Lesson 4: *Birds*

Lesson Summary

Students will learn about birds, their habitat, adaptations, and begin to identify birds.

Materials

-Cornell Lab of Ornithology Afterschool Investigators Nature Detective book Activity #4 and True or False Statements sheet
-Plain (unlined) paper
-Poster paper
-*Binocular Basics for Youth* handout
-Colored pencils, crayons or markers
-Binoculars
-Parts of a bird identification sheets
-Backyard Birds Identification book

Key Vocabulary

-Warm-blooded (endothermic)
-Environment
-Adaptations
-Natural selection

Next Generation Science Standards:

Performance Expectations: 5-LS2-1 Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.	**Disciplinary Core Ideas:** 5-LS2.A: Interdependent Relationships in Ecosystems LS2.B: Cycles of Matter and Energy Transfer in Ecosystems
Performance Expectations: Developing and Using Models Modeling in 3–5 builds on K–2 models and progresses to building and revising simple models and using models to represent events and design solutions. • Develop a model to describe phenomena.	**Cross Cutting Concepts:** Systems and System Models • A system can be described in terms of its components and their interactions.

Instructors Notes:

-Students will learn the basics of bird identification, and how to use binoculars. Review the *Binocular Basics for Youth* handout designed by the Cornell Lab of Ornithology to assist educators in sharing these skills with youth.

-Activity #4 and the materials provided in the Cornell Lab of Ornithology Afterschool Investigators Nature Detective kit will be included in this activity.

Introduction:

Explain to students that you are now going to learn even more about the riparian zone as a habitat, and about the birds that live in this habitat.

Procedure:

1. Explain to students that they are going to learn about birds, what makes them unique, what their habitat needs are, and add birds to their model.

1. Read Fact or Fiction statements on p. 28 in Bird Sleuth: Nature Detectives. Make this a physical activity by having students form a line and stepping forward for Fact and backward for Fiction.
2. Identify the parts of the bird, and what makes a bird a bird. Generate a list of characteristics that all birds share such as:
    - Feathers
    - Wings
    - Hollow bones (although some such as penguins and loon no longer have hollow bones)
    - Egg-laying
    - Warm blooded
    - Beaks

Now hand-out the Example Beak and Parts of a Bird sheets to each group.

3. Discuss bird beaks and what these different birds might eat based on their beak shapes and abilities. Each bird has a unique tongue and beak that helps it eat based upon the food available in its habitat. This is one reason why protecting certain habitats is so important. For example: a hawk cannot suck nectar from a flower, and hummingbird cannot gobble up a mouse. Each of these birds has special adaptations to help them eat nectar or a mouse. A hummingbird has a long hollow beak that protects its tongue as it probes flowers for nectar. A hawk, similar to other raptors, has a sharp, curved beak that they can use to pierce, stab, and tear at prey. They also have a small tooth, in their upper beak (called a tomila). A sparrow has very short, cone-shaped beaks strong enough to break open tough seeds, and shells. And some species of ducks have bills that can strain or filter tiny plants and animals from the water. For ideas on beak based activities see the activity *Fill the Bill* in Flying Wild.
4. Ask how do these birds connect to the riparian zone food web?

Explain: Birds eat the seeds, sap from flowers, and insects within the riparian zone. Riparian zones tend to have a lot more plants, shrubs, and deciduous trees than coniferous forests, therefore, offering more food choices.

5. Have students draw or act out a riparian zone food web including birds.
6. Do Activity 4 #3 in the Cornell Lab of Ornithology Afterschool Investigators Nature Detective Kit. Have students break into pairs or teams. Assign a habitat to each team that will require certain adaptations. For example: a dry, hot desert with poisonous snakes; or a wet, cold stream area that freezes over winter; or a warm, tropical rain forest with volcanoes. Be creative as they habitats don't have to be real; you may also choose to have students create habitats for each other. You may state that the birds will not migrate so they must be adaptable and get everything they need from this habitat. Have teams create and draw their "Perfect Bird", labeling important features that help it survive in its unique habitat.

NOTE: Students will want to be sure to draw their birds big, taking up most of the poster space. These will be the birds that students practice looking at across the room with their binoculars.

7. Demonstrate binoculars using the instructions from the Cornell Lab of Ornithology's Binocular Basics for Youth sheet.
8. Hand out binoculars and have students practice using them to look at their large "Perfect Bird" drawings.
9. Optional: Go outside and look for birds using the Field Notes Sheet in the bird handout packet.
10. Assign a certain bird from the Bird Game Cards in the Cornell Lab of Ornithology Afterschool Investigators Nature Detective Kit to each team working on a model.
11. Give students time to read about their bird and brainstorm what they will need to add to their model.

12. Optional: share bird information and trivia questions on each team's card.
13. Have students sketch out where and how they will add their bird's specific needs to their model.
14. Have students add their birds from their card to their model, being sure to include the specific needs of that bird's habitat.
15. Reflection: Will a riparian zone be the best habitat for their bird species? Why or why not? If the riparian zone is not the best habitat, what would they need to add to the model to make it a better habitat. Did they already consider or include humans in their model? How would humans affect their model?
16. Discuss: Birds connect us to the rest of the world as they migrate and travel the earth. Do Cornell Activity 2, #3. *What has a bird done for you lately?*, on pp. 12-13.
17. Reflect and Discuss: What would happen if birds were removed from our environment? Would it affect our own food chain?
    Some ideas include:
    - Birds keep many insect and some pest populations down because they are staples in their diet
    - Animals that depend upon birds as a main part of their diet would disappear
    - Plants that depend upon birds to disperse their seeds, or help with pollination would disappear
    - Our own diets might change drastically as humans consume a lot of chicken, duck, and turkey meat (and chicken eggs).
    - Socially and culturally birds add to tourism and recreation, and they frequent art, music, literature, and history.
    - Economically people spend a lot of money on hunting, bird related tourism and recreation events, and on conservation and protection of birds.
18. Optional: Discuss the 6 steps of breeding, p. 29 in Cornell Lab of Ornithology Afterschool Investigators Nature Detective Kit, and add these aspects to their model. Be sure to have students sketch out their plan for adding these needs first.
19. Share and talk about their models.

Resources:

Cornell Lab of Ornithology's Afterschool Investigators Bird Sleuth: Nature Detective Kit.
Council for Environmental Education. Flying Wild: An Educators Guide to Celebrating Birds.