



Nature at School Pre-lesson Birds of Fire

Learning outcomes:

Join DNR educator Craig Kasmer from one of Michigan's most amazing forest resources, Hartwick Pines State Park. Together we will explore the world of the Kirtland's warbler and the unique jack pine forest habitat it needs to survive. Once on the brink of extinction, this tiny bird has recovered due to cooperative efforts by scientists, foresters, and community volunteers. This 30-minute lesson will meet the following learning outcomes:

- Learn why Kirtland's warblers almost became extinct and the efforts that were made to help them recover.
- Understand how factors such as habitat loss and invasive species can impact the successful survival of Kirtland's warblers, and why some species need active conservation efforts to continue to thrive.
- Discover why some species, especially migrating birds, need cooperative management and communication between several countries.
- Learn how management of the jack pine ecosystem for Kirtland's warblers also supports many other species of plants and animals.

Background information:

Michigan is home to one of the rarest birds in the world. The Kirtland's warbler nests in jack pine forests, a special habitat found mainly in a small area in northern lower Michigan. This bird is dependent on fire to provide the open areas and small jack pine trees needed for nesting. Fire suppression beginning in the early 20th century led to a decline in nesting habitat. By the mid-1970's, there were only 167 breeding pairs of Kirtland's warblers in the world!

Other threats to Kirtland's warbler populations include nest parasitism by brown-headed cowbirds and potential loss of habitat at their wintering grounds in the Bahamas. Because of research and recovery efforts by scientists, biologists, foresters, and community volunteers, there are now over 2,300 breeding pairs, leading the U.S. Fish and Wildlife Service to remove this bird from the endangered species list in 2019. However, because of its specific habitat requirements, this bird will continue to rely on active conservation measures to maintain a healthy population.

Resources:

- [All About Birds](#)
- [Audubon News](#)
- [Detroit Free Press](#)

Suggested pre-activity:

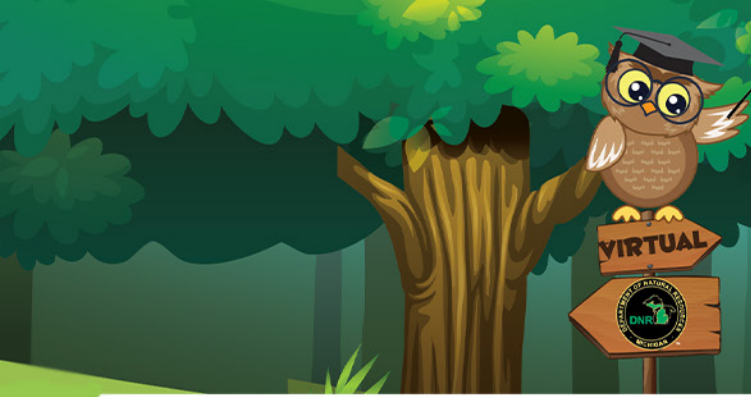
- [The Great Migration Challenge](#)
- Have students list four things a migrating bird needs to survive. Consider what the bird needs during the summer in Michigan, during migration and in the winter.

Directions for your DNR Nature at School virtual program:

1. You will receive a reminder email from SignUp Genius three days prior to your scheduled *DNR Nature at School* program. Please read and follow the directions, so we all can have a successful program.
2. At least one day prior to your lesson, send your instructor the link to your Zoom/Google Meet/Skype/Teams for your lesson time. Starting 10 minutes early with just your instructor is encouraged.

Day of:

3. Make sure students have their sound muted and their cameras on to participate (with thumbs up, number on fingers).
4. If you use the chat feature, we encourage the students to ask their questions there, and the teacher can ask them at the end of the program.
5. See further directions in your SignUp Genius confirmation.



Nature at School NGSS Correlation Birds of Fire

Bird of Fire: The Kirtland's Warbler Story

Live from Hartwick Pines State Park: From the brink of extinction to removal from the endangered species list, this is a true conservation success story.

Guiding question/phenomenon:

How can habitat management impact wildlife populations?

Science and Engineering Practice	Disciplinary Core Idea	Cross-Cutting Concepts
Analyzing and Interpreting Data Analyze data using tools, technologies, and/or models in order to make valid and reliable scientific claims or determine an optimal design solution. <ul style="list-style-type: none">Students will experience how real-world biologists used data to form a solution to bring back the Kirtland's warbler from being endangered.	LS2.C: Ecosystem Dynamics, Functioning, and Resilience When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die. (secondary) LS4.D: Biodiversity and Humans Populations live in a variety of habitats, and change in those habitats affects the organisms living there.	Systems and Systems Models A system can be described in terms of its components and their interactions. <ul style="list-style-type: none">Students understand how fire creates different age classes in jack pine, and that how its absence disrupted the ecosystem important to the survival of the Kirtland's warbler.

Recommended grade band(s): Lower elementary through middle school

All Nature At School virtual programs have been created to introduce students at any grade level to life and/or earth science core ideas, when used with pre- and post-activity suggestions.

Nature at School Post-lesson Birds of Fire

Activity wrap-up:

The Kirtland's warbler has very specific habitat needs. It nests on the ground in a jack pine forest with trees that are between 5 and 20 years old, and 5-20 feet tall. With the suppression of wildfires in northern Michigan, aging jack pine forests reduced suitable nesting areas for this rare warbler. Competition from the brown-headed cowbird, which lays its own eggs in other birds' nests, furthered the threat.

Conservation work by scientists and biologists from three countries, as well as by the forest industry and community volunteers, helped the Kirtland's warbler to recover as a species, but the work continues. Maintaining large nesting areas by hand-planting thousands of jack pine seedlings and using prescribed burns are essential, but population (or census) studies and other research efforts benefit the Kirtland's warbler as well.

Other animals and plants also benefit from active management of the jack pine ecosystem. Some species that share this habitat include deer, turkeys, badgers, snowshoe hares, grouse, oaks, blueberries, sweet fern, and many different wildflowers and birds. Without active management, some of these plants and animals might also become scarce or disappear.

Connect to home:

- Take a walk in your neighborhood or nearby park. Identify any native pines you may see.
- Start a nature journal of plants and animals you find in a habitat.

Post-activity:

- Have your students learn about another animal or plant species that lives in the jack pine ecosystem.
- Study another animal or plant on the federal endangered species list. Find out what is being done to help it.



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