Birds and the Garden Ecosystem

Overview: Birds are important and beneficial members of the garden ecosystem. They eat common garden pests, help with pollination, and aid in seed distribution. This lesson explores ways we can design our gardens to provide a supportive habitat for our feathered friends.

Grade Level/Range: 6- 8th Grade

Objectives:
Students will:

- Learn that birds play an important role in our ecosystem.
- Discover that bird populations are in decline and need our help to protect and restore their habitats.
- Explore ways to design and plant bird-friendly habitats.

Time: 2 hours

Materials:

- Interact access
- Paper and pencils

Background Information:
Found in a range of colors and sizes, birds fill gardens with song and activity. They are working hard for your garden, too. Birds:

- Eat insects that we might find garden pests, such as caterpillars chomping on your lettuce or tomato plants and mosquitoes that are feasting on young gardeners.

- Help with pollination. Birds that feast on nectar, such as hummingbirds, aid in the movement of pollen from flower to flower.

- Facilitate seed dispersal. Fruit and seeds are a favorite food of birds. Some seeds will actually survive the digestive system of birds when consumed. They get a free flight to a new home and are dropped off surrounded by a "care package" of organic matter. In fact some seeds with hard seed coats will benefit from acid treatment of the digestive process, which will help with their germination. Other seeds hitch a ride on birds by getting stuck on beaks or in their feathers.

Unfortunately, like many animal and plant species in our environment, bird populations are on the decline. *National Geographic* recently shared an article published in the journal *Science* that found bird populations have decreased by 2.9 billion birds since 1970 (which equates to a 29% reduction in the size of the population). They suggest many reasons for the decline.
Including

- loss of habitat
- exposure to toxic pesticides
- decrease in insects to consume
- collisions with glass and vehicles
- domestic cats

From this list, loss of habitat is considered the top reason for the decline. Fortunately, this is something our gardens can help with. By choosing plants that offer shelter and food sources for local bird populations, we can help our gardens become a safe haven for these garden helpers. The following lesson will guide your class through the process of identifying the birds living in your community and then use that information to help turn your garden into a supportive habitat for them.

Laying the Groundwork

Ask students to read the article National Geographic article Three billion birds have been lost in North America since 1970 by Jason Bittel.

Ask them to answer the following questions about the article:

- Approximately how many different kinds of birds can be found in the United States and Canada?
  Answer: 760 bird species

- What methods did scientists use to discover the decline in bird populations?
  Answer: population surveys and weather radar data

- What are some of the reasons they list that have contributed to decreasing populations?
  Answer: habitat loss, pesticides, decrease in insects, collisions with glass, domestic cat consumption

- What are some important jobs that birds do in our ecosystem?
  Answer: decrease insect pests, distribute seeds, eat dead animals, pollinate plants

- What are some ways they suggest people can help birds?
  Answer: Plant native plants, minimize impact of windows, keep cats inside

Exploration

1. The first step in helping your local bird populations is identifying which bird species live in your area. Many birds migrate seasonally as the weather changes, so this is an activity that your students should conduct multiple times during the school year to compare their findings. Also, different bird species are active at different times of day. If possible, conduct one inventory first thing in the morning, and perhaps one mid-day.

2. First ask students to make a list of all the birds they have seen in your area. Next, take the class on a field trip to your garden, schoolyard or a nearby park or natural area to complete a bird checklist or inventory. Before heading outside, remind students to:

- Respect all life in the garden. Observe living creatures with your eyes, not your hands.
- Write down or draw as many details as possible. You may also want to bring a digital camera to help record your findings.

Bring a bird identification resource with you to see if you can identify some of the birds as you see them in the field. The Cornell Lab of Ornthology has created an amazing bird identification app called the Merlin Bird ID App. There are also numerous field guides available specifically designed for young observers.

Depending on the skill level of your students, you can also opt to create ahead of time a pictorial checklist of common birds you may see to aid in the identification process. You may want to check with your local Audubon Society to see if they have regional checklists available for you to use.

You may also want to review these tips from the National Audubon Society before you begin.

3. To encourage more detailed exploration, in addition to identifying different types of birds, also have the students record how many of each they find. You can also ask them to take additional notes, such as to describe what they see them doing.

4. Before heading back in, take a look a look at your garden, schoolyard or natural area and complete an inventory of the different habitat elements you find, including plants that provide food, water sources, shelter, etc.

Making Connections

1. When you return to the classroom, begin by completing your identification and make an inventory list of all of the birds you observed.

2. Next, as a large group or in small groups or as an individual activity, research the habitat needs of each of these bird species. What foods do they like to eat? What kind of shelter do they prefer? Where do they like to build their homes? Do they migrate or do they live in your area year-round? What kind of water sources do they prefer?

3. Compare the resources you have available in your garden with the needs of the birds. Does you garden or greenspace currently provide what they need? Is there anything missing? Can you add these missing elements to your space?

4. Create a design to make your space more bird friendly. For example, identify native plants you can add to your garden that would provide food for your native birds. Brainstorm additional features you could add, such as shallow water sources, protective structures or feeders you could use to help provide supplemental winter food sources. If your region experiences freezing temperatures, consider a birdbath with a birdbath heater to ensure a continuous and reliable supply of water.

Branching Out

- Participate in a local or national bird inventory. Here are a couple events to consider:

October Big Day: https://ebird.org/octoberbigday

The Great Backyard Bird Count (February): http://gbbc.birdcount.org/

- Write stories about the garden from the perspective of one of its newly identified residents.
- Use your findings to create a field guide specific to your schoolyard garden to share with fellow students and community members.
- Invite a local naturalist or wildlife expert to give a guest presentation about birds in your area. Based on their own school garden discoveries, have students prepare some questions for the speaker in advance.

Link to Standards:

MS-LS2 Ecosystems: Interactions, Energy, and Dynamics
MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.

MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

MS-ESS3 Earth and Human Activity
MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.