

THE MEADOWLANDS IS FOR THE BIRDS!

Grades 4 - 6

NJCCCS: 5.1, 5.3

Field Trip Overview:

Students will be introduced to the natural phenomenon of migration and why so many birds migrate through New Jersey, and the Meadowlands in particular. Student teams will use geography skills and math to map one special bird's migration. They will also participate in a simulation to discover the obstacles and aids to this eventful journey. Weather permitting; we will take a hike in the park to find our feathered friends and the resources they depend on.

Background Information:

Migration is the periodic, cyclical movement of wildlife, most often associated with the changing seasons. Many species of birds, coastal organisms, marine mammals, and some insects participate in migratory behaviors. Some of these organisms may travel thousands of miles between their summer nesting and winter resting areas, while others may relocate just dozens of miles between two habitats. Others yet may simply move from warm, shallow water to the bottom of a deep water body.

Some species' migrations occur very regularly, often within the same 2-week period every year, while others keep very irregular calendars or even skip a year altogether if the winter is mild. Without a calendar, many animals are sensitive to temperature as their environmental cue for when it is time to go. However, many species react to the changing hours of daylight that accompany the changing seasons. Still others simply size up the local availability of food and water.

The "urge" to migrate is instinctive in most species that do it, and some animals make incredible trips without any training whatsoever. Other species depend on learning a particular route and destination from their parents or family group. For birds, natural features often point the way – mountains, coastlines, swaths of forest or some other desirable habitat that might offer appropriate food and shelter. Along the way, weather can be a help (strong tail winds) or a hindrance (strong storms can blow birds off course or cause them to interrupt travel and seek shelter). In a state like New Jersey, human features in the landscape often come into play. It is an eventful journey indeed!

Vocabulary:

Conversion: changing one unit of measurement to another

Geography: the study of the Earth, including where things are located in relation to one another

Instinct: a powerful, unlearned, complex behavior or “urge”; [NOTE: Reflexes are unlearned and often unstoppable actions, but they are usually very simple and quick, like pulling your hand away from a hot surface.]

Map scale: an indication, either in words, ratios, or a visual bar, of the relationship between space on a map and the space it represents in the real world

Migration: the seasonal movement of wildlife

Natural resources: things in the environment that are useful or can be made useful; wildlife will rely on food, water, and perhaps materials for shelter building

Reproduction: the process by which organisms generate more of their own kind; most (but not all) animals reproduce by laying eggs or giving birth to live young

Seasons: natural divisions of the year, based on apparent movement of the sun, resulting in changing temperatures and weather patterns; New Jersey acknowledges four seasons, but many tropical parts of the world will refer to two (i.e. wet and dry)

References / Resources:

- Baughman, Mel M. *National Geographic Reference Atlas to the Birds of North America*. National Geographic Society, Washington, DC. 2003. This reference book covers over 700 bird species. Every family group's entry includes range maps and breeding-to-wintering grounds notes.
- Burnie, David. *Bird*. Dorling Kindersley Limited, New York. 2000. Every page of this *Eyewitness Book* features full-color photographs and information. Migration-related topics include feathers, skeletons, and flight.

- [The Cornell Lab of Ornithology](#)
The Cornell Lab of Ornithology is one of the premier academic organizations to actively promote “citizen science”, including backyard or school yard “feeder watches”.
- [Journey North](#)
JourneyNorth.org: A Global Study of Wildlife Migration presents extensive information about butterfly migration, as well as other seasonal changes, through Kids pages, slideshows, and interdisciplinary lessons.
- [Animal Migration blog](#)
The Miss Rumphius Effect: Animals on the Move blog has a diverse children’s literature and poetry list related to animal migrations.

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Pre-Trip Activities

1. Road Trip!

Ask students if anyone has ever been on a *long* family trip that involved driving in a vehicle for a long time. What kind of planning must have been involved? Brainstorm and list some of the things that their parents (or whoever set the trip up) must have considered:

- a. Where is our final destination? What route will we follow? How will we know how to go? (written directions, map, GPS)
- b. What will we have to stop for along the way? (fuel, food, restrooms, possibly a place to sleep, etc.)
- c. How long is this going to take?
- d. What could go wrong along the way? (traffic, detours, flat tire, breakdown, getting lost, etc.)

Has anyone made the same trip multiple times? Discuss why it should get more efficient with each trip.

2. On-line Map Practice

On the field trip, students will be given access to "Google Maps". They will have to use it to locate migration rest stops by town and state or country name. At home or in school, if students can access this free on-line map site, they should practice:

- a. Typing in various locations in the Search Bar (spelling and typing counts!);
- b. Toggling between Map and Satellite Views (upper right hand box options);
- c. Zooming in and out (with the **+/-** slider bar on the left) to a recognizable scale; and
- d. Panning (with a click on the arrows in the circle in the upper left corner, or with a click & drag of the hand on the map itself).

The intent is that students should be able to locate places on a screen map and transcribe that location onto a paper map of the Americas. We will especially be focusing on coastal locations and their shapes.

References/Resources: [Google Maps](#)

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Post-Trip Activities

1. Nesters, Resters, and Tourists at Home

Have students think about some of the wildlife (excluding pets) that live around their own neighborhood. Put them into categories of Residents (here all year) vs. Migrants (most likely Summer Nesters). They should justify their groupings based on specific observations. For the migratory animals, what neighborhood natural resources make the stop worthwhile? (“Robins show up in the spring. When it rains a lot, worms come out of the soil, and I’ve seen the birds eating them next to the sidewalk. Last year, a pair built a nest in my neighbor’s tree, and we saw four babies. By the middle of the summer, they were big enough to fly away on their own. We didn’t see any robins after Thanksgiving; I think they started to fly south when it got colder.”)

Assessment Opportunity: As a Language Arts extension, students can be assigned to write and/or illustrate a creative story about one of the neighborhood migrants and “A Year in the Life”.

2. Push Pin Migration Map

If available, post a large map of the United States or World on a bulletin board. Reiterate that maps help us “see” very big places or a long journey (like migration). Assign students to research different migratory animals and the geography of their travels. Some good examples across different spatial scales include:

- Birds – American robin, Arctic tern, broad-winged hawk, great egret, harlequin duck, red knot, tree swallow
- Mammals – caribou, harp seal, humpback whale
- Fish – American eel, Atlantic salmon, striped bass
- Invertebrates – blue crab, monarch butterfly

Students will be adding push pins (or a small toothpick “flag” with a clay base) to the map to show the winter and summer destinations for their species. If everyone is issued a different color or makes a unique flag set, then create a map key identifying each species.

Assessment Opportunity: Students can be assessed on the accurate placement of their pin/flag sets and their contribution to the map key.

References / Resources: [eNature](#)

3. Road Trip Revisited!

Do students remember the trip that adults planned? Now they will have to help with trip planning, especially with a map. Based on student grade level and maps available to you, here are several suggestions for student challenges of increasing difficulty:

- a. New Kid in the School – Get copies of the school’s floor plan (these are required to be posted around the school for emergency evacuations). Help everyone locate your classroom. As you ask which rooms are to the left, right, and across the hall, show students how to point to these spaces on the “building map”. Imagine that a new student in your class has to deliver some papers to the Main Office, but he/she doesn’t know the way. Work together to come up with simple directions for the new student. Focus on turns, counting doors, and what to do at intersections.
- b. A Neighborhood Errand – Print out an on-line map of the immediate student community or copy from a common local road atlas. Students have to plan how, either walking or biking, to get from either their school or own home to a specific, recognizable destination on the town map (i.e. public library, supermarket, etc.). They should consider and highlight a safe route first, and then write out step-by-step directions to follow (distances optional).
- c. New Jersey Day Trip – Procure New Jersey road maps. Students will have to direct the bus driver from school to a field trip to the State Capital or some other destination recognizable on a state scale. Rather than local streets, focus on major roadways, cardinal directions, and approximate distances. For older students, algebraic investigations about traveling rate, distance, and time can also be introduced. (This exercise could also be expanded for a multi-day Cross Country road trip with a US map.)

Assessment Opportunity: Review directions for accuracy. For options **b** and **c**, students could be allowed to choose their own destinations, and then trade directions without revealing end points. Can someone else discover the intended destination?

References / Resources: [visitnj.org](#) (Many highway rest areas also have free fold-out NJ road maps.)