



Oak Ridges Moraine Land Trust Activity Guide for Teachers

Activity: Species at Risk Threat Matching Game

Age range: Grade 7-9

Supplies:

- Species at risk paper cutouts (on a separate PDF)
- Environmental threats paper cutouts (on a separate PDF)
- Paper and pencils

Background:

- The Oak Ridges Moraine is home to numerous species at risk. Many factors threaten the rich biodiversity of the region. This game is designed to help students identify risks to different species. Through this game, students will connect the life cycles of each species to the human activities that could impact them. For example, because a bird like the Cerulean Warbler migrates at night, light pollution and windows are major threats to its survival. The threats to some species are simpler and more tangible and can be more easily mitigated. Some species are impacted by a variety of complex factors that are more difficult to address.

Instructions:

- Students will be divided into seven groups.
- Each group will get a laminated, labelled image of a species at risk found on the Oak Ridges Moraine. The species will include the Blanding's Turtle, Cerulean Warbler, Goldenseal, American Eel, Eastern Meadowlark, Jefferson Salamander, and Monarch.
- Laminated images showing several environmental threats will be placed at the front of the classroom, visible to all the students. These threats include an outdoor cat, windows, poaching, climate change, deforestation, development, cars, pesticides, hydro dams, farm equipment, and light pollution.
- Students will be asked to match their species up with the appropriate threats that impact its survival, writing them down in a list.
- The teacher will go around to each of the groups and ask them to explain their rationale for which threats they included.
- When finished, each group will present for the class about their species and the threats they chose for it.

Inquiry-based learning questions:

- Which of these species at risk can you recognize?
- Which ones have you seen?
- How did you know which threats match up with your species?
- What can we do in our own lives to help protect wildlife?
- If people need places to live and wildlife is threatened by habitat loss, how can we balance development and protecting nature?
- What kind of threats do you think migratory birds might encounter on their trips?
- Why might it be hard to protect a bird that migrates to other countries?
- How do we balance the need for people to have jobs and support themselves with the needs of the environment?
- If our whole society and economy depends on cars, what can we do to reduce carbon emissions?
- We think of hydroelectric power and wind turbines as green energy, but they still have environmental costs. How can we balance our need for electricity with protecting the environment?
- If there's laws protecting species at risk, why are so many of them still in serious danger?
- Which of these species do you think would be easier to protect? Why?
- Which of these species do you think would be more challenging to protect? Why?

Threats for Each Species:

- Blanding's Turtle - development, cars, poaching
- Blanding's turtles live in wetlands and lakes. They depend on these habitats which are highly vulnerable to development. Each year in Ontario we lose more and more wetlands. All eight turtle species in the province are considered species at risk. Many turtles are killed each year by cars while attempting to cross roadways. Helping a turtle to cross a road is an excellent way to support these animals. Make sure you put the turtle in the direction it was facing, or it may cross the road again, putting it back in danger. Poaching, especially for the illegal pet trade, is a huge threat to turtles across North America. With its bright colours and smiling face, the Blanding's Turtle is a popular target.
- Cerulean Warbler- development, deforestation, outdoor cats, windows, light pollution, climate change
- Cerulean Warblers depend on mature deciduous forest habitats for breeding. They breed in the US and Canada and spend their winters in South America. Deforestation

and development throughout their range has caused their numbers to drop significantly. Climate change (droughts, forest fires) threatens these habitats as well. Like most birds, Cerulean Warblers migrate at night. Because of the way their eyes work, most birds can't decipher glass as a solid object. They will fly right into it. Nighttime light pollution, particularly in tall office buildings, confuses them and makes them more likely to hit the buildings and die. Applying bird safe window treatments (the little dot stickers) to windows and turning lights off during spring/fall migration are great ways to help. Outdoor cats are the number one killer of birds in the US and Canada. Keeping our cats indoors could save the lives of millions of birds each year.

- Eastern Meadowlark - development, outdoor cats, windows, light pollution, climate change, farm equipment
- Meadowlarks are grassland birds. Since the arrival of European colonizers, Ontario has lost over 99% of its grasslands. Many people don't even realize that you can find prairies and savannahs in Ontario! With so many grasslands lost, meadowlarks often nest in farm fields. Meadowlarks make their nests directly on the ground. While farmers are mowing hay, they often destroy meadowlark eggs or kill their young with combine harvesters and other equipment.
- Jefferson Salamander - development, cars, pesticides, climate change
- Habitat loss is a major threat to Jefferson Salamanders. In the early spring, they migrate to temporary pools of water to breed. Oftentimes, roads cut through their habitats, forcing them to cross. This puts them at a high risk of being hit by cars. Salamanders are extremely sensitive to changes in the environment, particularly pollutants like pesticides and agricultural runoff. In the future, climate change may dry up many of the seasonal ponds where they breed.
- American Eel - hydro dams
- American Eels used to be extremely common throughout Ontario's waterbodies. They breed in the Sargasso Sea near Bermuda, migrating thousands of kilometers through the St Lawrence River and out to the Atlantic Ocean. Dams and canals block their migration. The blades of hydro dams are particularly deadly for them. Their populations have declined by over 99% in the province.
- Monarch - development, pesticides, climate change, deforestation
- This iconic butterfly participates in a marathon migration from Canada and the US to Mexico. They depend on milkweed as their host plant. They lay their eggs on it, and their caterpillars feed on it. The loss of milkweed and other wildflowers threatens Monarchs and other pollinators. Widespread pesticide use is causing major population declines for insects across the world. Deforestation on their wintering grounds in Mexico is another major threat to Monarch. Climate change (particularly wildfires and drought) threatens the habitats and plants they depend on.

- Goldenseal - poaching, development, deforestation
- This rare wildflower depends on healthy forest habitats. This makes it extremely vulnerable to deforestation and development. It's used in herbal medicine, making it a valuable species for poachers to harvest from the wild. Poaching is probably the biggest threat this species faces in the Oak Ridges Moraine. Goldenseal has disappeared from many places where it was once found.

Curriculum Connections:

Grade 7:

Science:

- B. Life Systems - Interactions in the Environment
- B1. Relating Science and Technology to Our Changing World - assess the impact of human activities and technologies on the environment, and analyze ways to mitigate negative impacts and contribute to environmental sustainability
- B2. Exploring and Understanding Concepts - demonstrate an understanding of interactions between and among biotic and abiotic components in the environment
- E. Earth and Space Systems - Heat in the Environment
- E1. Relating Science and Technology to Our Changing World - assess the benefits of technologies that reduce heat loss, and analyze various social and environmental impacts of the use of energy from renewable and non-renewable sources

Geography:

- A1. Application: Interrelationships between People and the Physical Environment
- A1.1 describe various ways in which people have responded to challenges and opportunities presented by the physical environment (e.g., building dams, levees, or dikes to contain water and/or reclaim land; building terraces or irrigation systems to permit farming on inhospitable land; designing buildings suited to local climatic conditions or natural events such as earthquakes; specialized economic development such as resource towns in areas rich with ore, or tourism in areas of natural beauty or with a desirable climate), and analyze short- and long-term effects of some of these responses (e.g., water pollution from industry and agriculture; loss of animal habitat and wilderness areas as human settlement expands; deforestation and its consequences; the development of provincial or national parks to protect wilderness areas)
- A1.2 compare and contrast the perspectives of some different groups (e.g., Indigenous peoples living on the land, organic versus large-scale farmers, industrial and agrarian societies, owners of resource-extraction companies, environmental organizations, land developers) on the challenges and opportunities presented by the natural environment
- A1.4 assess ways in which different peoples living in similar physical environments have responded to challenges and opportunities presented by these environments, and assess

the sustainability of these responses (e.g., land reclamation and flood control in low-lying areas such as the Netherlands, the Mississippi delta, the Mekong River; nomadic lifestyles of peoples in the Gobi or Sahara Desert versus extensive irrigation to create cities such as Las Vegas in the Mojave Desert; the development of ecotourism in the Costa Rican rainforest versus the clear-cutting of rainforests in the Amazon or Madagascar)

Grade 8:

Science:

- D. Structures and Mechanisms - Systems in Action
- D1. Relating Science and Technology to Our Changing World - assess the social and environmental impacts of various systems, and evaluate improvements to the systems or alternative ways of meeting the same needs
- D2. Exploring and Understanding Concepts - demonstrate an understanding of different types of systems and the factors that contribute to their safe and efficient operation
- E. Earth and Space Systems - Water Systems
- E1. Relating Science and Technology to Our Changing World - assess the impact of human activities and technologies on the sustainability of water resources
- E2. Exploring and Understanding Concepts - demonstrate an understanding of the characteristics of Earth's water systems and of factors that affect these systems

Geography:

- A. Global Settlement: Patterns and Sustainability
- A1. Application: Interrelationships between Settlement and the Environment - analyze some significant interrelationships between Earth's physical features and processes and human settlement patterns, and some ways in which the physical environment and issues of sustainability may affect settlement in the future (FOCUS ON: Interrelationships)
- A2. Inquiry: Human Settlements and Sustainability - use the geographic inquiry process to investigate issues related to the interrelationship between human settlement and sustainability from a geographic perspective (FOCUS ON: Geographic Perspective; Interrelationships)
- A3. Understanding Geographic Context: Settlement Patterns and Trends - demonstrate an understanding of significant patterns and trends related to human settlement and of ways in which human settlement affects the environment (FOCUS ON: Patterns and Trends; Spatial Significance)

Grade 9:

Science:

- B. Biology - Sustainable Ecosystems and Climate Change

- B1.1 assess impacts of climate change on the sustainability of local and global ecosystems, describe local or global initiatives for combatting climate change, and identify solutions to address some of the impacts
- B1.2 assess impacts of climate change on communities in Canada, including First Nations, Métis, and Inuit communities
- B1.3 investigate and explain how sustainable practices used by various communities, including First Nations, Métis, and Inuit communities, reflect an understanding of the importance of the dynamic equilibrium of ecosystems

More Resources:

- [The Oak Ridges Moraine Land Trust](#)
- [Species at Risk - Government of Ontario](#)
- [Species at Risk - Government of Canada](#)
- [The Ontario Turtle Conservation Centre](#)
- [All About Birds - The Cornell Lab of Ornithology](#)
- [Birds - Hinterland's Who's Who](#)