

Bird Migration



A Teacher's Resource Guide

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Migration Basics

Why do birds migrate south in the winter?

A change in weather conditions that lead to a reduction or loss of food availability in the winter is perhaps the most common reason. However, birds migrate for a variety of reasons, some of which remain a mystery to scientists.

Do all birds migrate?

No! But most do to some extent. 80% of the birds that breed in North America migrate during some part of the year. Some birds migrate hundreds or even thousands of miles from north to south (and back), others move to another altitude, and others migrate at a more regional scale. Several common birds are resident in Ithaca year-round.

What do birds need as they migrate?

Shelter: Access to natural habitat is key at their destination AND along the way

Food: Migration is an enormous expenditure of energy for birds. Birds must build up fat reserves prior to migrating and constantly “re-fuel” along the way.

Favorable weather conditions: Winds blowing in the right direction and no extreme temperatures.



Where Do Birds Go?

There is a great variety of wintering grounds for North American birds. Many of the songbirds we see in New York during the summer migrate to Central and South America or the Caribbean for the winter.

Which birds migrate the furthest?

Arctic Tern: 11,000 miles each way annually

Wilson’s Storm-Petrel: breeds on islands off Antarctica and flies close to the Arctic during the North American summer.

How far can a bird fly without stopping?

There is great variation in the distance and length of time some birds will fly before they stop to rest and search for food. Some songbirds like warblers could migrate around 30 miles per day during the onset of migration and closer to 200 mile per day in the later stages of migration. These are some of the remarkable extreme examples:



Blackpoll Warbler: during the fall, Blackpoll Warblers (see picture on the right) migrate from the United States to South America, Puerto Rico, or the Lesser Antilles. During this incredible voyage, they travel about 3,000 kilometers (1,864 miles) over open ocean, with nowhere to land. This means these small birds can spend over three days flying without stopping.

American Golden Plover: Over 2,000 miles from Canada to the West Indies *without* stopping.

When Do Birds Migrate?

Time of year

Do migrating birds migrate at the same time? No! Migration occurs **throughout the year**. Each bird's "migration schedule" is different. Peak migration in the spring is typically between **April and May**, and in the fall between **September and October**. Migration timing is often synchronized with an increase in food abundance at the bird's destination. This is presenting a problem for many species now as the changing climate is causing a disconnect between food availability (like insects hatching) and arrival of migrants coming from hundreds of miles away.

Time of day

Why might most songbirds and many shorebirds migrate by **night**?

- Hidden from predators in dark
- Cooler temperatures—birds don't generate as much heat, and thus, save energy
- Navigation via constellations
- Build up fat reserves eating food during the day, and then continue on their journey

Some birds do migrate during the **day**—what are the advantages of daytime migration?

- Detailed landscape for navigation
- Raptors tend to migrate in highest numbers midmorning-early afternoon because they ride thermals



- Swallows may migrate during the day because they can catch food as they fly
- Unclear why ducks choose to migrate during the day

How do birds know when to begin their migration?

Birds probably rely on the earth's changing **photoperiod** to know when to migrate. In other words, migration timing depends on a bird's exposure to amount of daylight, which gets shorter and shorter as winter approaches, and longer as spring and summer approach. Birds may also rely on instinct and their own "biological clock" as a signal to migrate.

Problems Birds Encounter Along the Way

Lack of Food availability

Importance of timing: Climate change causing asynchronous timing of migration and availability of key food resources

Humans altering natural ecosystems:

Example: Red Knots migrate 30,000 km from southern South America to the Arctic to breed each year. Delaware Bay is the last major re-fueling area before they fly through harsh conditions and arrive in the arctic where food resources might be scarce initially. Their population is crashing because the horseshoe crabs in Delaware were removed by humans for crab bait.

Habitat destruction

Deforestation, over-development, and lack of "green rest stops" along the way: As more habitat continues to be cleared for development and agriculture, birds have no where safe to land and find food. Protection of these habitats is crucial for the survival of many species.

What happens when the birds arrive and previously used habitat is gone?

Many birds congregate in large **staging areas** (stopover areas) during migration. Without habitat, animals can't survive! Healthy forests and ecosystems are critical for providing

homes, food, and breeding areas for birds. If a loss of key resources results in reproductive failure, populations begin to decline.

Weather

Tropical storms, strong winds, and other harsh weather events can end up blowing migrants in the “wrong” direction. Outside of their needed environment, including being stuck out over the ocean) they may die.



Disasters caused by humans

Example: Gulf Oil Spill—Migrating ducks this fall may find a lack of clean, safe water to land in after traveling hundreds of miles.

Remember the importance of taking care of our environment for animals, ecosystems, and humans!

Predators

Birds that migrate during the day are especially vulnerable since they aren't hidden from predators.

What Can YOU Do to Help Migrating Birds?

Keep a garden

Bugs and berries serve as food for migrating birds and your garden will act as a mini-refuge in which birds can rest and re-fuel.

Encourage preservation of land and open space

Loss of habitat is the biggest threat to bird survival.

Take up birdwatching!

Understand patterns and changes in bird movement and abundance so you can help point out if something is wrong.

Get a bird feeder!

Watch, appreciate, and learn about birds...and feed them too!

[Additional Resources](#)

Citizen Science at the Cornell Lab of Ornithology <http://www.birds.cornell.edu>

**Participate in data-collection activities that help scientists determine trends and figure out proper management for birds.*

All About Birds <http://www.allaboutbirds.org>

**An accessible way for anyone to learn about the biology, identification, threats to different species of birds.*

Birds of North America Online <http://bna.birds.cornell.edu/>

**Provides in-depth species accounts for all of the birds found in North America.*

Project FeederWatch <http://www.birds.cornell.edu/pfw/>

**Get involved with data collection in your own backyard! Count the number of birds that visit your feeder from November-April and help determine populations trends.*

Leahy, Christopher W . 2004. *The Birdwatcher's Companion to North American Birdlife*. Princeton University Press, Princeton.

**An excellent resource about different aspects of bird biology.*

Sibley, David Allen. 2003. *The Sibley Field Guide to Birds of Eastern North America*. Chanticleer Press, Inc., New York.

**Learn how to identify birds!*

Baker, A.J., Gonzalez, P.M., Piersma, T. Niles, L.J., do Nascimento, D.S., Atkinson, P.W., Clark, N.A., Minton, C.D.T., Peck, M.K., and G. Aarts. 2004. Rapid population decline in red knots: fitness consequences of decreased refuelling rates and late arrival in Delaware bay. *Proceedings of the Royal Society of London Series B—Biological Sciences* 271:875-882.

**Read more about the problems plaguing migrating Red Knots.*

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