HAVE TO HAVE A HABITAT

Instructor's Guide

Grade Level: 5th and up

Length of Time: 45-60 minutes

Essential Questions:

- How have human activities affected Whooping Crane populations?
- How can communities make environmental decisions such as whether or not to develop a wetland?

Standards:

- **SCI.SEP7.m** Construct, use, and present oral and written arguments supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem.
- **SCI.LS2.A.m** Organisms and populations are dependent on their environmental interactions both with other living things and with nonliving factors, any of which can limit their growth. Competitive, predatory, and mutually beneficial interactions vary across ecosystems but the patterns are shared.

Materials: Area set up for a debate, such as two tables facing one another in the front of the classroom, Paper, Writing utensils

Key Vocabulary:

Wetland: A type of ecosystem where the land is covered with water for at least a portion of the year.

Population: A group of individuals of the same species living and interbreeding in the same area.

Background:

North America is home to two species of Crane. Sandhill Cranes *(least concern) and* Whooping Cranes *(endangered)*. In the 1940's Sandhill Crane populations had drastically declined and Whooping Cranes faced near extinction. This was largely because of unregulated hunting, markets for their eggs and feathers, and widespread destruction of wetland habitats. Since the 1940's, Sandhill Cranes have recovered and are now the most abundant species of cranes, numbering over 1,000,000 individuals. Whooping Cranes on the other hand have required more intensive conservation management and are slowly rebuilding their populations and recovering their range. At their lowest, only 21 individual Whooping Cranes were left in the world. Today, there are 4 populations of Whooping Cranes and almost 700 individuals in the wild.

Cranes rely on wetlands for their food, water, shelter, and space, making wetlands their primary habitat. Some crane species, like the Whooping Crane, are heavily dependent on wetland habitats to find food, roost, and build nests. Whooping Cranes are omnivorous, which means they eat both plants and animals. Their diet consists of minnows, insects, frogs, crabs, crayfish, snails, rodents, smaller birds, and plant material, all of which can be found in wetlands. Wetlands are also home to foxes, coyotes, bobcats, raccoons, and raptors that can predate on Whooping Crane adults and young.

Many species of birds migrate south every winter, heading to warmer areas where food is plentiful, and return north to their nesting grounds after the spring thaw. In Whooping Cranes, migration is a learned behavior. In the fall, young birds learn the migration route by following their parents or older members of the population from their summer nesting grounds to their winter habitat. Whooping Cranes migrate south as pairs, in family groups, or as small units of three to five birds. Pairs with young birds are among the last to leave the nesting habitat.

Along the migration route, cranes use many stopover habitats. Stopover habitats are used for different lengths of time (days or weeks) to gather the food and energy needed during migration, and to take advantage of abundant resources. Whooping Cranes are opportunistic foragers, which means that when a certain food in their diet is plentiful, they will take advantage of the abundance and continue to eat it. For example, if during migration, Whooping Cranes find a cornfield with a lot of unharvested waste corn and the weather is good, the cranes will likely stay at the stopover site and continue to eat for a while until resuming their migration. Most Whooping Cranes use the same summering, wintering, and stopover sites year after year when conditions permit.

However, habitat availability may change every year based on weather conditions (drought), resource availability (food), or environmental conditions (draining or filling of wetlands, power line construction). Ideally, Whooping Cranes vary their wintering, stopover, and nesting grounds as changes in habitat availability occur. Sometimes, however, when conditions change and food becomes scarce within a Whooping Crane's territory. This can have a devastating impact on the fragile population and Whooping Cranes may starve to death. This has happened in Aransas National Wildlife Refuge during drought years. In 2009, 23 Whooping Cranes in the Aransas-Wood Buffalo population died as a result of low resource availability. This was caused by a lack of freshwater from rivers to Aransas Bay during a drought year.

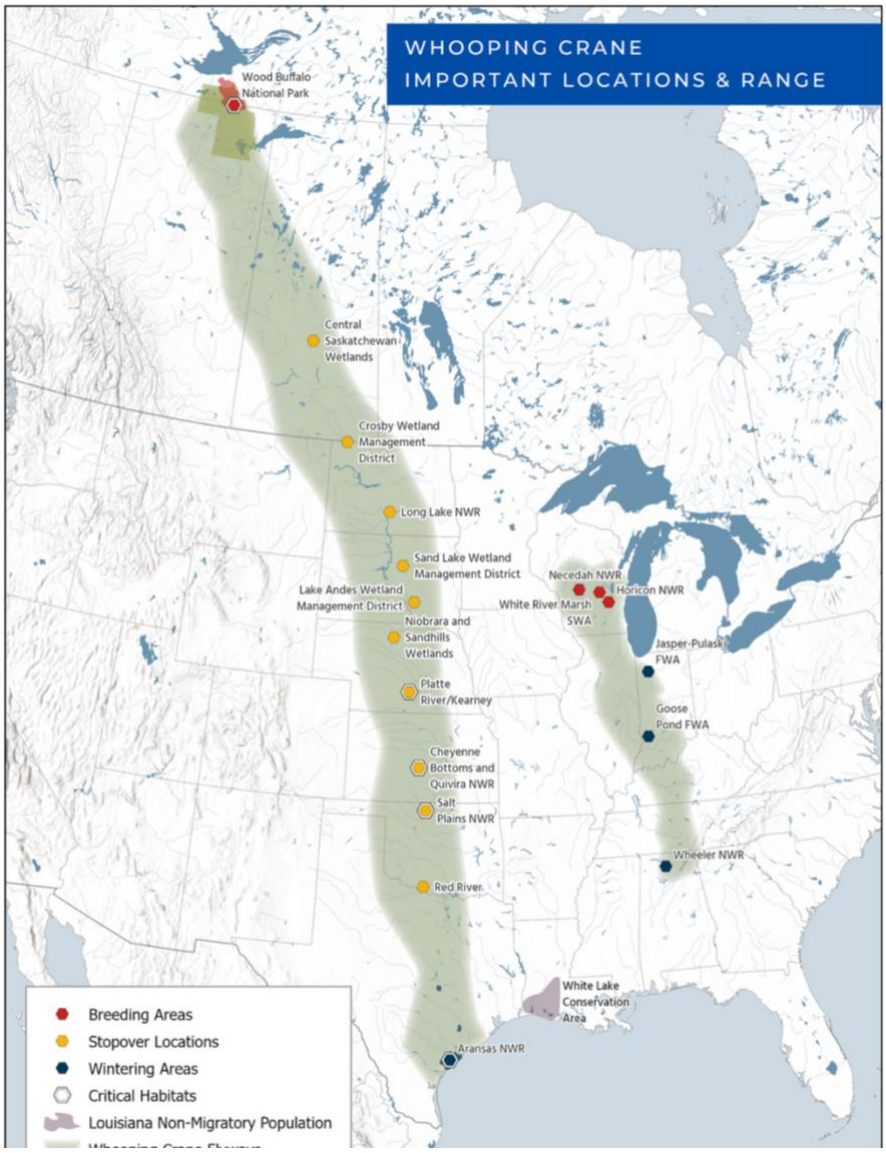

Image 1: Current breeding and wintering areas and migration routes of Whooping Cranes. Image: International Crane Foundation

Currently, there are two migrating populations of Whooping Cranes. The Aransas-Wood Buffalo Population of Whooping Cranes migrates between Canada and Texas. The Eastern Migratory Population (EMP) migrates between Wisconsin and the southeastern United States.

Fall migration for the Whooping Cranes in the Eastern Migratory Population typically begins between late October and early December. Most birds usually depart Wisconsin in mid- November. The birds find wintering habitat in many states along the learned migration route, including Indiana, Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Alabama, and Florida.

As spring approaches, Whooping Cranes begin displaying more "dancing" behavior (such as running, leaping and bowing, unison calling, and flying), indicating they are preparing for migration. Family groups and pairs usually leave the wintering grounds first, with the help of the strong seasonal winds at their backs to make their flight a bit easier. Cranes migrate during the day, making regular stops to feed and rest.

Image 2: Increased "dancing" behavior in the spring is a sign that Whooping Cranes are getting ready to migrate.

Cranes in the EMP leave their wintering habitat between late February and early April. Spring migration is usually completed in two to four weeks.

Habitat availability is a critical factor in Whooping Crane migration. Because migratory Whooping Cranes require nesting, wintering, and stopover habitats, losses of or changes to these habitats can have significant effects on population numbers. Habitat is lost and changed through both natural factors (droughts, hurricanes) and human-induced factors (draining wetlands for development or agriculture, designating an area to be a wildlife refuge, or even building a subdivision adjacent to an important habitat use area). Other factors can affect Whooping Crane populations as well. Over-hunting in the late 1800s and early 1900s played a large role in the decline of Whooping Cranes.

In 1918, the Migratory Bird Treaty Act was passed, which prevented hunting migratory birds unless there was a hunting season on a species. This Act also made it illegal to possess feathers from protected birds, which is one reason Whooping Cranes were hunted so extensively. When the Migratory Bird Treaty Act was passed, Whooping Cranes were given immediate protection from one of the biggest causes of their decline. It was the first step on their long road to recovery. Today, some of the most common threats faced by cranes are habitat loss, power line collisions and predators.

Collisions with power lines are another significant cause of death in Whooping Cranes. Power lines are especially dangerous during dawn and dusk when the cranes move between their roosts and foraging grounds. The low light conditions during these times of day make it very difficult for cranes to see the lines.

Predator populations are also important. People have created unnaturally high concentrations of small- to medium-sized predatory animals such as bobcat and raccoon. When people build communities adjacent to wild areas, small predators are able to thrive because they not only have the protection of wild habitat, but also because there is more food available from human activities. This has negative impacts on Whooping Cranes when communities are built next to wetlands used by Whooping Cranes.

Restoration efforts in recent years have helped to rebuild the Whooping Crane population which was nearly extinct in the 1950s when there were approximately only 15 wild Whooping Cranes left on Earth. However, many natural and human-induced factors still lead to variation in the population numbers from year to year.

The International Crane Foundation (ICF) works to conserve Whooping Cranes by protecting their habitats and supplementing their population growth through a reintroduction program. Since 2001, ICF has pioneered techniques for breeding and raising Whooping Cranes in human care for release into the wild. This has allowed for the establishment of a second migratory population, which has increased the species' resilience. With the help of many other non-profit organizations and government agencies, this reintroduced population, known as the Eastern Migratory Population, now has about 70 individuals. As of 2026, there are now estimated to be more 850 Whooping Cranes.

Activity Directions

1. Present students with the following scenario:

    > You live in a small town called Belle River. Belle River has a 20-acre wetland preserve called Belle Wetland. Every spring for the past five years, two Whooping Cranes have stopped at this wetland to spend two or three weeks feeding on the insects, frogs, and minnows that live there. Belle Wetland is also home to many other species of plants and animals, such as bullfrogs, sunfish, green herons, and an endangered species of orchid.

Your town has recently discovered that a development firm would like to turn the wetland into a mall with a new supermarket, a pizza restaurant, a video arcade, and a parking lot. Some of the town residents are strongly opposed to the idea of losing the only wetland habitat in Belle River. The people who work and volunteer at the Preserve are upset that the development will destroy the wetland habitat. Other residents, however, would like to see a new pizza restaurant in town. The developers are pushing hard to turn the wetland into a profitable business area. To address the issue of developing the wetland, roleplay and evaluate the different perspectives of people involved in the debate.

2. Divide students into groups and have students assume the following roles:
    - Developer (1-2 students)
    - Belle River wildlife manager (1 student)
    - Belle River Wetland employee (1-2 students)
    - Owner of the future Belle River Pizzeria (1 student)
    - Belle River resident(s) in favor of the development (1-2 students)
    - Belle River resident(s) in opposition to the development (1-2 students)
    - There will also need to be a meeting mediator (can be the educator or a student)

3. Allow the students 15 - 20 minutes to prepare questions, arguments, and viewpoints for the meeting.

    Students should be prepared to discuss both short-term and long-term effects that the development could have on the wetland. Have students present their arguments for the "town council." While one group is presenting their arguments, students who are not presenting are members of the Town Council and should be taking notes and thinking of questions to ask the presenters.

    Give each group an opportunity to present their arguments to the Town Council. Here are some questions the students should consider in preparing for the debate:

    - What are the short-term advantages and disadvantages of their view?
    - What are the long-term advantages and disadvantages of their view?
    - What are the short-term and long-term disadvantages of the opposition? Who are they and who do they represent?
    - What do they think should happen to the Belle River Wetland? List three reasons to support their view.

4. Following the meeting, have the students list the pros and cons of developing the wetland preserve. Ask them to provide examples, based on the town meeting, of

how people's beliefs can affect environmental decisions such as whether or not to develop a wetland. Have students write a brief synopsis detailing their own opinions of what they think should happen to the wetland preserve and why.

Wrap-up

Students now understand what a population is and how humans can intervene to support vulnerable population dynamics. Today, cranes still face ever-evolving threats from climate change and habitat loss to human development in wetlands. By learning about different species' habitat needs, understanding how local decisions relating to land use are made and advocating for habitat protection students can help be part of supporting wildlife.

Additional Resources

International Crane Foundation – Species Field Guide (Whooping Crane)
https://savingcranes.org/species/whooping-crane/