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PolarTREC Informal Education Product Resource

Arctic Connection - Seasonal Migration Edition

Katie Gavenus

MOSAiC

PolarTREC Expedition Page

<https://www.polartrec.com/expeditions/mosaic>



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Overview

Learn more about seasonal migrations of species around the world. These multidisciplinary hands-on activities focusing on art, observation, movement, and adventure. Resources can be used in formal and informal learning environments. All activities are designed to be possible as at-home/distanced activities.

Objectives

- Learners will understand the diverse forms of seasonal migration of animals.
- Learners will make connections between environmental and seasonal change and animal behavior.
- Learners will explore the natural and human-caused challenges to animal survival during migration.

Activities Preparation

Background & Introductory Information from resource author and PolarTREC Educator Katie Gavenus:

Here in Homer, Alaska, located in the south-central area of the state, signs of fall are all around us in September. Leaves are changing color, fireweed and cottonwood seeds are in the air, the temperature is dropping, and we hear the calls of sandhill cranes, geese, and other migratory birds overhead.

Why Migrate?

Many different types of animals participate in seasonal migrations. There are many reasons for migrating. Oftentimes, animals migrate long distances to avoid harsh winter weather and/or to take advantage of food sources that are more available in certain regions during certain seasons. Also, animals migrate in order to have greater mating and breeding success. All of these reasons apply to animals that migrate to and from the Arctic each year, as well as animals that may migrate near you.

Migration Stories

Animals can travel thousands of miles during migration. Arctic terns hold the current record for long-distance migration, traveling from the Arctic to the Antarctic and back every year. They breed in the Arctic and sub-Arctic areas of North America, Greenland, Iceland, Europe, and Russia and migrate to South America, Australia, New Zealand, and even Antarctica. This yearly migration is approximately 25,000 miles, and one Arctic tern was actually tracked flying 59,650 miles in a year!

Resource Details

Region

Arctic
Antarctic

Completion Time

n/a

Grade

All Aged

Permission

Download, Share, and Remix

Expeditions

MOSAiC

Author(s)

Katie Gavenus

Related Members

Katie Gavenus

Related Resources

Arctic Connection - June Solstice Edition

Materials

Observation notebook

Window decoration materials

Water tokens (represented by blue beads, pieces of paper, beans, etc.)

Food tokens (represented by brown beads, pieces of paper, noodles, etc.)

Topic

Life Science

General Life Science

Ecology

Evolution and Diversity

Organisms and Their
Environments

Regulation and Behavior

General Environmental
Studies

Photo By Nina Faust, Kachemak Crane Watch

Read more about [Arctic terns on this page from the Cornell Lab](#) or [in this article from National Geographic](#). Though the birds don't always follow the straightest course, they tend to follow wind patterns which allows them to cover such staggeringly great distances. An extra cool fact: these birds can live about 30 years, and fly this long migration route each year. If you add it all up, this comes up to about 1.5 million miles or the equivalent of three trips to the moon and back!

Terns fly over the water, but many marine mammals migrate too. Beluga whales and bowhead whales, for example, migrate south as winter comes to the Arctic. This allows them to stay in the area near the ice edge, where it is easier for them to move through areas of open water or moderate sea ice concentrations. As the sea ice retreats in the spring, the whales move northward. These migratory patterns help them to avoid the danger of getting stuck in the ice during the winter while also being able to take advantage of the rich food sources available in the Arctic Ocean during the summer months. [Check out this article from the National Park Service](#) for a great animation of beluga whale migration patterns and discussion of how beluga whale migration is affected by climate change.

On land, caribou also migrate across thousands of miles. Their migration may seem short compared to Arctic terns, but it is the longest recorded terrestrial migration. In northwest Alaska, caribou have been documented traveling 2,737 miles per year. This distance might be greater in other parts of the Arctic. In addition to seeking out different food sources as they become available, the seasonal migration helps caribou to avoid predation, especially during calving season. [Click on this article from the National Park Service](#) to learn more about caribou migration in northwestern Alaska and how Indigenous people have built their hunting practices around the migration patterns.

Migration doesn't just take place in the Arctic, though. Animals migrate all over this vast planet! Think about where you live. Do animals migrate to that place for breeding season or feeding? Do animals migrate through that place from one area to another?

The activities below are designed to explore the amazing phenomenon of migration, through science, art, nature observation, and community-based monitoring.

Activities

Activity 1: Art and Reflective Observation

Scientists are working to understand how organisms know where and how to migrate. For example, research suggests that thrushes use the magnetic fields of the earth and they adjust their orientation to the magnetic fields each night as the sun sets. Read more about the [fascinating science of migrating birds](#).

- Procedure: Learners can explore this concept by considering the route they travel from home to school or another important location, and trying to translate their mental map onto a physical topographic map or visual representation they sketch themselves. Find a [great lesson plan on migration here](#) from Journey North.

Activity 2: Art and Stewardship

Migratory birds (and resident birds) can run into trouble when they encounter glass windows. Learners can help make a difference by creating window decorations to deter the birds from striking the glass. Any sort of window decoration is great. Find out how to make one in [a lesson from the Audubon Society](#).

If monarch butterflies exist in your area, the World Wildlife Fund provides a great resource for creating an origami planter for milkweed. Monarch butterflies depend heavily on milkweed, but the habitat for this plant has been greatly reduced. Help out monarchs by planting some milkweed and have fun making a cool planter too! Find the [directions here](#).

Activity 3: Migration Observation

A great way to observe natural phenomena, including migration, is to choose a solo spot and make observations from that spot over time. An overview of [how to set up a solo spot can be found here](#) from the Center for Alaskan Coastal Studies. Solo spots provide learners with a designated time for observing and wondering about the natural world and/or reflecting and processing on the activities of the day.

- Procedure: Students pick a spot where they will be able to quietly and comfortably sit for the activity. Oftentimes, students return to the same special solo spot over time. Solo spot time may involve a guiding activity, such as writing or sketching, or allow for more unstructured activities like napping, yoga, and nature sculptures. You may choose to have time afterward for learners to share what they noticed, wondered, or reflected on during the solo spot. If you want to focus on migratory patterns, include a prompting question for learners to document evidence of migration (birds flying over, bird calls, butterflies, etc.)



Use a journal to record your observations.

Activity 4: Kinesthetic Games

[This series of three simple games](#) from PBS Kids helps learners explore what it is like for birds to migrate. The games focus on elementary age learners. These games are designed for a group of learners, so don't work as well if you are learning at home. However, individual learners could be challenged to follow a migratory route through their house, other buildings, yard, or nearby park.

Have learners find the best route from a spot designated as their summer grounds to a spot designated as their winter grounds, while finding enough places along the way to stop and gather food and water.

- Procedure: Depending on the size of the space, require each learner to stop at 5-10 places to collect water tokens (represented by blue beads, pieces of paper, beans, etc.) and collect food tokens (represented by brown beads, pieces of paper, noodles, etc.) Spread these tokens out in various clusters around the house, building, yard, or park. Then learners will create their own migratory route that represents the best combination of minimizing distance traveled while maximizing access to stopover locations with food and water. Allow each learner to try different routes, racing against themselves to get the best time. Afterward, discuss challenges birds face when the stopover habitats disappear, get smaller, or produce less food. Consider ways that learners can help to preserve stopover habitats.

Activity 5: Community-Based Monitoring and Citizen Science

- Wherever you live, you can help to track the migration of animals. Journey North collects sightings of migratory organisms, including monarch butterflies, hummingbirds, eagles, orioles, blackbirds, loons, swallows, whooping cranes, frogs, gray whales, and even earthworms! You can [submit your sightings](#) and learn more about this project at Journey North.
- The [Cornell Lab](#) also has a number of citizen science projects, like the Great Backyard Bird Count, eBird, and Urban Bird Celebration.
- [GLOBE \(Global Learning and Observations to Benefit the Environment\)](#) includes a protocol about [Arctic bird migrations](#) and [ruby-throated hummingbirds](#).
- [MonarchWatch](#) actually will provide you with the tools you need to tag and track migrating monarch butterflies!

- On the West Coast, you can report whale sightings right away through [West Coast Whale Alert](#) which will help to avoid ship strikes of whales. They have a real-time map to explore.
- In the Los Angeles, California area check out the information about the [Gray Whale Census and Behavior Project](#).
- Wherever you are, you can submit observations about animal migrations to the [LEO \(Local Environmental Observer\) Network](#). The [LEO Network map](#) is also a great way to learn what people in other parts of the world have noticed and documented related to animal migrations and other interesting environmental observations. Click on advanced search, and then the filter term “topics” to select certain topics. I recommend looking at *Seasonal Timing* or *Unusual Range/Sighting* as well as any category of animal (marine mammals, birds, fish, land mammals amphibians, etc.) that you are interested in learning more about.



You can help track migrating whales.

Activity 6: Indoor and Classroom Activities

For older students, [Movebank](#) is a site full of data on tracking animal movements. It provides an interesting [lesson](#) in which data about great egret movements are mapped using Google Earth so that students can analyze the habitat preferences of individual egrets. Science Buddies also has created two science projects utilizing Movebank data to explore migratory behaviors. Lessons include: [Do Migratory Birds Like It Hot?](#) and [Here Today, Gone Tomorrow - Saving Migratory Animals](#)

Films about migration can be especially fascinating if you are staying indoors:

- [Amazing Animal Migrations By Land, Sea, and Air](#) - Nat Geo Wild: 3 minutes
- [Animal Migration: Move It](#) – PBS: 6 minutes
- [Animal Migration](#) – PBS: 28 minutes

Transferability

Many of the suggested activities and links to external sites' lesson plans have options for formal and informal education environments.

Assessment

No assessments have been created but options include:

Activity 1: Art and Reflective Observation

- Participation, following instruction, engagement, interaction with peers.
- Utilize art education assessments.

Activity 2: Art and Stewardship

- Utilize art education assessments.
- Reflection on cause and effect, as well as human impacts on the environment.

Activity 3: Migration Observation

- You may choose to have a time afterward for learners to share what they noticed, wondered, or reflected on during the solo spot.
- Assessment of science journal/notebook protocols.

Activity 4: Kinesthetic Games

- Participation, following instruction, engagement, interaction with peers.
- Utilize application physical education assessments.
- Reflection on cause and effect, as well as human impacts on the environment.

Activity 5: Community-Based Monitoring and Citizen Science

- Rubric on data collection.
- Analysis (Claim, Evidence, Reasoning statement) on collected data.

Activity 6: Indoor and Classroom Activities

- Analysis (Claim, Evidence, Reasoning statement) on collected data.

Author/Credits

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