

Caring for the Land: The Debate



STANDARD COURSE OF STUDY CORRELATIONS:

Social Studies, Grade 6, Goal 3: The learner will analyze the impact of interactions between humans and their physical environments in South America and Europe.

3.01 Identify ways in which people have used, altered and adapted to their environments in order to meet their needs, and evaluate the impact of their actions on the development of cultures and regions.

3.02 Describe the environmental impact of regional activities such as deforestation, urbanization and industrialization, and evaluate their significance to the global community.

Language Arts, Grade 6, Goal 2: Explore and analyze information from a variety of sources.

MATERIALS

- ★ "What Do You Think" questionnaire (1 per student)
- ★ Scenarios (1 per student)
- ★ Monarch Conservation handout (1 per student)

PREPARATION

If Internet access is available, prepare to show this online video at National Geographic Kids: <http://video.nationalgeographic.com/video/player/kids/animals-pets-kids/bugs-kids/monarch-butterflies-kids.htm>. This brief video (2:28) describes conservation efforts at the monarch wintering grounds in Mexico.

INTRODUCTION TO LESSON: Students will examine their own values as they debate the issues surrounding deforestation, both in North Carolina's longleaf pine forest and in the forests of Michoacán, Mexico, which are the overwintering sites for the monarch butterfly.

BACKGROUND FOR TEACHER: During the past 300 years, North Carolina's longleaf pine forest has declined from 10 million acres to 3,000 acres due to logging and clearing of woodlands for agriculture. These forests are home to endangered species, including the red-cockaded woodpecker, and several declining species such as the scarlet king snake. For more than 25 years, eastern populations of monarch butterflies have been journeying from breeding sites in Canada and the United States—sometimes up to 3,000 miles—to the same wintering grounds in Mexico. Although logging is against the law in these areas, the forests have shrunk by half since 1968, putting the survival of the species in danger. Both these situations graphically illustrate the conflict between economic progress and preservation of the natural world.

engage > Hand out the questionnaire. Have students individually read the statements and indicate on the page if they agree, disagree or are neutral on each statement. They will revisit these statements at the end of the activity.

Show both videos as an overview of North Carolina situations. If Internet access is available, students should also watch the National Geographic Kids video—otherwise, briefly describe to the class the threats posed to monarch butterflies in Mexico. The Monarch Conservation handout is a good supplement.

explore > Divide the class into two groups. Assign each group one of the two scenarios. The groups are to explore the various arguments for and against deforestation in North Carolina and in Mexico. Have the members of each group decide for themselves how to divide their groups into three subgroups (to represent each of the three "roles" in each scenario).

explain > Have each group elect a spokesperson for each of the three points of view in its scenario. Each spokesperson will present an argument to the members of the Mexico group, which will represent the Town Council of the North Carolina town. After each presentation, the council members may ask questions of the presenters and as a group will decide which presenter made the best arguments for his or her point of view. This can be done by a show of hands or consensus, however you like.

Then reverse the roles and have the Mexico group present to the North Carolina group, which will act as the Mexico Environmental Department.

elaborate➤

Option 1: Have students read the Monarch Conservation handout, focusing on the final paragraph:

“Some people have suggested that conservation organizations should lease the trees from the ejidatarios so that there is similar financial compensation for protecting a living tree as for cutting it down. Others argue that organizations and the government should buy the land outright from the ejidatarios, an option now possible under Mexican law. Others suggest fostering new industries such as fish-farming, honey production or even shiitake mushroom cultivation. In any case, it is clear that economics are essential. Action must be taken soon if the monarchs are to survive the 21st century, but it will require creativity, hard work and compassion for both the butterflies and their human neighbors.”

Have students discuss the merits or drawbacks of some of the proposed solutions. Encourage them to volunteer some of their own ideas for protecting both the monarch wintering roosts and the local economy.

Option 2: Have small groups investigate other controversial land-use situations in their area and decide how they as students can influence the decision-makers. Have them discuss the relative value of different kinds of protest or support, for example, whether a picket line is as valuable as a letter to a lawmaker or newspaper editor. Take action as a class or individually.

evaluate➤ Have students revisit the “What Do You Think?” questionnaire. Ask them to answer the questions again and reflect on any changes. Have the students write a paper describing why they changed (or didn’t change) their opinion on any of the questions. These papers can be a basis for a meaningful class discussion on the complexity of caring for land. This will allow you to assess what the students learned.

Teacher’s Notes:



Roosting monarchs photograph by Gene Nieminen, U.S. Fish and Wildlife Service.



BEYOND THE CLASSROOM

Monarch tagging is a great hands-on science project for kids of all ages, and the data collected helps scientists learn more about monarch migration. The program is sponsored by Monarch Watch (www.monarchwatch.com), which sells tagging kits with instructions.

Additional Resources:

Journey North <http://www.learner.org/jnorth/> • This citizen science project engages students in a global study of wildlife migration and seasonal change. K-12 students share their own field observations with classmates across North America.



Scenario 1

Land-Use Issues



On the outskirts of your North Carolina town is a well-preserved longleaf pine forest. It is home to endangered red-cockaded woodpeckers; the scarlet kingsnake and other species of snakes whose populations are rapidly declining; and a collection of pitcher plants that are located only in this part of North Carolina. Your town is growing rapidly, and there is a need for more housing and more jobs. There are many opinions about what to do with this forest. Present each of the following arguments to convince the Town Council that your solution is the best:

- 1. THE NATURALIST.** You believe the forest should be left untouched because of the wildlife residents and the educational and recreational opportunities for people.
- 2. THE DEVELOPER.** You believe the land should be cleared to make room for more homes. With new residents, the town will make more money from taxes, and stores will have more customers.
- 3. THE LUMBER COMPANY.** You want the rights to cut down trees for your business, but you also promise to manage the forest with controlled burns and replanting. This will create new jobs in your company and open the forest as a park for residents to enjoy.

Scenario 2

Ejiditarios vs. Landowners



Deforestation in the butterfly sanctuaries of Michoacán [pronounced mee-cho-ah-CON] continues to be a problem. Because logging is illegal in these areas, loggers are behaving like criminals, sending armed gangs to cut trees at night to avoid capture. The loggers claim that they do not have any other way to make a living and that logging has been their main income source for many generations, even before the butterflies were discovered.

Naturalists claim that any break in the forest canopy is devastating to the wintering monarchs because the canopy serves as somewhat of a blanket to protect them. Logging the forest, they claim, endangers this species.

The ejiditarios [pronounced ay-hee-da-TAH-ree-oh] want the butterfly habitat to remain untouched. These are the landowners in the area who manage the preserves and earn a seasonal influx of cash from tourists. Explore each of the following points of view to prepare your case to present to the Mexico Environment Department.

1. **THE LOGGER.** Your family has been logging these mountains for generations. You have never known another way to make a living. You feel that the well-being of humans in the area is much more important than the butterflies' well-being.
2. **THE NATURALIST.** These sites in Mexico are the only places that the monarchs from Canada and the eastern United States go to spend the winter. If they cannot survive in these sites, the species will become extinct.
3. **THE LANDOWNER.** Ever since the wintering butterflies were discovered, groups of tourists have come to see them. You have been able to make a good bit of money selling food and crafts to these tourists, which enables you to feed your family. If the butterfly habitat is destroyed, your income source will dry up.

Questionnaire

What Do You Think?



Read each of the following statements and decide whether you agree (A) or disagree (D) with them. If you are not sure how you feel about a statement, put a question mark beside it.

- _____ It is important to preserve wilderness areas even if no one will visit them.
- _____ Natural resources exist for people to use. Preserving wilderness is a luxury we cannot afford.
- _____ When deciding between protecting wildlife and providing for human needs, we should always put people first.
- _____ People are responsible for protecting all life on Earth.
- _____ People should be able to use their land however they wish.

www.monarchwatch.com

Monarch Conservation



Given the great numbers of monarch butterflies (up to 100 million) that gather to migrate each fall, it is hard to imagine them facing any threat of extinction. In reality, however, monarchs and their amazing annual migration are seriously threatened by human activities, in both their summering and overwintering sites. Many of these threatening activities hinge on the destruction of good monarch habitats.

In the north (the United States and Canada), monarchs face direct habitat destruction caused by humans. New roads, housing developments and agricultural expansion transform a natural landscape in ways that make it impossible for monarchs to live there. Monarchs in the north also face more subtle habitat destruction in the loss of their host plants. Milkweed, the plant that larvae feed on exclusively, is considered a noxious weed by some people, which means it is often destroyed. In some areas across North America, milkweed plants are also being severely damaged by ozone. Both milkweed and adult nectar plants are vulnerable to the herbicides used by many landscapers, farmers, gardeners and others. Monarchs can also be killed outright by many pesticides.

Monarch populations are even more vulnerable in their overwintering sites. The eastern population of monarchs migrates only to the Transvolcanic Mountains in Mexico, where there are only 11 to 14 known sites each year. Each site is a few hectares in size and contains millions of monarch butterflies. This combination—a high concentration of individuals in only a few small sites—makes the possibility of habitat destruction in Mexico very serious. This is particularly true because the oyamel trees, on which the monarchs cluster, are valuable lumber sources that many local people—the ejidatarios who own the land—depend upon for income. Logging not only removes roost trees, but also opens up the forest canopy. These gaps are like holes in a winter coat, as far as the monarchs are concerned. They let in snow and rain, and the roosting monarchs are more vulnerable to freezing.

In December 1995, an estimated 5 million to 7 million monarchs died after a snowstorm hit the overwintering sites. A snowstorm in 1992 killed a similar number. Five sites are protected from logging by a government decree, but lumber is still removed from buffer zones around these sites. Although it's significant, logging isn't the only cause of habitat destruction near the

overwintering roosts. As local human populations grow near these sites, ejidatarios also use the lumber for building materials and the cleared land for growing food and grazing cattle. If the roost sites are destroyed through these activities, monarch populations are likely to drop precipitously.

Although many people in Mexico and around the world want to preserve these sites to protect the monarchs they harbor each year, conservation efforts have not been completely successful. In the five to 10 years after the roosts were discovered, people were fairly optimistic about the possibility of protecting the sites. Conservation organizations, in particular the Mexican group Monarca, A.C., worked with governmental agencies and local people to establish land protection, sponsor research, initiate education about monarch conservation and enhance alternative economic development in the region. Despite the establishment of five sanctuaries in 1985 and the opening of a tourist trade, these efforts have not yet assured the continued survival of the overwintering monarch population.

The crux of the problem lies in economics. Lumbering is lucrative and continues today even in protected areas. And the creation of alternative jobs has not progressed. In some areas, for example near El Rosario sanctuary outside the town of Angangueo, tourism does provide some economic support; the ejidatarios charge visitors for transportation up the mountain, sell food at roadside stands, and earn money from souvenir sales and guided tours. Tourism, however, does not bring in nearly as much money as lumbering, and the profits are not shared among all ejidatarios.

Some people have suggested that conservation organizations should lease the trees from the ejidatarios so that there is similar financial compensation for protecting a living tree as for cutting it down. Others argue that organizations and the government should buy the land outright from the ejidatarios, an option now possible under Mexican law. Others suggest fostering new industries such as fish-farming, honey production or even shiitake mushroom cultivation. In any case, it is clear that economics are essential. Action must be taken soon if the monarchs are to survive the 21st century, but it will require creativity, hard work and compassion for both the butterflies and their human neighbors.