

Activity 5: Have to Have a Habitat



Summary

Students roleplay a mock town council to explore different issues, attitudes, and consequences associated with developing a natural area.

Objectives

Students will be able to:

- Identify some of the issues faced in developing a natural area
- Evaluate how developing a natural area may affect an endangered species
- Assess short-term effects of development on the species and ecosystem levels
- Examine how personal beliefs can influence environmental decisions
- Take a position and advocate that position in a debate
- Effectively participate in a discussion

Standards

Science F.8.9

Art and Design E.8.4

Environmental Education B.8.10
and B.8.15

Materials Needed:

- Area set up for a debate, such as two tables facing one another in the front of the classroom
- Paper
- Writing utensils
- Bird Flight Diverter (in crane trunk)

Background:

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. Many birds have an internal clock that informs them when it is time to migrate south for winter. As the amount of daily sunlight decreases with the approaching winter months, hormone production is stimulated. These hormones then result in changes in the birds' physiology and behavior that prepare them for migration.

In Whooping Cranes, migration is a learned behavior. In autumn, 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.

During every migration cycle, Whooping Cranes leave their summer nesting habitats in the northern U.S. and Canada and migrate to their wintering habitats in the southern U.S. 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.

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.

Autumn 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.



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



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 seasonal strong winds at their backs to make their flight a bit easier. Cranes migrate during the day, making regular stops to feed and rest. 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 for their decline. It was a first step on their long road to recovery.



Increased “dancing” behavior in the spring is a sign that Whooping Cranes are getting ready to migrate. Photo: USGS Patuxent Wildlife Research Center

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. 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. If during one year, bobcats are abundant, then more Whooping Cranes will likely be predated.

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.



Procedure:

- 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:

- a) Developer (1-2 students)
- b) Belle River wildlife manager (1 student)
- c) Belle River Wetland employee (1-2 students)
- d) Owner of the future Belle River Pizzeria (1 student)
- e) Belle River resident(s) in favor of the development (1-2 students)
- f) Belle River resident(s) in opposition to the development (1-2 students)
- g) There will also need to be a meeting mediator (can be the educator or a student)

- 3) Allow the students 15 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.

- 4) 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:

- 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.



- 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?
- 6) 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.

Extensions:

- 1) Have the students look up the zoning laws for the county in which they live and consider whether the current laws are protective of wetlands. Is there more than one level of protection for the wetlands in their area? If so, what are they?
- 2) Collisions with power lines adjacent to wetlands are a significant cause of Whooping Crane mortality. Cranes often hit power lines after being flushed or disturbed from a roost. Ask the students to research bird collisions with power lines. (Students can do a Google search using the keywords "bird power line collisions." The students should receive several results with links to information.) Show the students the Bird Flight Diverter in the crane trunk. Ask them to identify it and think about how it might work.

It attaches on power lines to reduce bird collisions. There are various types of Bird Flight Diverters. Each kind has different characteristics, but they all make power lines more visible to birds. Some Bird Flight Diverters reflect high concentrations of ultraviolet light, which is visible to many diurnal birds. The Diverter appears very bright to the birds, so they will not fly or land within 25 feet of it because the light hurts their eyes.

Use of Bird Flight Diverters is one technique to reduce the negative impact that development can have on Whooping Cranes. Ask students to consider other steps that can be taken to reduce the impact of wetland development. Have them brainstorm in small groups and list five techniques that can be used to reduce the effects of wetland development on wildlife.

- 3) Scientists are concerned about the impact that global warming may have on wetland habitat. Conduct research to determine the potential impacts that global warming may have on wetlands. How will this affect where you live? How will your neighborhood look 50 years from now? What will be different?