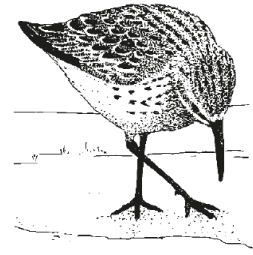


What is a Shorebird?



Learning Objectives

Students will use their own prior knowledge and observations of shorebirds and their habitats to construct explanations for how shorebird adaptations help them survive in their various habitats.

Students will analyze and interpret data on food availability in different habitats. Using this evidence, students will prepare an argument for where particular shorebirds are likely to forage for food.

Activity 1: Know-Wonder-Learn about Shorebirds

Time: 10-15 min

Provided: None

From your Classroom: Large paper, whiteboard, or chalkboard

Create a K-W-L chart on large paper or on the classroom whiteboard or chalkboard. Write 'Shorebirds' at the top.

Ask students "What do you **KNOW** about shorebirds?" Even if the term 'shorebird' is new to them, encourage them to draw on their prior knowledge of birds. Write their ideas down in the 'Know' section of the chart, OR give each student a sticky note and have them add what they know to the chart themselves.

Ask students "What do you **WONDER** about shorebirds?" If they are having trouble coming up with ideas, encourage them to wonder how shorebirds might be different from other birds they are familiar with. Record their questions in the 'Wonder' section of the chart using sticky notes or by writing them there yourself, then set it aside. Resist the temptation to answer their questions now - they will discover the answers themselves during the lesson! Return to the chart at the end of the lesson.

** This K-W-L brainstorm could also be done in a discussion format with the teacher writing down student ideas in the chart. Adapt terminology as needed for the age of students.*


Activity 2: Hidden Eggs


Time: 20-30 min | **Student Level:** Grades 3-5

Materials:

Provided: Egg Pattern (Activity Sheet 1.1), Pattern Backgrounds (Activity Sheet 1.2, available online), Habitat Backgrounds (Activity Sheet 1.3, available online), Eggs slideshow (Slideshow 1.1)

From your Classroom: Markers or crayons. If a color printer is not available to print the patterns, wrapping paper is an excellent substitute


 **Engage:** How could you hide an egg in plain sight? Students brainstorm ideas; write on board.

 **Explore:** Provide each student with Egg Pattern (Activity Sheet 1.1), a Pattern or Habitat Background (Activity Sheet 1.2 or 1.3), and markers or crayons. Students cut out their egg and tape it to the background, color it in to match the background so the egg cannot be seen, and add their camouflaged egg to a class display!



Optional

Provide students with a second egg and have them color it so it can be hidden in plain sight somewhere in the classroom, then hide it there secretly. Once they are all hidden, students see how many they can find!

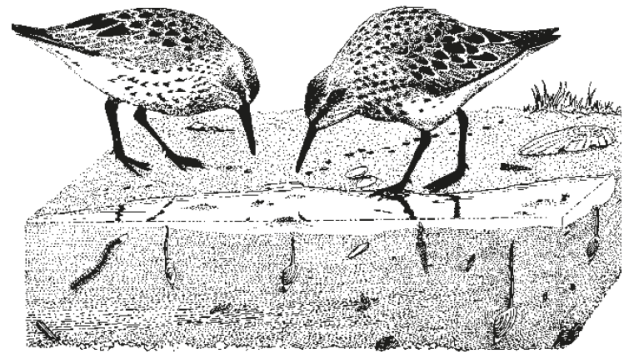
 **Discuss:** View the slideshow of actual shorebird eggs in natural habitats.

Small or large group discussion using the following prompts:

- What is camouflage for?



- Why do you think shorebird eggs are so well camouflaged?
- If an animal has well-camouflaged eggs, what does that tell us about its biology?
- Introduce the idea of an adaptation: a trait that helps an animal survive and reproduce in its habitat.



Activity 3: What can I Eat with this Beak?


*Adapted from *Explore the World with Shorebirds!* - Educator's Guide for the Shorebird Sister Schools Program


Time: 40 min | Student Level: Grades 3-5

Materials:

Provided: Shorebird Bills slideshow (Slideshow 1.2), Beaks Example Table (Activity Sheet 1.4), Beaks Worksheet (Activity Sheet 1.5), Beaks Answer Sheet (Activity Sheet 1.6)

From your Classroom: 'Beak' tools (enough for each student to have one): spoons, scissors, tweezers (or chopsticks), spring-type clothespins. 'Food' items: 50 marbles (snails), 100 toothpicks or cut pipe cleaners (worms), 100 3/16" metal washers (crabs/crustaceans)

 **Engage:** Remind students what we learned about shorebirds just from looking at their eggs. What do the students think we can learn from their beaks?


 **Explore:** Tell students that they are going to use simple tools to represent different types of beaks, and have students count off in fours. Each student gets a paper cup (stomach) and a 'beak' tool: 'ones' get a spoon, 'twos' get a pair of scissors, 'threes' get tweezers or chopsticks, and 'fours' get clothespins.

Explain the rules to students:

1. Each shorebird (student) can only pick up food with its beak
2. They have to drop food items into their stomach (the paper cup)
3. Food may not be scooped or thrown into the stomach; the stomach must be held upright.
4. The teacher is a hawk that eats birds. Unruly behavior or violation of the rules will result in the hawk capturing the unruly bird and making it sit out for the rest of the round (in reality, unusual behavior of a bird draws attention from a predator).

Conduct the activity:

1. Students sit in a large circle.
2. Scatter **one** food type throughout the circle.
3. Let students feed for a set time (up to 2 minutes). One option is to simulate a normal feeding cycle by using the classroom lights. When the classroom lights are out, it is night and the birds are asleep. When the lights are on, the sun has risen and they can feed. Turn off the lights again as the signal to stop feeding (sunset).
4. Students with similar beak types get together, and count the combined number of food items collected.
5. Record the class data in the Beaks Example Table (Activity Sheet 1.4) and/or on the board.
6. Repeat for each food type.
7. Run the simulation one final time with ALL food types included.
8. Provide students with the Beaks Worksheet (Activity Sheet 1.5) and have them fill it out.

 **Discuss:** Encourage small or facilitate a large group discussion using the following prompts:

- Which beak type was the most successful for worms? The least successful? Discuss each food item in turn.
- Show the class the Shorebird Bills slideshow (Slideshow 1.2). Can the students identify real birds that have beaks similar to each of the tools we used? Do any of the birds have a beak that is not similar to one of the tools?
- Some birds eat food that lives in mud, some find food in the water, others pick things off the surface of the sand, etc. In which habitat do you think each of these beaks belongs?

- What happened when all the food types were available at the same time? What was your strategy? Did you experience more or less competition for the food?
- Would a real shorebird have a similar strategy?
- How are shorebird beaks examples of adaptations?


Activity 4: Fabulous Feet

Time: 40 min | Student Level: Grades 3-5

Materials:


Provided: Shorebird Cards, Fabulous Feet Worksheet (Activity Sheet 1.7), Shorebird Cards slideshow (Slideshow 1.5), Fabulous Feet slideshow (Slideshow 1.3)

From your Classroom: No materials needed

 **Engage:** Remind students what we were able to learn about shorebirds from looking at eggs and beaks. Share the Fabulous Feet slideshow (Slideshow 1.3) which highlights shorebirds using their legs and feet in their habitats, noting differences. Ask students to brainstorm ideas for things that can be learned from looking at their legs and feet. Without discussing, record students' ideas so that they can be revisited later.

Explore:

1. Divide students into small groups and give each group a Shorebird Card. Make sure to include at least some long-legged birds such as the American Avocet and Lesser Yellowlegs, and some shorter-legged birds such as Killdeer and Semipalmated Sandpipers. American Oystercatchers are also a good choice for their thick, pink legs.
2. Students should read their Shorebird Card, then use the worksheet to brainstorm how the legs and feet might be adaptive. Questions for them to consider include:
 - What are the legs and feet used for?
 - Are they adapted for wading, swimming, walking on land, catching prey, or some other activity?
 - Do the legs and feet match the habitat?

 **Discuss:** Students present their bird to the class (optional project trading card so all can see) and share their ideas about how the feet and legs are adaptive. Revisit the the Fabulous Feet slideshow (Slideshow 1.3) to discuss what the students learned.


Activity 5: Superfood for Shorebirds

Time: 40 min | Student Level: Grade 3-7

Materials:

Provided: Habitats slideshow (Slideshow 1.4), Superfood Habitat Worksheet (Activity Sheet 1.8), Superfood Data Table (Activity Sheet 1.9), Large Food Icons (Activity Sheet 1.10), Small Food Icons (Activity Sheet 1.11), Shorebird Cards

From your Classroom: A large paper for habitat drawing (e.g. butcher paper), markers or crayons, scissors, glue or tape.

 **Engage:** Brainstorm list of habitats where shorebirds might be found, based on what they have learned so far. Show the Habitats slideshow (Slideshow 1.4).


Explore:

1. Assign students to small groups. Each group will be assigned a habitat to draw/diagram (sandy beach, salt marsh, mud flat, grassland, or saline lake) on a large piece of butcher paper.
2. Provide each group with a Superfood Habitat Worksheet (Activity Sheet 1.8) and Large Food Icons (Activity Sheet 1.10) that can be cut out.
3. Students should use the table on the Superfood Habitat Worksheet (Activity Sheet 1.8) to determine how many food icons of each type to glue or tape onto their habitat diagram.
4. Post the habitat drawings in different areas of the classroom.

Note: this activity can also be done individually, with each student drawing their habitat on an 8.5x11 sheet of paper, using the Small Food Icons (Activity sheet 1.11).


Modification for Grades 6-7: Provide each student with a copy of the Superfood for Shorebirds Data Table (Activity Sheet 1.9).

Assign each student one of the food items, and have the students make a graph showing how that food item varies across the habitats. All students assigned a particular food type can stand up together to present their graphs to the class or post with their habitat picture.

 **Discuss:** Have each habitat team describe to the class why their habitat is a great habitat for shorebirds, what food it provides, and why it is unique.

 **Explore, Part II:**

1. Each student selects a Shorebird Card at random, reads it, and becomes that bird!
2. Students get up from their seats and check out the habitat options based on what their shorebird needs, then pick one and go stand there - this is where they are going to forage for food today. Emphasize to students that there may be more than one good choice for their shorebird - but they need to be able to justify their choice with evidence. Make a list of which students/birds chose which habitats.

 **Discuss, Part II:** Each student explains - in character as their shorebird - why this is a good habitat based on (1) adaptations (how is this habitat good for their bird based on its feet, legs, bill, etc.), and (2) the available food (what food does their bird eat)? For many birds there may be more than one good answer - the point is for the student to support their choice with evidence.

Activity 6: Know-Wonder-Learn about Shorebirds, *revisited*

Time: 15 min

Revisit the Know-Wonder-Learn chart created at the beginning of the lesson. Students should work in pairs to brainstorm things they have learned about shorebirds to add to the chart. Have them share by adding sticky notes, or by writing their responses onto the chart. Follow up on their 'wonder' items to see if we can now answer some of their questions.

Observe student presentations & discussions, and student contributions to the learn panel of the K-W-L chart to evaluate whether students have met the learning objectives.

Things to look for:

- Are students identifying specific shorebird adaptations and explaining how those adaptations help the shorebirds in their habitats?
- Are students using scientific evidence (data on food availability) to make the case for why shorebirds might do better in one habitat than in another? Are they connecting this back to adaptations?
- Are students able to explain how resource availability might limit shorebird populations?

Cultural Connections: Reach out to local first nations/indigenous groups to learn stories and access traditional knowledge about shorebirds, their habitats, and their adaptations. Access resources such as the [Ojibwe People's Dictionary](#) to find indigenous names for birds and parts of birds. Other resources include [Canadian Language Museum](#), [First Voices](#), and [Online Cree Dictionary](#). Please explore other resources that are most relevant in your area.

Notes
