

Wildlife in a Warming Climate

GRADE 6-8

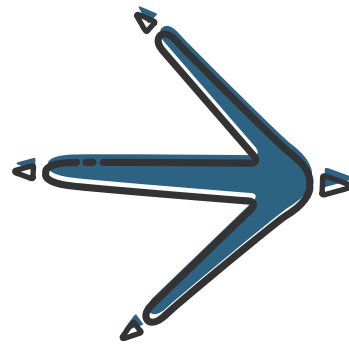
The following lesson plan is recommended as a stand-alone lesson or before receiving the **Grade 6-8: Wildlife in a Warming Climate** classroom visit. Book a classroom visit at sandy-pines-wildlife-centre.mylearnworlds.com.

Ontario Curriculum Links

Grade 6 Science B1.1, B1.2, B2.2, B2.4, B2.7

Grade 7 Science B1.2, B2.1, E2.8

Grade 8 Science E1.1, E2.4



A Changing Climate

STUDENTS WILL DISCUSS THE IMPACTS OF GREENHOUSE GAS EMISSIONS.

INTRODUCTION TO CLIMATE CHANGE

Throughout the history of the Earth, the planet has gone through periods of warming up and cooling down. Currently, the planet is in a period of warming. Global warming today is happening at a faster rate than usual because of human activity.

All ecosystems on Earth are impacted by a warming climate, from the Arctic tundra to a school yard in southern Ontario. Each ecosystem contains a web of life with plants, animals, fungi and other living beings interacting with each other and with the environment around them. When the environment rapidly changes, the ecosystem changes and it can be challenging for species to survive if they are not able to adapt.



Flowing water in winter, Kingston, Ontario.

DISCUSSION Ask students if they have noticed any changes in their life because of a warming climate. Do they find it too hot to do certain activities in the summer? Has it been too warm in winter to engage in snow/ice dependent activities like skating outside, skiing, snowshoeing, etc.? How have they adapted to these changes?

A Changing Climate

STUDENTS WILL DISCUSS THE IMPACTS OF GREENHOUSE GAS EMISSIONS.

GREENHOUSE GASES

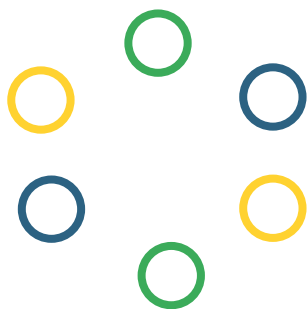
Greenhouse Gases (GHGs) are gases floating around in the Earth's atmosphere that trap heat instead of letting the heat pass through the atmosphere into space. As more heat becomes trapped in the atmosphere unable to escape, the entire planet gets warmer.

LIST OF GREENHOUSE GASES

Water vapor
Carbon dioxide
Methane
Ozone
Nitrous oxide
Chlorofluorocarbons

ACTIVITY Materials: Game script (see Appendix A), six plastic hoops (or equivalent), 60 green craft sticks, 60 red craft sticks, and 60 yellow craft sticks.

Set Up: Place six plastic hoops in a field or gymnasium, in the following formation and spread far apart:



- Place **green** sticks in green hoops to represent **food**.
- Place **blue** sticks in blue hoops to represent **water**.
- Place **yellow** sticks in yellow hoops to represent **shelter**.

Instructions: Three students will be GHGs to start. All remaining students are a wild animal of their choice. Students will begin by collecting food, water, and shelter. They can only take one stick at a time, and cannot collect duplicate food, water, or shelter until they have a full set. Using the script in **Appendix A (page 17)**, guide students through a series of challenges to learn about the impact of GHG emissions and ways of reducing GHG emissions. Debrief questions are provided in Appendix A.

A Changing Climate

STUDENTS WILL DISCUSS THE IMPACTS OF GREENHOUSE GAS EMISSIONS.

CASE STUDY: WINTERGREEN STUDIOS

Wintergreen Studios is an environmental education centre in South Frontenac, Ontario committed to reducing greenhouse gases. Here are a few ways they have stopped contributing to climate change:

Sustainable Technology: Powered by the sun, roof panels on the lodge and additional photovoltaics in the meadow provide enough energy for the main lodge and three woodland cabins at Wintergreen Studios, even in winter!

By storing energy in batteries when the sun is shining and converting it to alternating current to run lights, laptops and electrical appliances, Wintergreen is able to dramatically reduce its carbon footprint.

Green Buildings: As a green building demonstration site, all of Wintergreen's structures showcase low-impact construction techniques like straw bale and cordwood. They also feature living roofs, another signature element of many buildings at Wintergreen Studios.



The main lodge at Wintergreen Studios, made of straw bales and powered by solar energy.

A Changing Climate

STUDENTS WILL DISCUSS THE IMPACTS OF GREENHOUSE GAS EMISSIONS.

Zero Carbon Leadership: An early adopter of green energy, Wintergreen Studios inspired the Wintergreen Renewable Energy Co-op to help achieve zero carbon emissions in its community and beyond.

Now in its 10th year, Wintergreen's Annual Green Energy Retreats feature presentations and talks by experts and climate leaders. Participants are empowered to take personal actions that can lead to a greener future, such as exchanging fossil fuels for new technologies like solar electric, heat exchange pumps, and electric vehicles.

Rewilding: Nature is all around us to celebrate and protect. With a helping hand, even the most degraded landscapes can be restored to healthy ecosystems. Wintergreen Studios features wildlife gardens, rewilded meadows, bat boxes, bee hotels, and other habitat features designed to support the health of the landscape and its wild inhabitants.

Using our site as a living laboratory, Wintergreen Studios runs programs for schools focused on understanding habitats and ecosystems as the foundation for taking action to preserve and re-wild local habitats.

By engaging in hands-on projects to improve local habitats, visitors learn how to take an active role in mitigating the effects of a warming climate and, in so doing, foster hope for the future.



Animal tracks in a rewilded space at Wintergreen Studios.

Wildlife and Climate

STUDENTS WILL LEARN ABOUT THE IMPACTS OF CLIMATE CHANGE ON WILDLIFE.

BIODIVERSITY

Biodiversity describes the variety of life, including different species, differences within species, and the various ecosystems around the world. A biodiverse environment is a healthy environment, where many living beings are interacting with one another and keeping the ecosystem in balance.

Some changes to the environment can *increase* biodiversity, like planting native species that are at risk of extinction or building nesting boxes for birds where there are no tree cavities in an area.

Other changes can *decrease* biodiversity. Recall from the Greenhouse Gas game that a warming climate can push an ecosystem out of balance, as animals cannot find food, water, or shelter. If they cannot adapt quickly enough to the changes, they will not survive. And if one species disappears from the ecosystem, all other beings are impacted, as they are all connected through relationships of predator-prey, symbiosis, and more.



Polar bear on a beach with no snow or ice.

DISCUSSION Ask students to describe an ecosystem and share the benefits of biodiversity in an ecosystem. Which ecosystems and animals are often highlighted in the media as impacted the most by climate change? Which ecosystems and animals might be impacted by a warming climate **in their neighbourhood** and how? Consider how the impacts might change by season.

Wildlife and Climate

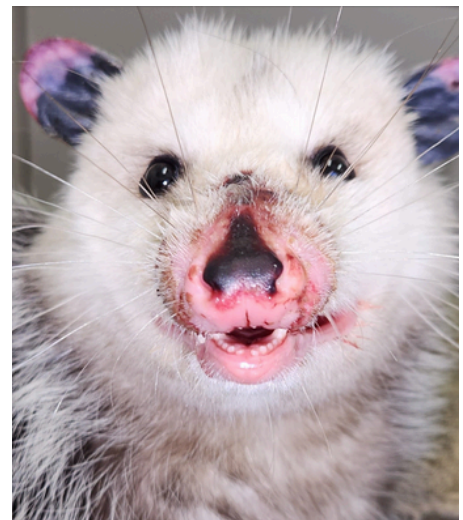
STUDENTS WILL LEARN ABOUT THE IMPACTS OF CLIMATE CHANGE ON WILDLIFE.

CASE STUDY: SANDY PINES WILDLIFE CENTRE

At Sandy Pines Wildlife Centre (SPWC)—a wildlife hospital in Napanee, Ontario—the impacts of a warming climate are appearing more frequently.

In December 2021, orphaned Canada Geese hatchlings were brought to SPWC; a time of year when it is historically too cold for Canada Geese to be nesting in this region.

Over the past several winters, SPWC has started to admit Virginia Opossums with frostbite. This species is moving north from the United States as temperatures warm. They thrive here in the summer, eating invertebrates like ticks, but are not adapted for the cold mid-winter temperatures.



Virginia Opossum with frostbite on their nose, receiving treatment at SPWC.

Hibernating animals such as bats, snakes, and salamanders are waking up in winter as the temperature warms, then cannot find food. When it



Eastern Milksnake found out of hibernation and spending the winter at SPWC.

becomes cold again with fluctuating temperatures, the animal is both hungry and unable to stay warm, leading to emaciation, sickness, and even injury. When found out of hibernation, these animals are brought to SPWC to overwinter and are released in the spring when their food source is available and temperatures are warmer.

Wildlife and Climate

STUDENTS WILL LEARN ABOUT THE IMPACTS OF CLIMATE CHANGE ON WILDLIFE.



Goslings at SPWC in December 2021.

ACTIVITY Materials: Appendix B - Cut Outs Part 1 and Part 2, Appendix C - Blank Sheets Part 1 and Part 2. Appendix D - Answer Sheets Part 1 and Part 2, scissors x 1 per student, glue x 3 per group (optional).

Instructions: Gather students in groups of four or five. Each group receives scissors, glue, all sheets from Appendix B and all sheets from Appendix C.

Students will start by cutting up all the squares in **Appendix B (pages 21-22)**. As a group, they will fill in the blank sheets in **Appendix C (pages 23-24)** by placing the cut squares into the blank squares. They may wish to start with an animal image, then deduce their ecosystem role, impact of a warming climate, and reason for admission to Sandy Pines Wildlife Centre. Each reason for admission is based on true circumstances.

Once their blank sheet is filled in and answers are taken up using **Appendix D (pages 25-26)**, groups may wish to glue the squares on their blank sheets.

Wildlife and Climate

STUDENTS WILL LEARN ABOUT THE IMPACTS OF CLIMATE CHANGE ON WILDLIFE.

DISCUSSION Ask students to share examples of how climate change impacted the animals in the activity, both directly and indirectly. Choose any of the animals from the activity and ask students what would happen to the ecosystem if the species disappeared due to climate change? How is biodiversity essential to climate resilience? How is an organization like SPWC trying to mitigate the impact of climate change on biodiversity?



TOP LEFT: Leopard Frog in triage at SPWC, found dry and crawling on a road in summer with a leg injury. TOP RIGHT: Purple Finch with conjunctivitis at SPWC, spread from a dirty bird feeder. BOTTOM: Big Brown Bat found out of hibernation and overwintering at SPWC.

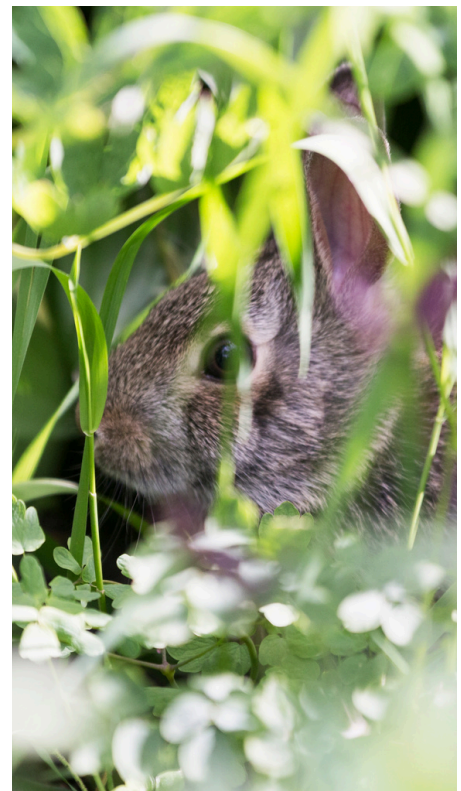
Rewilding

STUDENTS WILL TAKE ACTION TO SUPPORT WILDLIFE IN A WARMING CLIMATE.

WHAT IS REWILDING?

Rewilding is one way that we can reduce the impact of climate change on wildlife. Rewilding means working with nature to restore landscapes to good health and then giving them the opportunity to be wild ecosystems without human interference. It's about lending a helping hand, and then trusting that nature knows how to take it from there. For example, rewilding might include adding more water to the landscape to address water scarcity or adding more shade to the landscape to provide relief for wildlife in the heat. It might also mean adding more native plants to ensure there is a variety of food and shelter options available to wildlife that are more resilient to drought, wildfires, ice storms, and other climate-related challenges.

Rewilding a landscape is not just for long-term climate resilience. Immediate benefits to wildlife include an increase in nectar, seeds, and leafy greens as food, more shelter options to help wildlife evade predators and raise their young, and an increase in insect diversity for plant pollination, which helps sustain the entire ecosystem. This work is critical for the health of patients at Sandy Pines Wildlife Centre, as they all rely on climate-resilient, biodiverse ecosystems to survive once they are released from the hospital. Some of this rewilding work has been done by organizations like Wintergreen Studios, but most of this work can be done by **you** in your own neighbourhood!



Young Eastern Cottontail taking shelter in tall grasses.

Rewilding

STUDENTS WILL TAKE ACTION TO SUPPORT WILDLIFE IN A WARMING CLIMATE.

PAUSE HERE

If you are booking the in-person Grade 6-8: Wildlife in a Warming Climate 1-hour in-person classroom visit with us, **please swap the following seed ball activity** with the activity recommended on Page 14 or skip the following two activities completely. During the in-person classroom visit, we will make seed balls with your class, all materials provided.

SEED BALLS

You can start the process of restoring a landscape to health (a.k.a. increasing biodiversity) by starting a native plant garden, rewilding style, using a restoration tool called the seed ball. Seed balls are an ancient tool that were made popular in modern times by a Japanese microbiologist named Masanobu Fukuoka. A seed ball is a roughly formed ball of sand, clay and/or soil and seeds left to dry. Rewilding is as easy as tossing your seed balls into an area with open ground, where the seeds will receive the light and water required to grow.



American Goldfinch eating Purple Coneflower seeds.

Rewilding

STUDENTS WILL TAKE ACTION TO SUPPORT WILDLIFE IN A WARMING CLIMATE.

This restoration tool is all about sowing native plant seeds, which will later result in food, shelter, and even water for a variety of wild animals in your community. Take a moment to imagine the flowers and leaves catching rain water for birds to access and hydrate in the heat. Imagine the dark ground cover below the leaves providing shade for birds and small mammals. Imagine the fallen stems rich in insect life and fallen seeds scattered on the ground, teeming with small scurrying mammals at home in their rewilded world.

TOP 6 PLANT LIST FOR ONTARIO

ACTIVITY **Materials:**

Clay, sand or soil, buckets, water, and native plant seeds*.

*Most native wildflowers, grasses and shrubs produce seeds every fall and you can responsibly harvest them from parks, neighbours or your school pollinator garden. Native wildflower seeds can also be purchased online. Check out our top six plant list and try using SEEK or I-Naturalist apps to identify and learn more about them.



**Purple
Coneflower**



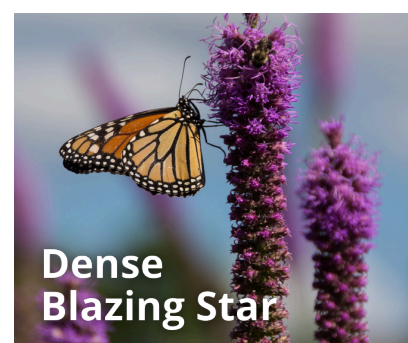
**Lanceleaf
Coreopsis**



Black-eyed Susan



Swamp Milkweed



**Dense
Blazing Star**



Cup Plant

Rewilding

STUDENTS WILL TAKE ACTION TO SUPPORT WILDLIFE IN A WARMING CLIMATE.

Instructions: Mix one part clay, one part sand or soil, and a few seeds in a bowl. Aim for 3-4 small seeds per ball or 1-2 large seeds per ball. Add just enough water to make it all stick together. Roll into a golf ball size and leave them to dry and harden. When dry, they are ready to help rewild! Choose a site that has bare soil and toss the seed balls onto the soil. Late fall or spring are excellent times to toss your seed balls.



Seed balls ready to be dried.

Extension: You may want to conduct an experiment with different planting parameters to see which produces the most plant growth. For example, try *tossing* the seeds in an area versus *planting* the seeds directly (no seed ball) in another area. Note that some seeds need **cold stratification** to germinate, meaning they need a whole winter outside before germinating.

DISCUSSION What is the environmental impact of having no plants in an ecosystem? How will planting seeds increase biodiversity and reduce the impacts of climate change? How might a plant that catches water (i.e., Cup Plant) help reduce the impacts of climate change on wildlife? What is your hope for wildlife in rewilding this space? Are there other planting projects you feel would support wildlife in your community?

More Rewilding!

STUDENTS WILL EXPLORE ADDITIONAL REWILDING IDEAS.

BRUSH PILES

Small mammals and birds require shelter to give them opportunities for cooling off from the heat in summer and staying protected from wind or snow in winter. At any scale, piles of sticks, leaves, logs, and branches will provide a range of nooks and crannies perfect for animals to find safety in extreme weather conditions.

ACTIVITY **Materials:** Sticks, leaves, and small logs, responsibly and locally sourced.

Instructions: Gather sticks, leaves or small logs and pile them up in a few different places. Try to keep it messy and natural, with entrances for wildlife to access the most sheltered part of your creation.



Brush pile.

DISCUSSION What is the environmental impact of having no shelters in an ecosystem? How will making a brush pile increase biodiversity and reduce the impacts of climate change? What is your hope for wildlife in rewilding this space? Are there other shelter-building projects you feel would support wildlife in your community?

Closing

STUDENTS WILL REFLECT ON THEIR CLIMATE-CONSCIOUS ACTIONS.

There are many ways to create climate-resilient communities that support both the human and more-than-human world. You've already explored actions you can take in your school community - from hosting a clothing swap to advocating for plant-based meals - as a way to reduce harmful greenhouse gas emissions. Going beyond the school walls, you've learned that rewilding habitats by adding native plants that provide food, water, and shelter will help maintain biodiversity amidst the changing climate.

Always remember that you are not alone in your efforts to make a difference. Wintergreen Studios and Sandy Pines Wildlife Centre are working alongside you to build a future where all beings can thrive. Together, we *can* create flourishing climate-resilient communities that are shared by present and future generations of human and more-than-human species.

DISCUSSION How did it feel to complete a project that benefited wildlife and increased climate resiliency in your community? Which more-than-human beings do you believe are benefiting from your actions? How will you celebrate your inspiring actions? How will you share about your inspiring work with others in your community?



Chipmunk taking shelter under a brush pile.

Appendix A

GREENHOUSE GAS GAME

Three students will be GHGs to start. All remaining students are a wild animal of their choice. **Wild Animals** - You must find food, water, and shelter in order to survive. These needs are represented by craft sticks. Green means food, yellow means shelter, and blue means water. You may only collect one at each hoop and you cannot collect doubles of food, water, or shelter until you have a full set. You may trade with other animals to get what you need if a hoop is empty.

From time to time, I will call out 'PAUSE'. Sometimes, the Greenhouse Gases (GHGs) will enter the game to take away food, water, and shelter as they warm up the planet. Other times, an action is taken by a community to reduce GHGs. *Wild animals may now start collecting their needs.*

PAUSE #1 - The demand for fast fashion has increased and factories are making more clothing out of polyester to keep up with the demand. Polyester is made from plastic and plastic is made from oil and gas. Making polyester releases the GHG Carbon Dioxide into the atmosphere, causing the planet to warm up.

The warming planet is increasing extreme weather and an ice storm has hit Ontario. In a moment, the GHGs will be released into the play area and will start taking food, water, and shelter from the hoops and/or from the wild animals. They may only take **one** need from an animal (they cannot take from the same animal twice). The GHGs will stop taking food, water, and shelter once the remaining students come up with **three** solutions to stop fast fashion from increasing.

Helpful Prompts: What is an alternative to buying brand new clothing? Used clothing. What is an alternative to throwing clothing out if it is damaged? Repair it. What is an alternative clothing material to polyester that is not made of plastic? Cotton, hemp, etc.

Appendix A

GREENHOUSE GAS GAME

Once students have shared three solutions, GHGs are called back from the play area with the food, water, and shelter they collected. These can be dropped on the ground outside the main play area. Check in with the animals and ask if any are missing food, water or shelter after the ice storm. Animals can start collecting food, water, and shelter again.

PAUSE #2 - Students at a local school started a clothing swap each season to reduce the need for buying new clothing. This has reduced GHG emissions, reduced waste, and reduced pollution in the environment. Wildlife are thriving! Bring food, water, and shelter back into the environment for 15 seconds, and **drop them off in the hoops**. Animals can start collecting food, water, and shelter again.

PAUSE #3 - The demand for eating farmed animals has increased. To meet this demand, factory farms are destroying habitats to make space for the 46 billion animals raised for food annually. These habitats *were* keeping GHGs out of the atmosphere. Additionally, the factory farms use fertilizer that releases GHGs like Nitrous Oxide and the animals themselves - like cows - release the GHG methane into the atmosphere.

The warming planet has caused a drought in Ontario. Water resources are drying up, plants are drying out, and the risk of wildfires are high. In a moment, the GHGs will be released into the play area and will start taking food, water, and shelter from the hoops and/or from the animals. The GHGs will stop taking food, water, and shelter once the remaining students come up with **two** solutions to stop factory farming.

Helpful Prompts: What is an alternative to eating meat? Eating plants. Instead of buying food from a factory farm (usually sold at a regular grocery store), where could you buy food instead? Local farm.

Appendix A

GREENHOUSE GAS GAME

Once students have shared two solutions, GHGs are called back from the play area with the food, water, and shelter they collected. These can be dropped on the ground outside the main play area. Check in with the animals and ask if any are missing food, water or shelter after the drought. Animals can start collecting food, water, and shelter again.

PAUSE #4 - Students at a local school asked their school cafeteria to swap out meat products with plant-based alternatives. This has reduced GHG emissions, saved the lives of farmed animals, and saved habitats from being destroyed. Wildlife are thriving! Bring food, water, and shelter back into the environment for 15 seconds, and **drop them off in the hoops**. Animals can start collecting food, water, and shelter again.

PAUSE #5 - Instead of buying electric buses or building more bike lanes, local governments have decided to build more roads, highways, and gas stations to accommodate more gas-powered vehicles. Each gas-powered vehicle releases the GHG carbon dioxide into the atmosphere and warms up the planet.

The warming planet has caused glaciers to melt in the Canadian Arctic. As ice disappears and freshwater flows to the ocean, ice and freshwater habitats are lost for both human and more-than-human species. In a moment, the GHGs will be released and will start taking food, water, and shelter from the hoops and/or from the animals. The GHGs will stop taking food, water, and shelter once the remaining students come up with **three** solutions to stop the effects of gas-powered vehicles.

Helpful Prompts: Instead of coming to school in a gas-powered vehicle, what mode of transportation could you use? Biking, walking, scooter, etc. Instead of asking adults to drive you somewhere to meet with friends, what public transportation could you take instead? Bus, train, etc.

Appendix A

GREENHOUSE GAS GAME

Helpful Prompts continued: Instead of building roads and gas stations, what could a city government do to help you get to school safely and on time?
Better bike lanes, better bus schedules, etc.

Once students have shared three solutions, GHGs are called back from the play area with the food, water, and shelter they collected. These can be dropped on the ground outside the main play area. Check in with the animals and ask if any are missing food, water or shelter after the glaciers melted. Animals can start collecting food, water, and shelter again.

PAUSE #4 - Students at a local school started a 'bike bus'. Friends cycle to each other's home to meet them on their bike and they cycle to and from school as a large group. This has reduced GHG emissions, reduced other air pollution, and prevented wild animals from being hit by vehicles. Wildlife are thriving! Bring food, water, and shelter back into the environment for 15 seconds, and **drop them off in the hoops**. Animals can start collecting food, water, and shelter again for another minute.

End the game here and debrief using the prompts below.

Game Debrief:

- What was the impact on species when the climate warmed up? What happened to the availability of food, water, and shelter?
- In this game, what released greenhouse gas emissions? *Fast fashion (making polyester/plastic), factory farming, and gas-powered vehicles.*
- In this game, what reduced greenhouse gas emissions for fashion, factory farming, and transportation?
- How could students start an initiative to reduce greenhouse gas emissions at their school or in their community - like the ones described in the game?

Appendix B

SPWC ACTIVITY - CUT OUTS PART 1

Ponds are drying up in the heat. This reptile usually burrows in the mud at the bottom of a pond to hibernate for the winter.	 Leopard Frog	Fluctuating temperatures in winter cause the mammal to wake up early from hibernation without a food source.	Found tired, with dry skin, and with an injured leg from a possible predator attack after being too weak to find safety.
Disperses seeds. Also a prey species.	Maintains populations of invertebrates on the forest floor by eating them.	 Midland Painted Turtle	Disperses seeds of plants and fungi. Also a prey species.
Maintains populations of flying insects like mosquitos by eating them.	Found awake in late fall with a shell fracture, after being hit by a vehicle while looking for a place to hibernate.	Found awake in late fall after a heavy rainfall, too thin and weak to outrun a cat. The cat caught them and caused multiple injuries.	Cleans the environment by eating deceased animals and plants.
Fluctuating temperatures in winter cause the amphibian to wake up early from hibernation without a food source.	Found thin and tired, crawling down a chimney inside a human's home.	 Big Brown Bat	Maintains populations of aquatic and terrestrial animals as both predator and prey.

Appendix B

SPWC ACTIVITY - CUT OUTS PART 2

 American Goldfinch	Maintains populations of small rodents by eating them.	Started eating seeds from a bird feeder. Contracted an illness called conjunctivitis, spread by dirty bird feeders.	 Red Fox
Extreme weather events in winter can bring extremely cold temperatures. If an animal's ability to stay warm is compromised, they might not survive.	 Eastern Red-backed Salamander	Extreme weather events like ice storms create a layer of ice on seeds and nuts. This bird cannot eat icy food.	Extreme weather events like ice storms create a layer of ice on the ground. Predators cannot access small animals who live under the ice.
 Eastern Chipmunk	Found cold, tired and weak on top of the snow, unable to find food or warmth.	Maintains populations of small rodents by eating them. Also disperses seeds.	Ponds are drying up in the heat. Without water to soak in, this amphibian's skin dries up and they cannot absorb oxygen to breathe.
Found on the road in winter, thin and with a head injury. They were hit by a vehicle at night after being too weak to fly out of the way.	Extreme weather events like flooding can cause burrowing animals to evacuate their dens. Food saved up for winter may be lost.	 Barred Owl	Found in winter with an illness called mange that causes them to lose their fur. This animals was freezing and unable to hunt.

Appendix C

SPWC ACTIVITY - BLANK SHEET PART 1

Animal	Ecosystem Role	Impact of a Warming Climate	Possible Reason for Admission to SPWC

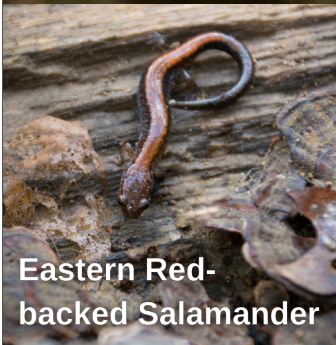
Appendix C

SPWC ACTIVITY - BLANK SHEET PART 2

Animal	Ecosystem Role	Impact of a Warming Climate	Possible Reason for Admission to SPWC

Appendix D

SPWC ACTIVITY - ANSWER SHEET PART 1

Animal	Ecosystem Role	Impact of a Warming Climate	Possible Reason for Admission to SPWC
 Big Brown Bat	Maintains populations of flying insects like mosquitos by eating them.	Fluctuating temperatures in winter cause the mammal to wake up early from hibernation without a food source.	Found thin and tired, crawling down a chimney inside a human's home.
 Eastern Red-backed Salamander	Maintains populations of invertebrates on the forest floor by eating them.	Fluctuating temperatures in winter cause the amphibian to wake up early from hibernation without a food source.	Found cold, tired and weak on top of the snow, unable to find food or warmth.
 Leopard Frog	Maintains populations of aquatic and terrestrial animals as both predator and prey.	Ponds are drying up in the heat. Without water to soak in, this amphibian's skin dries up and they cannot absorb oxygen to breathe.	Found tired, with dry skin, and with an injured leg from a possible predator attack after being too weak to find safety.
 Midland Painted Turtle	Cleans the environment by eating deceased animals and plants.	Ponds are drying up in the heat. This reptile usually burrows in the mud at the bottom of a pond to hibernate for the winter.	Found awake in late fall with a shell fracture, after being hit by a vehicle while looking for a place to hibernate.

Appendix D

SPWC ACTIVITY - ANSWER SHEET PART 2

Animal	Ecosystem Role	Impact of a Warming Climate	Possible Reason for Admission to SPWC
 Barred Owl	Maintains populations of small rodents by eating them.	Extreme weather events like ice storms create a layer of ice on the ground. Predators cannot access small animals who live under the ice.	Found on the road in winter, thin and with a head injury. They were hit by a vehicle at night after being too weak to fly out of the way.
 American Goldfinch	Disperses seeds. Also a prey species.	Extreme weather events like ice storms create a layer of ice on seeds, and nuts. This bird cannot eat icy food.	Started eating seeds from a bird feeder. Contracted an illness called conjunctivitis, spread by dirty bird feeders.
 Eastern Chipmunk	Disperses seeds of plants and fungi. Also a prey species.	Extreme weather events like flooding can cause burrowing animals to evacuate their dens. Food saved up for winter may be lost.	Found awake in late fall after a heavy rainfall, too thin and weak to outrun a cat. The cat caught them and caused multiple injuries.
 Red Fox	Maintains populations of small rodents by eating them. Also disperses seeds.	Extreme weather events in winter can bring extremely cold temperatures. If an animal's ability to stay warm is compromised, they might not survive.	Found in winter with an illness called mange that causes them to lose their fur. This animals was freezing and unable to hunt.

Sources and Credits

Sources

Ontario Science Centre. (n.d.) Make Sensory Seed Balls.

<https://www.ontariosciencecentre.ca/science-at-home/diy-science-fun/make-sensory-seed-balls>

Protecting Our Winters (2023, March 14). *The Melting Reminder, Presented by Guru.*

https://www.protectourwinters.ca/the_melting_reminder#:~:text=However%2C%20widespread%20glacier%20loss%20reduces,alpine%20freshwater%20and%20glacier%20biodiversity.

World Animal Protection. (n.d.). Farmed Animals. <https://www.worldanimalprotection.ca/our-work/farmed-animals/>

Credits

Written and designed by Wintergreen Studios and Sandy Pines Wildlife Centre.

This project was made possible by the S.M. Blair Family Foundation and the Community Foundation for Kingston & Area.



Wintergreen Studios is an environmental retreat centre located in South Frontenac, Ontario, Canada. Established as a not-for-profit in 2007, Wintergreen embodies joyful ways of living in balance with the natural world. Our programs and off-grid facilities inspire people to live harmoniously, to become more resilient, and to return to their homes, workplaces, and communities nurtured and rejuvenated—ready to make a difference.

Visit wintergreenstudios.com to learn more about our work.

SM BLAIR FAMILY FOUNDATION



Community Foundation
for Kingston & Area



Sandy Pines Wildlife Centre is a registered charity that rehabilitates sick, injured, and orphaned wildlife in southeastern Ontario. We are located on the traditional lands of the Anishinaabek and Haudenosaunee.

If you are in conflict with wildlife or find a wild animal in distress, please call us for advice at 613-354-0264 or contact your nearest wildlife hospital.

Visit sandypineswildlife.org to learn more about our work..