing possum for long, they are losing their lives and their homes because of climate change. Opossums in MN are fairly new, as opossums have only lived in southern MN for under 100 years. They are coming to MN because North Virginia got too warm so they had to leave. Since there are less and less opossums in North Virginia, there are more of the opossums prey because there is nothing to eat them, which is causing an imbalance in nature. Soon even MN will get too warm, we will lose them again, and they won't come back.



DECEMBER



Canada Lynx (*Lynx canadensis*)
Rayne Van Guilder



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Pitted Beard Lichen (*Usnea cavernosa*) by Lillie Eiken

Have you ever seen, on a trail or lake, a moss-like plant on rocks or trees? That might be the pitted beard lichen, which is being hurt by climate change. Pitted beard lichens absorb nutrients and water from the environment around them. This means they are very sensitive to temperature, water's availability, and pollutants in the air, all of which are affected by climate change. That means loss of pitted beard lichen will be one of the first observable signs of major responses to climate change in coniferous forests. Then it will be lost, and one of our most interesting species will be gone.

