

# ***It's All About Birds!***

Grade 7  
Social Studies

## ***I. Introduction to Birds***

Birds are warm-blooded, have distinctive beaks, and their young hatch from hard-shelled eggs. Feathers provide insulation, enable flight, are used in visual communication and are a unique characteristic of birds. Adaptations that enable flight include fused and lightweight hollow bones, and a keeled sternum (for the support of flight muscles).

- Warm Blooded
- Feathers
- Wings
- Beaks
- Hard-shelled Eggs
- Lightweight hollow Bones

## ***II. Effects of Humans on Bird Populations***

Standard 6:3 – Analyze local, regional, national, and world policies and problems having spatial dimensions (e.g., acid rain and international boundaries, and water quality affected by runoff from poultry and hog farms).

Standard 5:2 – Evaluate the effects of human modification of and adaptation to the natural environment (e.g., use of the steel plow, crop rotation, types of housing, flood prevention, discovery of valuable mineral deposits, the greenhouse effect, desertification, clear-cutting forests, air and water pollution, urban sprawl, and use of pesticides and herbicides in agriculture).

Everyone has thought an animal a nuisance at some time. Whether it is a mosquito, bee, pigeon, or crow in a corn field, some animals are considered pests. Pest species may hurt us, spread disease to us or our animals, or damage our property or crops.

Several methods can be used to eliminate or control pests. Chemical pesticides can be effective against pests, but some have been shown to be harmful to us and the environment. Also, pesticides rarely stay where they are applied.

### **Activity: Pesticide Runoff**

Objective: Demonstrate runoff pollution and acid rain.

Materials: Aluminum Foil  
Shallow Pan (aluminum baking pan or other appropriate container)

Kool-Aid powder (without sugar added) in vibrant color

[Cut-out shapes](#)

Spray bottles

Scrap Paper

Masking Tape

Procedure:

1. Arrange students into groups of 4-5.
2. Distribute aluminum foil, pans, cut-out shapes, scrap paper, and masking tape.
3. Demonstrate how to form the landscape (mold foil into hills and valleys, using scrap paper to bunch up and stuff underneath hills for support)
4. Have students arrange and tape [cut-out shapes](#) onto formed landscape.  
Note: To demonstrate runoff pollution, direct a couple of groups to place their crop field on top of a hill.
5. Go around room with Kool-Aid packet (students enjoy it more if they can choose from a few colors) and sprinkle powder over crop field, explaining that this is pesticide.
6. Spray water over crop field. Have groups make note of where the colored water runs off to (i.e., streams, playground, yards, etc).
7. Discuss the water cycle, and how water evaporates back into the atmosphere carrying some of the pesticide with it, and later returning to the earth's surface via rain. Spray colored water over each group's landscape showing how pesticides are eventually found everywhere, not just where runoff occurs.



1. Showing scale of project,



2. Top view of project



3. Adding “pesticides” to farm field.



4. Adding “rainfall”.



5. Illustrating runoff of “pesticides”.

The use or non-use of pesticides creates a dilemma. Without the use of pesticides, insects can destroy crop fields causing food shortages and price increases to the consumer, as well as affect the livelihood of farmers. However, using pesticides can affect non-target species such as birds and humans.

### *III. Biodiversity and Bio-indicators*

An **ecosystem** refers to a group of living organisms interacting among themselves and with their environment. Whether predator or prey, birds are an integral part of our ecosystem. **Biodiversity** is the variety of life, and it includes several levels: living organisms (crows, cacti, coyotes, etc.), genetic variations among organisms (different colored roses, differences in body size among the same species), and different ecosystems (forest, prairie, wetland, coastal, etc.). Greater biodiversity in a system returns greater stability and resilience to both natural and human-caused disturbances.

Birds are found on every continent and in nearly every habitat. Their ability of flight demands a fast metabolism, which in turn leads to faster processing of environmental quality. Because birds show symptoms and indications of poor environmental health before many other animals, they are referred to as biological indicators or bio-indicators. **Bio-indicators** are a group or class of organisms whose population or status can be used to determine environmental health.

Because all things on earth are interconnected, losing one species can have a devastating effect on other species in an ecosystem, sometimes in ways that we wouldn't foresee. That's why preserving biodiversity is important to us all.

#### **Activity: We're All Connected!**

(This activity is also included in the Science lesson plan)

Objective: To demonstrate to students how all things on earth are connected and the importance of biodiversity.

Materials: Ball of Yarn  
Species Cards  
Tape

#### Procedure:

- 1) Explain to students that they are going to play the components in a forest ecosystem.
- 2) Assemble students in a circle and assign each a species of plant, animal, or non-living thing (see suggested list).

Note: If there is time, allow students to write and draw their component themselves.

- 3) Have students look around the circle at each other and think about how plants, animals, and non-living things are connected.

- 4) Have one student hold onto the end of the yarn and toss the ball to another student, explaining his/her ecological connection to the other student.

Example: The Red-shouldered Hawk is connected to the tree because the tree provides shelter for the bird.

- 5) Have the second student toss the ball of yarn to another student and explain their connection. As each student makes a connection, wrap the yarn around the student's waist. A big complicated web will start to form.
- 6) When all students are connected in the web, explain that harming any part of the web affects many other parts. Have students imagine what would happen if the tree was cut down (the tree student can shake or tug on the yarn). What would happen if the bird died (have the bird fall to the ground)? Ask the other students if they can feel the changes in their yarn.
- 7) When the students have played for a while, ask them to stop and notice which components of the ecosystem have the most connections to others and why. Make note of components that would cause the most disturbance to the ecosystem.

### **Suggested Ecosystem Components**

Sun	Red-shouldered Hawk
Tree	Water
Vulture	Mouse
Sparrow	Bat
Mosquito	Mushroom
Turtle	Millipede
Fish	Eagle
Ant	Woodpecker
Frog	Log
Coyote	Fox
Rabbit	Pigeon
Sunflower	Spider
Moth	Deer
Crow	Scorpion
Poison Ivy	Human

