

Kindergarten Lesson Plan - Beaks by Design

Suggested time: 45 minutes

Lesson Snapshot:

In this lesson, students will demonstrate proficiency in collecting, recording and sharing observations focusing on the different kinds of food needed by different types of animals, specifically Pennsylvania birds. Students will be challenged to use models to represent the relationship between a variety of Pennsylvania birds and the foods that they eat.

Students will also explore the relationship between the available foods within a geographic location and the physical characteristics of birds in Pennsylvania.

This lesson provides natural opportunities for class discussion centered around the disciplinary core idea that Pennsylvania birds need specific regional foods in order to live and grow.

Background Information:

In any habitat, food is limited. Food types vary by geographic location. For animals to survive, they must adapt. Physical characteristics, which allow animals to take advantage of available food sources, are an example of an inherited adaptation. Bird beaks are a specific example of this type of adaptation.

Bird beaks vary in shape and size depending on the available food sources. This lesson focuses on birds that live and eat in Pennsylvania, where various habitats such as woodlands, pine forests, gardens, meadows, ponds and lakes are found.

- American Robins - These birds have short and pointed (triangular) beaks to better access worms and insects in vegetation and soil. Robins also eat small fruit especially in the fall and winter—their favorite, honeysuckle berries, grow widely in Pennsylvania.
- Hummingbirds - These birds have long, narrow, tubular beaks to help sip nectar in flowering plants (particularly tubular flowers) and shrubs. Ruby-throated and the Rufous are the most common hummingbirds found in Pennsylvania. During winter months, these birds migrate south to warmer climates for better access to abundant nectar sources.
- Ducks - These birds, commonly referred to as waterfowl, have broad flat bills to dig and collect aquatic plants found in ponds, streams, and lakes in Pennsylvania. Their beaks also serve as a strainer to filter the plant food from the water.
- Woodpeckers - These birds have beaks that are long, strong and taper at the tip. Their beaks are designed to drill for food, pecking holes in Pennsylvania trees to locate and eat insects. Interestingly, woodpeckers also use their beaks to drink the tree sap as they drill and are commonly referred to as sapsuckers.

Fun Fact: More than half of the species of birds in America live and eat in Pennsylvania! Now, that's a lot of birds!

Science, Technology & Engineering, and Environment Literacy & Sustainability (STEELS) Standard(s):

- 3.1.K.A: Use observations to describe patterns of what plants and animals (including humans) need to survive.
3.3.K.C: Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.

Connections to Other Standard(s):

- CC. 1.5.K.A: Participate in collaborative conversations with peers and adults in small and larger groups.
CC. 1.5.K.C: Ask and answer questions in order to seek help, get information, or clarify something that is not understood.

Objective(s):

Students will explore the relationship between the available foods within a geographic location and the physical characteristics of birds in Pennsylvania.

Materials:

- ***What Do You Do With a Tail Like This?*** (bilingual version) by Steven Jenkins & Robin Page
- Chip clip - represents the beak of songbirds who use their beaks to crack open nuts and seeds (goldfinches, sparrows, cardinals, blue jays) or pick up worms, insects, and small fruit (robin, warblers, thrushes)
- Pipette - represents the beak of a hummingbird to drink nectar from flowers
- Slotted spoon - represents the beak of a duck which filters food from water
- Tweezers - represents the beak of a woodpecker to extract insects from trees
- Beads to represent seeds/nuts
- Paper plates
- Rubber worms
- Pom poms in water (filter food out of water- i.e. plants from pond water)
- Small clear plastic bowls
- Small condiment containers
- Rice in wood holes to represent insects
- Photos of Pennsylvania birds: Robin, Hummingbird, Woodpecker, Duck (at the end of this file)
- 1 tray per group
- Glue sticks (1 per student)
- Scissors (1 per student)
- Bird Beak worksheet (at the end of this file)

Advanced Preparation:

Prepare predrilled holes in wood slabs for bird beak investigation. (Alternative suggested material: Styrofoam or similar material colored brown to simulate wood and dig out shallow holes.)

Prepare bird “food” in advance (1 tray per group): beads on a paper plate, a condiment cup of water, a bowl of water with pom poms, rubber worms.

Print photos of Pennsylvania birds and Bird Beak worksheets.

Suggested Implementation:

Part 1: Shared Read Aloud

Read *What Do You Do With a Tail Like This?* (bilingual version) by Steven Jenkins & Robin Page

Explore Students’ Background Knowledge:

“Have you seen any animals from the book where you live?”

“What characteristics do they have that allow them to survive/live here?” (Guide students to discuss animals from the book that are specific to Pennsylvania ending with the eagle.)

“What other types of birds do we see in Pennsylvania?” (Robins, owls, hummingbirds, ducks, etc.)

“Do you think all birds in Pennsylvania eat the same thing?” (No, eat different foods)

Using the Bird Beak worksheet, students will predict what Robins, Hummingbirds, Ducks, and Woodpeckers eat.

Part 2: Investigation(s)

Introduce the investigation, posing the question: “Which beak is best suited for the food?”

Students will work collaboratively in groups to test various tools representing bird beaks specific to Pennsylvania.

Using the Bird Beak worksheet, each group will be challenged to determine which tool/beak is best suited for each type of food.

Provide time for students to explore all four tools and determine which tool is best to pick up each type of food. Whole-class discussion to provide students with an opportunity to share their findings. Make connections between the tool used in the investigation and the design of the beaks (Robin, Hummingbird, Duck, Woodpecker).

Part 3: Summation

Using the Bird Beak worksheet, students will cut the Pennsylvania birds and glue them in the row associated with the food that they eat.

Discuss the relationship between animals and the places where they live.

Extension Activities:

- Encourage students to design a beak specific to their own diet or food available in their community.
- Discuss Pennsylvania animals and their physical characteristics (examples: a deer's coloring provides camouflage or a bat's hearing supports nighttime hunting for their diet which includes mosquitoes).
- Research other local birds, comparing physical characteristics such as their beak to their diet.
- Research other Pennsylvania animals, focusing on the relationship between the animal and its environment.

Connections to Other Standard(s):

CC.1.4.K.C: With prompting and support, generate ideas and details to convey information that relates to the chosen topic.

CC.1.4.K.V: Participate in individual or shared research projects on a topic of interest.

3.5.K-2.M: Demonstrate essential skills of the engineering design process.

PBS Resources and Links:

[Animal Adaptation](#) | [Science Trek](#) | [PBS LearningMedia](#) (video short: 6:04 minutes)

[Bird Beak Adaptations](#) | [PBS LearningMedia](#) (images)

[Backyard Birds](#) | [Everyday Learning](#) | [PBS LearningMedia](#) (interactive photographs-English and Spanish)

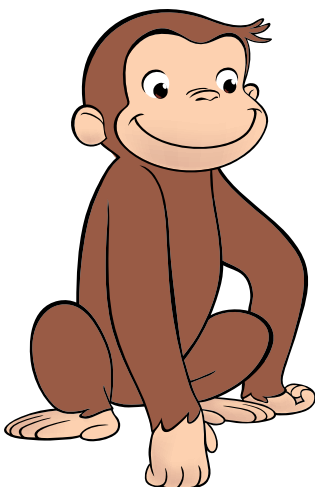
[Hummingbird](#) | [Wild Kratts](#) | [PBS LearningMedia](#) (video episode: 26:25 minutes)

Resources/Acknowledgments:

[STEELS Standards](#)

[Bird and Wildlife Watching](#)

[Cornell Lab K-12 Education](#)


















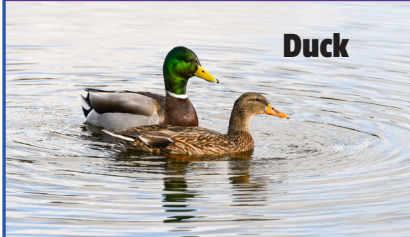




Supported by:



Prediction

What do these birds most often eat? Circle one.





















NAME _____

 <p>Robin</p>	<p>Insects</p> 	<p>Seeds, Berries & Worms</p> 	<p>Nectar</p> 	<p>Plants</p> 
 <p>Hummingbird</p>	<p>Insects</p> 	<p>Seeds, Berries & Worms</p> 	<p>Nectar</p> 	<p>Plants</p> 
 <p>Woodpecker</p>	<p>Insects</p> 	<p>Seeds, Berries & Worms</p> 	<p>Nectar</p> 	<p>Plants</p> 
 <p>Duck</p>	<p>Insects</p> 	<p>Seeds, Berries & Worms</p> 	<p>Nectar</p> 	<p>Plants</p> 



Investigation Findings

Which tool/beak is best suited for the food? Circle your answer.

FOOD	TOOLS				This bird eats...
<p>Insects</p> 	<p>Chip Clip</p> 	<p>Pipette</p> 	<p>Slotted Spoon</p> 	<p>Tweezers</p> 	
<p>Seeds, Berries & Worms</p> 	<p>Chip Clip</p> 	<p>Pipette</p> 	<p>Slotted Spoon</p> 	<p>Tweezers</p> 	
<p>Nectar</p> 	<p>Chip Clip</p> 	<p>Pipette</p> 	<p>Slotted Spoon</p> 	<p>Tweezers</p> 	
<p>Plants</p> 	<p>Chip Clip</p> 	<p>Pipette</p> 	<p>Slotted Spoon</p> 	<p>Tweezers</p> 	

Cut and glue to food each bird eats.

