

## Bird Migration

**Objective(s):** Students will (1) define migration, (2) examine how birds migrate, and (3) identify hazards to migrating birds in their local community as well as solutions to help them.

### Overview

Students will discover why birds migrate and develop solutions to help migratory species in their community.

### Georgia Standard(s) of Excellence (GSE)

S1L1; S2E3; S2L1; S3L1;  
S3L2; S6E6; S7L1; S7L4;  
S7L5; SB1; SB5; SZ4; SZ5.

### Essential Terms

Breeding Ground  
Bird Count  
Migration  
Stopover Site  
Wintering Ground

### Materials

- LAB: *Mysteries of Migration Student Guide*
- *Migration Hurdles cards*
- LAB: *Cheep Sheet for Bird Songs and Calls*

### Additional Resources

- LAB: *Migration Mapping*
- LAB: *Bird Conservation*

## Background

Bird migration has awed people for centuries. Signaled by a change in seasons and the availability of resources, migration is an especially exciting period for students to catch a glimpse of species that do not normally live in their area.

Roughly 40% of the world's 10,000+ bird species are migratory, including about 350 North American species. Migrations differ by species and sometimes even by populations within a species. While the science of migration isn't fully understood, we do know that birds undergo hormonal changes in their bodies (their "internal clock") triggered by seasonal changes in day length, weather, and food availability. These physical changes, combined with amazing navigational abilities, enable birds to complete astonishing journeys. Teaching students about the migratory birds that visit their area and making them aware of the hazards they face will empower them to take action to help.

## Bird Superpowers

Migratory birds have extraordinary navigational capabilities. In addition to using their acute vision to follow landmarks or celestial bodies to navigate, many birds can sense the earth's magnetic field (an invisible field produced by the Earth's rotation and liquid-metal core), which keeps them on course. Some species even use a sense of smell or hearing to navigate, picking up odors and sounds from hundreds of miles away. In addition, migrating birds undergo some dramatic physical changes. To fly vast distances between breeding and wintering grounds, birds may shrink their internal organs, rapidly gain and burn through fat, sleep on the wing, and more.

## Stopover Sites: Crucial Pit Stops

Although some species fly nonstop between breeding and wintering grounds, many visit **stopover sites** as a survival strategy. They rely on predictable habitat that offers food, water, shelter, and a safe space to rest, often visiting the same locations annually. Today, habitat loss and degradation threaten the availability of these invaluable stopover sites and the migrating birds that rely on them.

Red Knots travel from wintering locations in South America, Africa, and Australia to nesting grounds in the High Arctic. Their spring migration is perfectly timed to coincide with the spawning of horseshoe crabs. In April and May, Red Knots pause at stopover sites to gorge on horseshoe crab eggs and replenish fat. **A single Red Knot needs to eat roughly 400,000 eggs during stopover to complete migration.** Sadly, coastal development and the use of horseshoe crabs in the bio-medical industry have put Red Knot populations in peril.



Students often mistakenly assume that birds migrate because of cold weather. While cold weather may trigger migration, birds are compelled to migrate because of diminishing resources (like insects or nectar, or safe spaces to nest). Many species are able to find ample resources year-round without migrating.

## Migration Hurdles

We don't understand everything about migration, but we do know that birds expend tremendous energy and face many perils. Scientists estimate that almost half the birds that leave their breeding grounds in the fall will not return again the following spring. The most significant man-made perils that migrating birds face include:

- **Habitat loss**—degrades quality and the availability of resources.
- **Windows and tall buildings**—create collision hazards.
- **Light Pollution**—disorients birds by obscuring the night sky that helps them navigate.
- **Domestic Pets**—injure and predate upon birds.

Challenge your students to identify other hazards birds may face during migration, including storms, pollution, and pesticides.

## Preparing for Flight

Review the student guide to help students understand the miraculous migrations that birds make and have them consider what dangers birds face on their journeys. *Migration Hurdles* (Activity 1) will highlight many of the perils birds face while migrating, preparing students for problem-based learning in *School Stopover Sites* (Activity 2).

## Activity 1: Migration Hurdles

**Students will learn about obstacles birds face during migration and discuss ways they can help migrating birds at school and at home.**

Materials: Set of *LAB: Migration Hurdles* cards and an opaque container to hold the leader cards

### **Playing the game:**

1. Place the leader cards in an opaque container. Have students select a student card.
2. Tell students they will be going on a migratory journey—they must stand and flap their arms until their journey ends. Caution students that migration is dangerous and that not all of them will "survive."
3. Pull leader cards one at a time and read aloud to the students. Each card tells the fate of a particular color/species. Students holding the color that is drawn are "out" and may sit down and stop flapping.
4. Once all of the leader cards have been pulled, the students still standing represent the individuals that survived migration.
5. Wrap up by discussing the dangers of migration. Which hurdles were man-made? What other hurdles do birds face?

Math Extension: Figure out what percentage of the population survived. In reality, only about 50% of the birds leaving their breeding grounds will survive and return to breed again. Consider "stacking" the deck with green cards so that roughly half the class "survives."

## Activity 2: School Stopover Sites

**Students will evaluate their school grounds as a stopover site from the perspective of a migratory bird.**

1. Take students outside and ask them to imagine themselves as a migratory bird who has landed on campus. Walk the school grounds and ask students to consider the four components of habitat—food, water, shelter, and space—and locate these resources on campus. Are there sufficient resources for a migratory bird? What improvements could be made to make the location a better stopover site, breeding site, or overwintering site?
2. Identify possible hazards to birds that they see. Pollution/litter, windows, construction sites, invasive plants, outdoor cats, and other predators are a few examples. What might be some possible solutions to minimize or eliminate those hazards?
3. Back in the classroom, discuss the students' observations, listing the resources and threats they noted.
4. Develop a project to raise awareness and help migratory birds on campus, working in small groups or as a class. Some ideas include planting native plants and/or removing invasive species, creating a "Lights Out" or "Pets Indoors" campaign, applying window treatments to reduce collisions, and maintaining a bird bath or feeder.

Additional Resources: the *LAB: Bird Conservation* unit highlights some of the major threats to birds as well as some possible solutions.

Extension: Assign students to research different migratory birds to gain a deeper understanding of their survival strategies and specific habitat needs.



RED

Predator Alert!  
You were just eaten by  
a Red-tailed Hawk.  
You are out!

ORANGE

Meow! A pet cat  
caught you while  
you were resting.  
You are out!

YELLOW

Bonk! You fly into  
a window and  
are disoriented.  
You are out!

LIGHT BLUE

Oh no! Your habitat  
was turned into  
office buildings.  
You are out!

PINK

Slurp! You eat and  
drink from a polluted  
lake and are poisoned.  
You are out!

DARK BLUE

Storm alert! You  
were blown off course  
and lost at sea.  
You are out!

BROWN

You land in a wildlife refuge  
– take a break. (Sit down  
and relax for 10 seconds)  
\*all students play\*

BROWN

You land in a backyard  
with lots of full feeders.  
(Rub your tummy)  
\*all students play\*

BLACK

Smack! You hit a cell  
phone tower in the  
middle of the night.  
You are out!

WHITE

Watch out! Windmills  
ahead. (Angle your “wings”  
to fly around them.)  
\*all students play\*

WHITE

Whoosh! The wind is pushing  
you in the right direction.  
(Stop flapping and soar.)  
\*all students play\*

blank



Migration Hurdles Leader Card



Migration Hurdles Leader Card



Migration Hurdles Leader Card



Migration Hurdles Leader Card



Migration Hurdles Leader Card



Migration Hurdles Leader Card



Migration Hurdles Leader Card



Migration Hurdles Leader Card



Migration Hurdles Leader Card



Migration Hurdles Leader Card



Migration Hurdles Leader Card



Migration Hurdles Leader Card

Summer Tanager



RED

Summer Tanager



RED

Summer Tanager



RED

Baltimore Oriole



ORANGE

Baltimore Oriole



ORANGE

Baltimore Oriole



ORANGE

American Goldfinch



YELLOW

American Goldfinch



YELLOW

American Goldfinch



YELLOW

Roseate Spoonbill



PINK

Roseate Spoonbill



PINK

Roseate Spoonbill



PINK



Migration Hurdles Student Card



Migration Hurdles Student Card



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Migration Hurdles Student Card

Blue-gray Gnatcatcher



LIGHT BLUE

Blue-gray Gnatcatcher



LIGHT BLUE

Blue-gray Gnatcatcher



LIGHT BLUE

Indigo Bunting



DARK BLUE

Indigo Bunting



DARK BLUE

Indigo Bunting



DARK BLUE

Gray Catbird



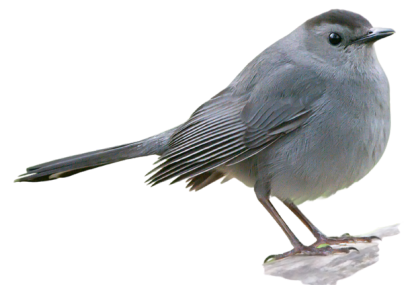
BLACK

Gray Catbird



BLACK

Gray Catbird



BLACK

Ruby-throated Hummingbird



GREEN

Ruby-throated Hummingbird



GREEN

Ruby-throated Hummingbird



GREEN



Migration Hurdles Student Card



Migration Hurdles Student Card



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Migration Hurdles Student Card



Ruby-throated Hummingbird



GREEN

Ruby-throated Hummingbird



GREEN

Ruby-throated Hummingbird



GREEN

Ruby-throated Hummingbird



GREEN

Ruby-throated Hummingbird



GREEN

Ruby-throated Hummingbird



GREEN

Ruby-throated Hummingbird



GREEN

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GREEN



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