



Lesson 6.2 Birds and People

Curriculum for Sustainability

Topic I

Introducing Environmental Issues and Sustainability

Module 6: Defining Sustainability on a personal level

Concepts:

Birds are vertebrate animals that are warm-blooded (endothermic) and lay eggs.

Many of the distinguishing features of birds are related to adaptations for flight, though not all birds fly.

- **Feathers**
- **Wings**
- **Beaks**
- **Hollow bones**

People use birds in a variety of ways, and birds provide many “ecosystem services” that people need

1. **Birds are food**
2. **Feathers**
3. **Biological control**
4. **Scavengers**
5. **Nutrient cycling**
6. **Pollination and seed dispersal**
7. **Ecosystem engineering**
8. **Other: Warning Systems, Messengers, Hunting**
9. **Aesthetics, cultural value, inspiration, and companionship**

Background information

- 1) The most obvious example is chicken: soup, wings, “fingers” or “nuggets” made of just about any part of the bird, and even liver. Chicken eggs are fried, scrambled and poached for breakfast and used in just about every kind of bake good. In addition to the ubiquitous chicken, people eat both the meat and eggs of many wild birds such as Duck, Turkey, Pheasant, Quail, Goose, Dove, Ostrich and Emu.
- 2) People use and have used feathers for many things for many years. A bird’s feather is made up of keratin, the same material that human fingernails and hair is made of. Flight feathers are a single long shaft with parallel lines of barbs each with many barbules that hook together. Feathers help birds regulate body temperature because they hold air, and birds can “fluff up” their feathers in colder weather to help stay warm. Some of the



things people have used feathers for include: flights for arrows, quill pens, down (comforters, pillows, sleeping bags, jackets), feather dusters, jewelry and other accessories/decorations.

- a. It is illegal in the US to own or sell any feather from a migratory bird under the Migratory Bird Treaty Act.
- 3) Biological control is the use of a biological organism to reduce the population numbers of pest species. Many birds eat insects, and the presence of birds can help reduce numbers of pests, from caterpillars that eat our plants to mosquitos that transmit disease. Other birds, like raptors, eat small mammals, such as rats that can be disease vectors.
- 4) Scavengers like vultures are often disliked, but imagine how different our environment would be without them. Vultures and other scavengers (such as seabirds, crows, and ravens) eat decaying carcasses of animals. These carcasses, if uneaten, would be broken down much more slowly by bacteria, insects, and maggots and would increase water pollution through storm water runoff of bacteria. Vultures have extremely acidic stomachs, and it has been suggested that they help reduce the spread of disease by eating and then passively sterilizing contaminated meat.
- 5) Through their foraging behavior, birds move energy within and between ecosystems. Birds increase decomposition and nutrient cycling by eating dead animals, as mentioned above. In addition to their important place in the food chain, many birds also move nutrients between ecosystems, most notably, from aquatic ecosystems to terrestrial ecosystems. By eating fish and depositing feces on land, birds bring important nutrients from aquatic environments to terrestrial environments. Seabird droppings have been shown to influence plant community composition in terrestrial environments, especially on islands where the birds nest in colonies.
- 6) Birds primarily aid in plant dispersal by eating fruit. The seeds pass through the birds digestive system and are deposited in a new area, along with some custom-made fertilizer. But, they also disperse plants by hording nuts and seeds. The migratory habits of birds also mean that many serve as important dispersal mechanism for plants to colonize new suitable habitats and help to increase genetic diversity among plant populations. Bird seed dispersal also means that the plant is more likely to be dispersed to a site favorable for growth than a seed dispersed by a passive mechanism. Some birds (like hummingbirds) serve as pollinators for specific plants, though the instances of bird-plant pollinator mutualism are much fewer than the instances of birds as dispersers.
 - a. Cascading ecosystem effects: by eating herbivorous insects, aiding in nutrient cycling, and acting as dispersal and pollination vectors, birds benefit plants and increase health and reproductive viability of plant populations, which in turn benefits people since we eat and use so many plants.
- 7) Birds build nests. The nests that birds build are extremely varied in where they are built within the environment, materials, size, structure, and how long that they last. Some birds burrow, altering the soil structure and contributing to nutrient cycling. Some birds



excavate cavities from trees. Other birds build cups, platforms, or domed nests in shrubs, on trees, on rock walls, in caves, and just about anywhere. Many other animals benefit from the structures that birds create, both while the bird is in residence and after the nest has been abandoned by the owner.

- 8) Everyone knows the phrase “canary in the coalmine.” Coal miners used to carry caged canaries with them into the coal mines. Since canaries were more sensitive, they would get sick in the presence of toxic gas, warning the miners that gas was present. The phrase is still used to imply that something is an early warning of trouble to come. Pigeons have been used to carry messages for people. Falconers train raptors to hunt for small mammals.
- 9) Birds are beautiful. Many native cultures feature birds in mythology, religion, and art. The flight of a bird is a beautiful thing to watch and has inspired poetry, art, and even technology. Bird specific tourism has become popular and economically advantageous, especially in developing countries. Bird specific tourism may also lead to increased conservation of tropical habitats where natives can make money through bird tours and bird friendly products such as shade grown coffee. Finally, birds are pets and companions to many people whether they are in a cage or at the backyard bird feeder.

Lesson:

We all see birds every day, but we often don’t think about all of the important things that birds do for us.

Begin with a brainstorming activity. Ask students to list some birds that they know and write these up on the board.

Then, ask the class to think quietly for a few minutes about the birds that they listed and write down anything that they can think of that those birds do/make that benefit people or the environment.

Following the students brainstorming, list the 9 general categories from above, and see which ones were covered in the list. Surprise! Birds give us a lot more than we realize. Then briefly go over each category with some of the background information provided.

Websites for student research:

http://www.globio.org/glossopedia/article.aspx?art_id=25

Options for Expansion:

- This lesson could be paired with lesson 26.6 Bird Identification
- Have students research a bird from South Carolina and do a short report to the class.
 - Questions for guided research :
 - What are the distinguishing characteristics of your bird?
 - What habitats does your bird prefer to live in?
 - Do people use your bird for anything?



- What environmental services does your bird perform? (ex: pollination, nutrient cycling, seed dispersal, ecosystem engineering, waste clean-up, pest population reduction, etc.)
- Are there any other interesting facts about your bird?
- Websites for research:
 - www.allaboutbirds.org
 - www.birds.com (go to the species tag and search alphabetically)
- Discussion or writing prompt:

Imagine a city where there are no birds. Write a brief description of what that city might be like. How do you think Greenville would change if there were no birds in the city (vultures, crows, geese, pigeons, cardinals, house finch, Carolina wrens, Carolina chickadees, Red-tailed hawks, blue jays, robins)?

Optional Activity:

Building a bird feeder from recycled materials:

There are many options available online, from the traditional pinecone covered with peanut butter and bird seed to fancier feeders made from milk cartons. Or, try the recycled plastic bottle bird feeder how to available with this lesson on the connections website. If you have younger students, you can pre-cut the bottles so that they are only responsible for decorating and finishing the feeders.

Photograph of a recycled plastic bottle bird feeder.

