

RESOURCE LIBRARY | ACTIVITY : 1 HR 20 MINS

Create an Animal Migration Map

Students research a variety of sources in order to investigate their project's focal animal and create a map showing the typical migration route for their animal. Students support their map with a key and descriptions of their animal, its habitat(s), and why and how it migrates.

GRADES

6, 7, 8

SUBJECTS

Biology, Ecology, Conservation, Geography

CONTENTS

1 Resource, 2 PDFs, 2 Links

OVERVIEW

Students research a variety of sources in order to investigate their project's focal animal and create a map showing the typical migration route for their animal. Students support their map with a key and descriptions of their animal, its habitat(s), and why and how it migrates.

For the complete activity with media resources, visit:

<http://www.nationalgeographic.org/activity/create-animal-migration-map/>

In collaboration with



DIRECTIONS

This activity is part of the *Detours and Distractions: How Humans Impact Migration Patterns* unit.

I. Activate students' prior knowledge about their focal animals and create *Know & Need to Know* charts to engage groups in setting research goals.

- Distribute the *Animal Migration Map*: *Know & Need to Know Chart* to each student.
- Invite students to answer the questions in their small groups based on their focal animal, assigned in the *Tracking Animal Migration* activity, and record their thoughts on their chart:
 - *What do we already know about our animal's migration and how humans impact it?*
 - *What do we need to know about our animal's migration and how humans impact it, in order to create our base layer map that shows the animal's uninterrupted migration pattern?*
- As students are working on their *Know & Need to Know* chart, circulate and prompt with some of the following questions to expand student thinking:
 - *What do all animals need to survive? (food, shelter, water, etc.)*
 - *What does your animal, in particular, need to survive?*
 - *Why do you think your animal might migrate?*
 - *How do you think your animal gets to where it needs to go?*
 - *How do you think scientists and explorers know where these animals go?*

2. Explain group goals for this first session of project work.

- For the remainder of this activity, students will work with their groups to research, gather, and organize information to create the first map layer of their unit project, a map showing the typical migration route of their focal animal. Each group will create one copy of their paper map. This should include a map key (written directly on the map), and accompanying explanations about 1) their animal's habitat and characteristics, 2) why it migrates, and 3) how it migrates.
- Remind students that their final project will include a base map depicting the migration route of their focal animal (the focus of this activity), an ecosystem map layer, a human impact map layer, and suggested solutions to help the animal migrate.
- Distribute the *Animal Migration Map Rubric* to each student and orient students so they are familiar with the expectations before they begin their work.

3. Model how to choose the correct map scale.

- Orient student groups to [MapMaker 1-Page Maps](#). Explain to students that based on their research, they will need to choose the correct paper map that best shows their animal's migration pattern on the correct scale. Once groups choose the correct 1-page map for their migration map, they should print the map. Students contribute to one map per group for their final product, but multiple copies should be printed to keep all group members engaged.
 - For example, if they are going to map the migration route of elk in Yellowstone National Park, then a map of Yellowstone and its surrounding areas would be the correct scale (show [Elk Migrations of the Greater Yellowstone Ecosystem](#) map example).
 - However, if they are going to map the migration route of the monarch butterfly, which flies across North America, a continental map would be the correct scale (show [Monarch Migrations](#) map example).
 - Note that for some of the focal animals, students can choose from a variety of maps, based on the animal population. For example, the humpback whale could be mapped on a global scale if students focus on all humpback whales, or it could be mapped on the continental scale (e.g., using a map of Australia) if students focus on just a subpopulation of humpback whales.

4. Guide groups to research focal animals and create the first layer of a migration map. (This step should take up the majority of the activity.)

- Set boundaries for students on where they can do research. See the *Background & Vocabulary* tab for helpful sources.
- Encourage students to limit their research to only what is needed to complete their unit project.
- As needed, provide instruction for effective online research and online literacy.
- As students are working, circulate to remind them of the required project components:
 - Prompt for a key: *What do all of the symbols and colors on your map mean?*
 - Prompt for an animal and habitat description: *Tell me a little about your animal and where it lives.*
 - Prompt for explanations of why and how their animal migrates: *Why does your animal need to migrate? How does it get from Point A to Point B and back again?*

- Additional questions to ask:
 - *How do you think your animal might be tracked?*
 - *Have you encountered any problems in your animal's migration yet?*
- Collect group maps at the end of the activity to assess student work and provide formative feedback.

Modification

Step 2: In place of a hard copy map, students may use a map-making software such as [MapMaker Interactive](#) or [ArcGIS](#) to complete their map layers.

Tip

Step 2: To provide some background information on maps and their components, spend time as needed exploring the [Map](#) encyclopedic entry.

Modification

Step 4: Review each group's Animal Migration Map to provide formative feedback and ensure students are meeting expectations. If your review indicates that many groups need more time to revise or improve their Animal Migration Map, adjust your pacing to provide time before students develop their second map layer, the Ecosystem Map Layer in Lesson 2 of the unit.

Rubric

The [Animal Migration Map Rubric](#) can be used to assess each group's base layer map. Each group's map should show a typical migration route, include a key, and contain additional information about their animal, its habitat(s), and why and how it migrates.

Extending the Learning

Have the students create a map, similar to the one they created for their animal's migration, showing a movement pattern they make in their lives. Examples include: going to school every day, going on a vacation, or visiting a friend's house. Students should describe the movement, include a map key, a reason for why they make this movement, and how they get to where they need to go.

OBJECTIVES

Subjects & Disciplines

Biology

- Ecology
- Conservation

Geography

Teaching Approach

- Project-based learning

Teaching Methods

- Discussions
- Research
- Self-directed learning

Skills Summary

This activity targets the following skills:

- 21st Century Student Outcomes
 - Learning and Innovation Skills
 - Communication and Collaboration
 - Life and Career Skills
 - Initiative and Self-Direction
 - Productivity and Accountability
- Critical Thinking Skills
 - Analyzing
 - Applying
 - Creating
 - Evaluating
 - Remembering

- Understanding
- Geographic Skills
 - Acquiring Geographic Information
 - Analyzing Geographic Information
 - Answering Geographic Questions
 - Asking Geographic Questions
 - Organizing Geographic Information
- Science and Engineering Practices
 - Asking questions (for science) and defining problems (for engineering)
 - Obtaining, evaluating, and communicating information

National Standards, Principles, and Practices

COMMON CORE STATE STANDARDS FOR ENGLISH LANGUAGE ARTS & LITERACY

- CCSS.ELA-LITERACY.RST.6-8.7:

Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

- CCSS.ELA-LITERACY.SL.7.2:

Analyze the main ideas and supporting details presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how the ideas clarify a topic, text, or issue under study.

- CCSS.ELA-LITERACY.WHST.6-8.7:

Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.

- CCSS.ELA-LITERACY.WHST.6-8.8:

Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.

- Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6-12:

Research to Build and Present Knowledge, WHST.6-8.7

NEXT GENERATION SCIENCE STANDARDS

- **Disciplinary Core Ideas LS2.A: Interdependent Relationships in Ecosystems:**

- **Performance Expectations: MS-LS2-2:**

MS-LS2-2: Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.

- **Science and Engineering Practice 1:**

Asking questions and defining problems

- **Science and Engineering Practice 8:**

Obtaining, evaluating, and communicating information

Preparation

What You'll Need

MATERIALS YOU PROVIDE

- Crayons
- Markers
- Paper
- Writing utensils
- Scissors

REQUIRED TECHNOLOGY

- Internet Access: Required
- Tech Setup: 1 computer per classroom, 1 computer per pair, Printer, Projector

PHYSICAL SPACE

- Classroom

GROUPING

- Small-group work

RESOURCES PROVIDED: HANDOUTS & WORKSHEETS

- [Animal Migration Map Know and Need to Know Chart](#)
- [Animal Migration Map Rubric](#)

RESOURCES PROVIDED: UNDEFINED

- Monarch Watch: Monarch Butterfly Fall & Spring Migrations

RESOURCES PROVIDED: MAPS

- National Geographic: MapMaker 1-Page Maps
- Protecting Elk Migration in the Greater Yellowstone Ecosystem

BACKGROUND & VOCABULARY

Background Information

Mapping animal migration is an important way to understand more about the animals, their movement pattern, and their global relationship. Additionally, creating and reading maps are important skills, and help students to simplify complex patterns and gain new perspectives. Spatial representations are important tools students can use to aid in memory and learning. Utilizing different maps (e.g., state, country, and world maps) not only helps students learn geographical information, but also helps their understanding of geographic perspective and scaling.

Prior Knowledge

[]

Recommended Prior Activities

- [Collision! Human Impacts on Animal Migration](#)
- [Tracking Animal Migration](#)
- [Why and How Animals Migrate](#)

Vocabulary

Term	Part of Speech	Definition
animal migration	<i>noun</i>	process where a community of animals leaves a habitat for part of the year or part of their lives, and moves to habitats that are more hospitable.
detour	<i>noun</i>	unplanned or temporary path.

Term	Part of Speech	Definition
distract	<i>verb</i>	to divert or draw attention away from something.
ecosystem	<i>noun</i>	community and interactions of living and nonliving things in an area.
focal	<i>adjective</i>	central and important.
impact	<i>verb</i>	to influence or have an effect on something.
key	<i>noun</i>	an explanation of symbols and abbreviations used on a map, also known as a legend.
map	<i>noun</i>	symbolic representation of selected characteristics of a place, usually drawn on a flat surface.
map layer	<i>noun</i>	part of a map representing specific features of a place.
migration pattern	<i>noun</i>	predictable movements, in time and space, of a group of animals or people.
pole	<i>noun</i>	extreme north or south point of the Earth's axis.
scale	<i>noun</i>	distinctive relative size, extent, or degree.
solution	<i>noun</i>	an answer to a problem.
survival	<i>noun</i>	ability to live.
symbol	<i>noun</i>	something used to represent something else.
tracking	<i>noun</i>	process in which scientists and resource managers use technology to tag animals and map their movements.

For Further Exploration

Articles & Profiles

- [The Nature Education Knowledge Project: Animal Migration](#)
- [National Geographic: What a Trip! The Toughest Animal Migrations on Earth](#)
- [National Geographic: Nature's Most Impressive Animal Migrations](#)

Websites

- [Idaho Public Television: Animal Migration!](#)
- [National Geographic: Resource Library: Animal Migration](#)
- [National Geographic Kids: Animals](#)
- [National Geographic: Animals](#)

- [Arboretum, University of Wisconsin-Madison: Journey North](#)



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