Smithsonian

Saving Migratory Birds

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Heron Here, Heron There

Every spring, a flock of black-crowned night herons arrives at Smithsonian's National Zoo in Washington, DC. The herons build nests high in trees, choose **mates**, and raise their young. Zoo staff feed the birds mice and fish. The herons are noisy. Sometimes, they are even smelly—young herons vomit to **deter** predators when they feel threatened.

Black-crowned night herons have been returning to this spot for at least a hundred years. Bit by bit, the Zoo has grown up around the birds. In August or September, the herons fly away. Almost overnight, the loud flock is replaced by silence.

Where the herons go has always been a mystery. But now, new technology lets scientists track the birds. During the summer, trackers are strapped to a few herons. As the herons travel, the devices tell scientists where the birds are located. Scientists know not only where the herons spend winter but also how they get there.

All over the world, people who study birds are using new technology to answer old questions. And it's happening just in time—many **migratory** birds need humans to give them a helping hand.

Almost half of all bird **species** migrate.

A black-crowned night heron catches a fish.

Night herons get their name because they are active at night.

black-crowned night heron

Migration Sensation

Many animals move to different locations when the weather changes. Birds are the champions of the animal world when it comes to finding the best spots to live throughout the year.

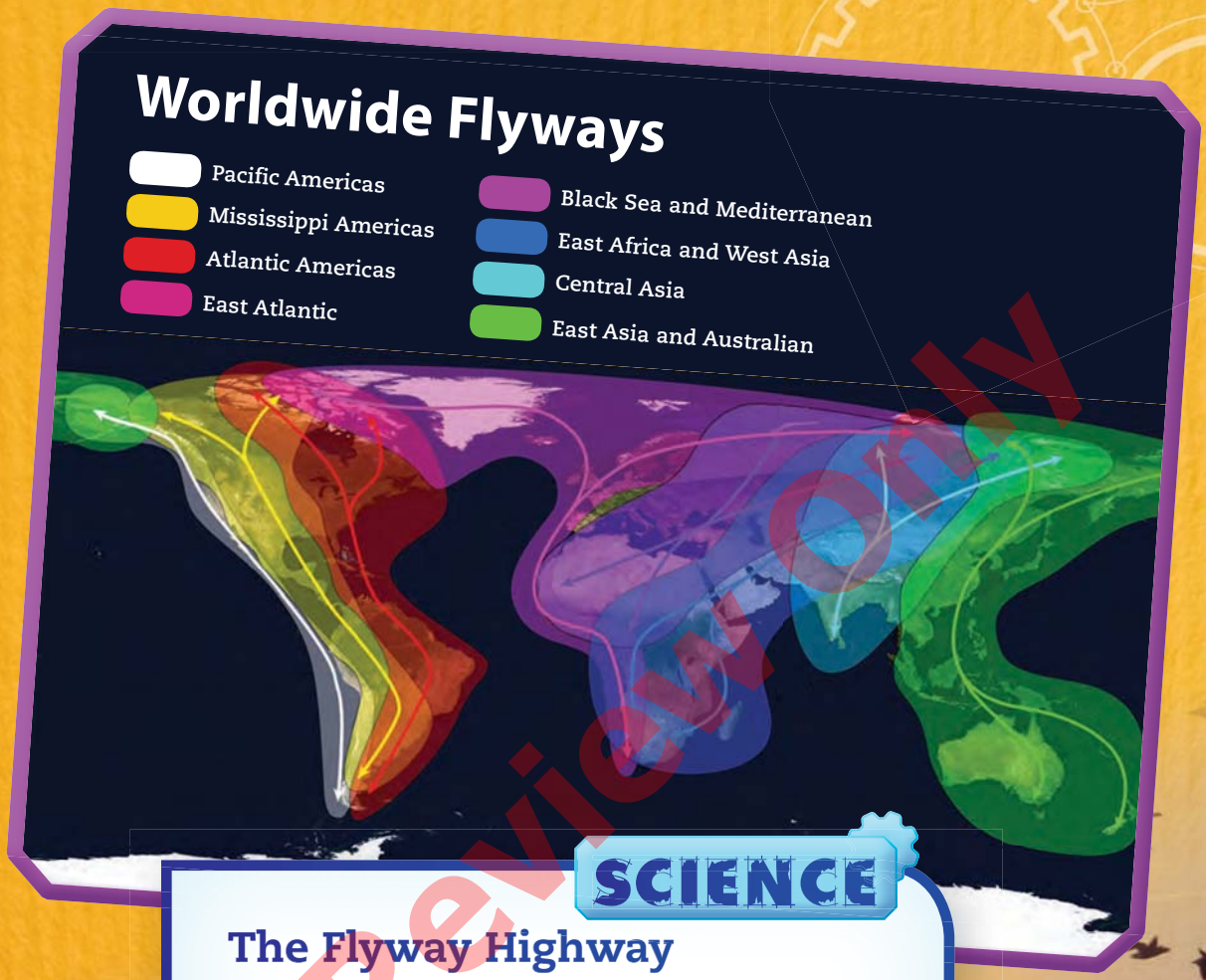
The small Arctic tern travels from the Arctic at the top of the globe to the Antarctic at the bottom, giving it the longest migration of any animal! The bar-tailed godwit is another record holder. It soars over the Pacific Ocean for eight days and nights without stopping during its migration from New Zealand to Alaska.

Some birds have much shorter migrations. For example, some spend the summer high on a mountain where the weather is cool, but they spend the rest of the year at a lower elevation.

Migration has many benefits. Think about a lake in northern Europe. During the summer, it is full of fish. Thick clouds of insects hover in the air. Flowers bloom and trees are green. For water birds, such as loons and ducks, the lake is a great place to have a family. Food is plentiful, which allows these birds to build nests, lay eggs, and protect their young.

In the winter, that same lake is frozen solid. All the water birds are far away, in warmer places.

bar-tailed godwit



SCIENCE

The Flyway Highway

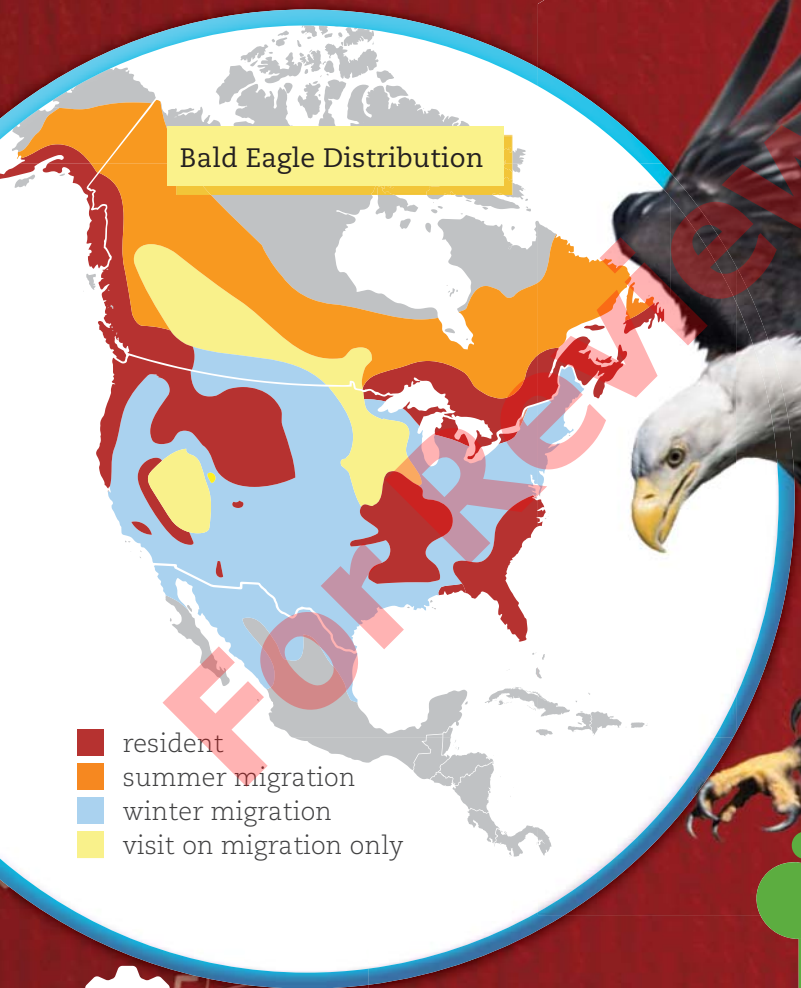
The path that birds take when they migrate is called a flyway. In North America, there are four major flyways. How do birds know where to go? They use several methods to navigate their way. Birds look to the stars, the sun, and Earth's **magnetic field** to fly in the right direction. They might also use landmarks, such as rivers or mountains. Some birds follow certain paths that offer food, water, and shelter on their long trip.

Penguins migrate by swimming.

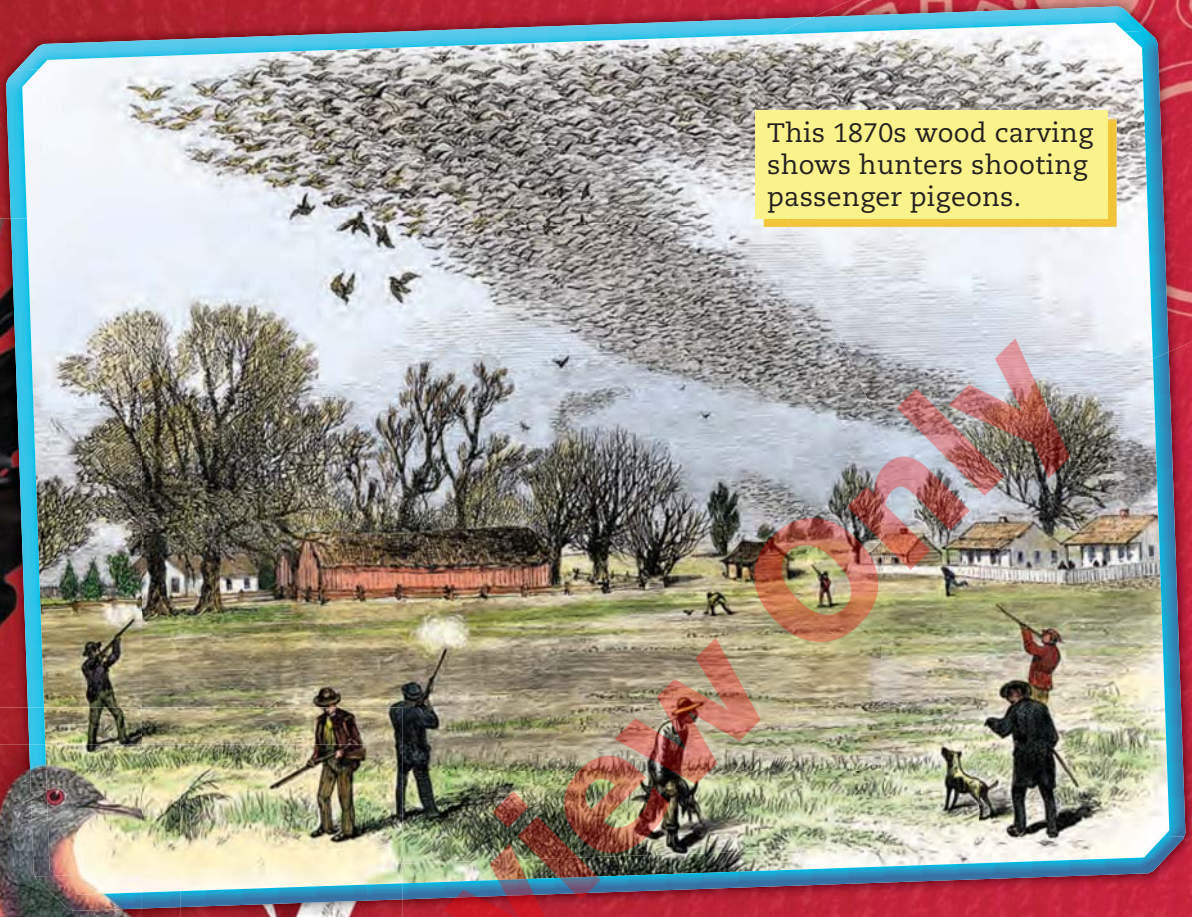
Migration is not easy. Bad weather can push birds off course. They have to survive predators and hunters. The journey is so hard on their bodies that some birds starve.

Birds are also harmed by pollution, including **toxic** chemicals. They can be trapped in fishing nets or crash into buildings. Loss of **habitat** is a huge problem as well.

Although most species of migratory birds aren't close to **extinction**, many are under stress. When a species that migrates is in trouble, **conservationists** face a big challenge. Protecting an animal that lives in one place is hard enough. Protecting an animal that lives in two places is more difficult.



The bald eagle is the **emblem** of the United States, but many of them spend their summers in Canada before migrating south.



This 1870s wood carving shows hunters shooting passenger pigeons.

The passenger pigeon is one extinct migratory species. Once, these pigeons were the most common bird in North America. They lived together in huge flocks that were so big they took hours to pass overhead. In summer, the birds could be spotted as far north as Canada. In winter, they lived as far south as Florida.

Farmers killed many passenger pigeons to protect their crops. Hunters killed many of the birds, too. Forests the birds needed were cut down to make farms. When living together in a big community was no longer possible, they stopped nesting and raising young. In 1914, the last passenger pigeon died.

STEAM CHALLENGE

Define the Problem

Migration is a risky mission! Migratory birds face many challenges. Stress, lack of food and water, extreme weather, and predators are all dangers. Scientists and engineers have found new ways to monitor and help these birds. Your task is to design and build a model of an artificial island that can provide a safe space for birds during their seasonal journey.

Constraints: You may only use four types of materials to build your model.

Criteria: Your model island must float in water while supporting five washers.

Research and Brainstorm

What types of environmental factors cause birds to migrate? How can people help migrating birds? What types of plants and flowers do migrating birds like?

Design and Build

Sketch your artificial island design. What purpose will each part serve? What materials will work best? Build the model.

Test and Improve

Test your model by placing it in water. Add the washers to the surface of the model. Did it work? How can you improve it? Modify your design and try again.

Reflect and Share

What types of materials can you use to create a stronger model? What other ways can you test your model? Can you think of any other purposes for artificial islands?