



# Garden Birdwatchers

## Grade Kindergarten

### Standards

GPSS SKL1b; SKL2a  
NGSS K.LS1c; K.ESS3.A  
CCM: CCGPS.K.CC.4, 5, and 6  
CCM: CCGPS.K.MD.1, 2, and 3

### Time

at least two 45 min sessions; plus  
environmental stewardship project

### Supplies

(For each student)

- 2 pine cones (gathered)
- String (24" or longer per feeder)
- Clipboard and pencil
- My Bird Watcher Chart (copy)

(For the class)

- Book: Counting is for the Birds  
by Frank Mazzola, Jr.
- Peanut butter or solid  
vegetable shortening (e.g.  
Crisco)
- Two types of bird seed
- Camera (may be in smartphone)
- Computer or tablet to display  
photos of birds at feeder, or  
printer

### Garden Connection

Students will place bird feeders in the  
garden or nearby and monitor birds  
using the feeders.

### Overview

Students will make pine cone bird feeders using different types of seed, observe and distinguish between different types of birds that visit the feeders, count the birds of each type that visit, and determine whether different species prefer different foods based on how often they are seen at each feeder.

### Essential Question

What kinds of birds would come to a feeder in our garden and what do they like to eat?

### Engaging Students

Students will listen to a book about counting birds that visit a feeder and make bird feeders with two different types of seed.

### Exploration

Students will monitor both feeders and count the number of birds of each type at each feeder, to see which birds prefer which seeds.

### Explanation

Students will be able to explain how they distinguished birds by types and determined the seed preference of each type of bird by counting the number of birds at each feeder.

### Environmental Stewardship

Students may plant flowers to attract more pollinators.

### Evaluation

A rubric is provided to assist in assessing student mastery of the concepts.

### Extension

Students may participate in a citizen science bird monitoring project or create their own citizen science project and invite other classes to participate; or design and make their own hummingbird feeders, since hummingbirds are the most significant pollinator birds in North America.

## Standards

### Georgia Performance Standards in Science

#### SKL2. Students will compare the similarities and differences in groups of organisms.

a. Explain the similarities and differences in animals. (color, size, appearance, etc.)

#### SKL1. Students will sort living organisms and non-living materials into groups by observable physical attributes.

b. Group animals according to their observable features such as appearance, size, motion, where it lives, etc.

(Example: A green frog has four legs and hops. A rabbit also hops.)

### Next Generation Science Standards

#### K.LS1.C: Organization for Matter and Energy Flow in Organisms

All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow. (K-LS1-1)

#### K.ESS3.A: Natural Resources

Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do. (K-ESS3-1)

### Common Core Math

#### CCM-GPS.K.CC.4 (Count to tell the number of objects)

Understand the relationship between numbers and quantities; connect counting to cardinality.

a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object

b. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.

#### CCM-GPS.K.CC.5

Count to answer “how many?” questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.

#### CCM-GPS.K.CC.6

Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies

#### CCM-GPS.K.MD.1

Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.

#### CCM-GPS.K.MD.2

Directly compare two objects with a measurable attribute in common, to see which object has “more of” or “less of” the attribute, and describe the difference. For example, directly compare the heights of two children and describe one child as taller/shorter

#### CCM-GPS.K.MD.3

Classify objects into given categories; count the numbers of objects in each category and sort the categories by count. (Limit category counts to be less than or equal to 10.)

## Teacher Preparation

Obtain supplies for the lesson and make copies of My Birdwatcher Chart for each student. Scout the garden (or schoolyard) in advance, for places to hang bird feeders near vegetation. If there are no nearby tree branches where feeders can be hung, a garden shepherd’s hook can provide a substitute.

Check for student allergies to peanuts or tree nuts before doing this project. Then check the ingredients list on the birdseed container to see whether any nuts were processed at the same facility as the seed.

Substitute solid vegetable shortening for peanut butter and use peanut-free and tree nut-free bird seed, if any students have allergies to peanuts or tree nuts.

## PROCEDURES FOR LESSON ACTIVITIES

Day 1 (45 minutes)

### Engagement

Read aloud to the class: Counting is for the Birds by Frank Mazzola, Jr. (or an equivalent counting book) and discuss how to tell birds apart by colors, specific body parts (beaks, heads, etc.), shapes, sizes, and behaviors. Make bird feeders with the class, using two different types of wild bird seed, for comparison purposes.

- Gather pine cones on a class hike (two per student) or obtain in advance if not available on campus.
- Tie a string to the end of each cone, so it can be hung. (Do this in advance, before slathering in peanut butter or shortening!)
- Students may roll pine cones in peanut butter or solid vegetable shortening or slather the sticky stuff on pine cones using the backs of spoons.
- Pour two types of wild bird seed in separate shallow aluminum pans.
- Students should roll each pine cone in one type of bird seed only.
- Pine cones can be stored in zip top bags with strings hanging out. These feeders may be taken home, but at least two (one with each type of seed) should be hung near the school garden, where students can easily and comfortably observe the birds that visit. If each student makes two feeders, consider sending one home and keeping one from each student in reserve as a class feeder. Replace feeders as necessary.

Day 2 (45 minutes)

### Exploration

Once the bird feeders have been made, and at least one feeder with each kind of seed is hung where all students can observe it – outside the classroom window, in the school garden, or near vegetation - ask students to look for different kinds of birds that visit a feeder. Ask how students can tell different kinds of birds apart. It is not necessary to identify bird species by name: just encourage students to describe birds by their distinguishing characteristics (i.e. “redhead” or “big beak” or “feathery feet”). When students are confident in recognizing the differences among birds, begin the bird count activity described below.

- Pass out pencils and clipboards with My Bird Watcher Chart attached.
- Help students choose one type of bird to observe at a time, ignoring all others.
- Assist students in writing the name OR a characteristic of this bird in the left column of the chart.
- Choose one feeder to observe first, and write the name of its seed at the top of the second column of the My Bird Watcher Chart.
- Ask students to sit quietly to observe a bird feeder without scaring birds away.
- Students should observe the bird feeder, pick one type of bird to observe, count all the individuals of that type that are in view, and record the number on the chart in the square that is across from the bird name and down from the feeder / seed name.
- Because birds in motion can be difficult to count, it may be useful to let students take pictures of a group of birds around a feeder and practice counting birds in the still image, displayed on a Smartboard.
- Then switch to the second feeder, help students write the name of the type of seed it holds at the top of the third column, and follow the protocol for observing the SAME type of bird in this second location.
- Then ask students to count and record the number of all birds – regardless of type – at each feeder (separately), in the last row on the My Bird Watcher Chart.

### Explanation

Students will be able to identify birds by distinguishing characteristics (not necessarily species or common names) and articulate differences such as color, size, beak shape, or other features. They will count birds at two different feeders and compare relative numbers. Students will also count one particular type of bird at two different feeders, to infer which feeder (which seed type) that bird type seems to prefer, and articulate that preference.

## Day 3

### Environmental Stewardship

Students will plant flowers and/or native plant species that attract pollinators to the garden. Pollinators include birds or other animals such as bees, moths, bats, wasps, etc. Students should learn that some plants need help from pollinators to spread their pollen to other plants so that flowers will make fruits. For more information on the benefits of attracting birds to the garden, see the following article (for teacher background info): <http://birding.about.com/od/attractingbirds/a/Benefits-Of-Attracting-Birds.htm>

To learn more about birds as pollinators in the garden, check out the Pollinator Partnership web site: <https://pollinator.org/usefulresources.htm> . Certain types of birds, including hummingbirds and orioles, pollinate plants in the garden. Birds are also welcome in gardens because they eat common garden pests as well as the seeds of garden weeds. In addition to their roles as pollinators, pest controllers and weed preventers, birds also disperse seeds from native plants.

Planting to attract pollinators can enhance the bird feeder project. Some of the most effective plants for attracting pollinators, including birds, butterflies, bees, and moths, are trumpet vine, lavender, rosemary, sage, coneflower, sunflower, lamb's ear, verbena, aster, black-eyed susan, oregano, milkweed, and yarrow.

To identify pollinator plants that grow in your ecoregion, enter your zip code in the search box of this interactive web site: <http://www.pollinator.org/guides.htm> To find sources for those native plants, enter your zip code in the search box at this web site: [www.plantnative.org](http://www.plantnative.org).

Also, consider these valuable resources, to plan your environmental stewardship project with students: Tips on attracting pollinators to the garden: <http://www.fs.fed.us/wildflowers/pollinators/gardening.shtml> Booklet on native plants that attract bees, humming birds, moths, bees and wasps for pollination: [http://www.fs.fed.us/wildflowers/pollinators/documents/AttractingPollinatorsEasternUS\\_V1.pdf](http://www.fs.fed.us/wildflowers/pollinators/documents/AttractingPollinatorsEasternUS_V1.pdf) Bat gardening: [http://www.bats.org.uk/pages/encouraging\\_bats.html](http://www.bats.org.uk/pages/encouraging_bats.html)

### Evaluation

Students should be assessed in terms of their ability to recognize differences among different species of birds, count the number of individuals of one type, and determine whether there are more or fewer birds of one particular type at each feeder, and articulate the concepts of more and less /fewer (comparing larger and smaller numbers). In addition, students should be able to count the total number of birds at each feeder, without regard for bird type, and compare which number is larger or smaller. Finally, if two feeders have different types of food, students should be able to infer the seed preference of a type of bird by observing which feeder attracts a larger number of that bird.

### Extensions

- Make a hummingbird feeder from recycled items. Hummingbirds are one of the most important birds that serve as pollinators. Directions for making feeders from recycled items and a guide to engaging children in an engineering challenge to design their own hummingbird feeders are included below. Both were written by Kim Bailey.
  - <http://www.fs.fed.us/wildflowers/kids/activities/documents/RecycledPlasticFeeders.pdf>
  - <http://www.kidsgardening.org/node/13077>
- Contribute data to [citizen science projects](#) about birds. Students can serve as junior scientists, providing data that is actually used in important research by scientists. Some bird-related citizen

science projects are sponsored by Audubon Society, such as the [Christmas Bird Count](#) in December; [Great Backyard Bird Count](#) in mid-February; or [Hummingbirds at Home](#) and [NestWatch](#) in spring.

Cornell University also sponsors a number of citizen science projects related to birds. Students may set up free eBird accounts to begin keeping their own bird lists. Use the preferences feature at <http://ebird.org/ebird/prefs> to make sure each account is anonymous, so data is not associated with student names. eBird is a global community of birders who submit data about their bird sightings, track their personal bird lists, and use eBird's tools to learn more about birds. Here is a quick start guide: <http://ebird.org/content/ebird/about/ebird-quick-start-guide>

Cornell Lab of Ornithology also offers Project Feeder Watch, which can take place anytime from November until April and include two counting days, followed by five days without recording data, and then two more counting days. The procedures are a little complex for Kindergarten. Read about [Project FeederWatch](#) to decide whether your class will participate in the project. There is a \$15 charge. However, the very-useful Project Feeder Watch Handbook is available to download for free: <http://feederwatch.org/wp-content/uploads/2013/09/Handbook.pdf>

- Race4Birds is a 24-hour bird sighting competition involving teams of students during a weekend: <http://www.race4birds.org/>



## Birdwatchers Lesson

# My Bird Watcher Chart

Name: \_\_\_\_\_

Date: \_\_\_\_\_

<b>Type of BIRD (list name or feature)</b>	<b># of birds eating this type of seed: _____</b> <b>at Feeder 1</b>	<b># of birds eating this type of seed: _____</b> <b>at Feeder 2</b>	<b>Which seed is the favorite?</b>
<b>All Birds</b>			



## Assessment for Birdwatchers Lesson

Student Name(s): \_\_\_\_\_ Date: \_\_\_\_\_

<p style="text-align: center;"><b>Level of Mastery</b></p> <p style="text-align: center;"><b>Benchmark or Performance Measure</b></p>	<p style="text-align: center;"><b>EMERGING</b> Not yet proficient <b>1 point</b></p>	<p style="text-align: center;"><b>COMPETENT</b> Partially proficient <b>4 points</b></p>	<p style="text-align: center;"><b>PROFICIENT</b> Mastered task <b>5 points</b></p>	<p style="text-align: center;"><b>TOTAL POINTS</b></p>
<p>Students recognize similarities and differences among birds and group birds according to characteristics, to distinguish one type from another.</p>	<p>Unable to distinguish bird species by main characteristics</p>	<p>Able to distinguish among types of birds with 80% accuracy.</p>	<p>Able to distinguish among types of birds and to explain features or characteristics by which each group can be distinguished</p>	
<p>Students can count the number of birds of one type, when scattered around a feeder</p>	<p>Unable to do so.</p>	<p>Counts birds accurately but cannot count only one type of bird in a group of birds.</p>	<p>Accurately counts the number of individuals of one type of birds within a larger group of birds. May count using a still image (photograph).</p>	
<p>Students can compare the number of birds of one type at one feeder to the number of birds of the same type at a second feeder, to determine which number is larger, and infer preference for favorite seed.</p>	<p>Unable to do so.</p>	<p>Compares numbers of same type of bird in two different locations.</p>	<p>Compares numbers of same type of bird in two different locations and can explain that – all other things being equal - the more birds around a feeding station, the more they prefer that seed.</p>	
<p>Students can count total number of birds of all types around one feeder and then other feeder.</p>	<p>Unable to do so.</p>	<p>Compares total number of birds of all types in two different locations.</p>	<p>Compares total number of birds at two different feeders and infers type of seed most of those birds prefer.</p>	