

RESOURCE LIBRARY | ACTIVITY : 50 MINS

Collision! Human Impacts on Animal Migration

Students engage in a gallery walk of photographs that illustrate how human activities and infrastructure (like highways and wind turbines) can impact animal migration. Students are introduced to the scope of the unit and its culminating map project and presentation. Finally, they create a *Know & Need to Know* chart to engage with the unit's driving question.

GRADES

6, 7, 8

SUBJECTS

Biology, Ecology, Conservation, Engineering, Geography

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1 Resource, 1 PDF

OVERVIEW

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For the complete activity with media resources, visit:

<http://www.nationalgeographic.org/activity/collision-human-impacts-animal-migration/>

In collaboration with



DIRECTIONS

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

1. Spark student interest in animal migration by teasing the *Human Impacts Photo Gallery*.

- Place the images from the *Human Impacts Photo Gallery* around the perimeter of the classroom.
- Ask students to look at the images, then elicit their ideas about what they think the topic of discussion is, based on these photos.
- Establish that the topic is animal migration, and elicit students' background knowledge.
Ask:
 - *What is animal migration?*
 - *Why do you think animals need to migrate?*
 - *What animals do you know that migrate?*
 - *What problems do you think migrating animals could encounter?*
- To confirm and extend students' prior knowledge, project and read aloud the *Migration* encyclopedic entry.

2. Highlight how wind turbines impact animal migration.

- Project the photograph of the wind turbine from the *Human Impacts Photo Gallery* for students to see. Hide the image caption.
- Have students think-pair-share to discuss how wind turbines could be impacting animal migration and to discuss their responses to the image.
- Ask the class:
 - *Why are wind turbines important?* (Possible responses: They provide a cost-effective, clean, sustainable source of energy.)
 - *How can wind turbines be deadly?* (Possible responses: Turbines can kill migrating birds, bats, and insects, as well as animals on the ground).
- To build on students' responses, reveal the image caption for all students to see, and read aloud.

3. Allow students to explore the *Human Impacts Photo Gallery*.

- Direct students' attention again to the *Human Impacts Photo Gallery* hanging around the classroom. Emphasize that students' perspectives about the photos will likely change or expand over the course of the unit.
- Distribute a supply of two different colors of sticky notes to each student. Mention to students that the completed sticky notes will be kept and reused later in the unit.
- Explain the activity:
 - Sticky note color number one: Students will examine each photograph in the gallery walk and answer the following question on their sticky note: *What is depicted in the photograph (e.g., highway) and how might it impact a migrating animal?* They should stick their note on the wall next to the photograph.
 - Sticky note color number two: Next, direct students to revisit the gallery walk and read the captions on the underside of the photographs. On this sticky note, students should record their responses to the images after reading the captions. Again, students should stick their notes on the wall next to the photograph.
- Bring students back together as a class and invite volunteers to share their ideas and feelings about each photograph.
- Keep the sticky notes associated with their respective image, as they will be reused later in the unit.

4. Introduce the *Detours and Distractions: How Humans Impact Migration Patterns* unit project and complete a class *Know & Need to Know* chart.

- Drawing on the gallery walk and students' reactions to the images, elicit student responses to the unit driving question: *How can we help solve the problems faced by animals on the move?*
 - After a few volunteers have shared, introduce students to the unit project: Student groups will create a multilayered paper map that shows a particular animal's migration pattern, how its migration is impacted by humans, ecosystem effects of migration, and recommended solutions to mitigate human impacts on migration. Explain that students will also present an argument supported by empirical evidence to convince stakeholders to implement recommended solutions.
- Encourage students to pair up and explain to each other what they need to do to have a successful unit project.
- As a class, create a *Know & Need to Know* chart based on students' understanding and questions about the unit. This will develop a sense of ownership and help guide student

work over the course of the unit.

- Use the process below to elicit students' ideas and questions related to the unit, which can be revisited over time. Record students' responses and display them in the classroom.
 - Ask students to discuss the following questions with a partner and then share their responses with the class:
 - *What do we already know about animal migration and how humans impact it?*
 - *What do we need to know about animal migration in order to create a map that shows how humans impact animal migration?*

5. Discuss opportunities for further action.

- Consider ideas for students to take additional action after the unit concludes to continue momentum toward helping end negative human impacts on animal migration and extend the impacts of their project work into the local or global community. Ideas for further action include:
 - Identify local migratory organisms. Create a backyard "pit stop" for the most vulnerable organisms, such as a bat box or specific native flowering plants.
 - Author a class letter to Congress, local government, or a local business to encourage an animal migration solution (e.g., building a wildlife crossing bridge, installing a culvert). Students can submit copies of their maps and presentations as evidence.
 - Download the [Animal Tracker app](#) or [eBird app](#) and follow and add to scientific knowledge about migrating animals through student citizen science field work.

Tip

Step 1: Hang the *Human Impacts Photo Gallery* photographs around the room a few days before you launch the activity to build interest in the unit.

Tip

Step 3: Hang each photo from the *Human Impacts Photo Gallery* on a larger sheet of paper so that the sticky notes can be stuck on the larger paper for easier access later.

Modification

Step 3: If space is limited, show the photos to the class as a slideshow and have students record and share their responses on paper or digital devices.

Modification

Step 3: Instead of different colored sticky notes, students could also use colored pencils to respond to the different prompts.

Tip

Step 3: You may also choose to keep the *Human Impacts Photo Gallery* hanging throughout the duration of the unit; students will revisit these images in Lesson 3 during the [Exploring Solutions to Human Impacts on Animal Migration](#) activity.

Tip

Step 4: To learn more about facilitating a *Know & Need to Know* chart in project-based learning, this [PBL Works](#) blog provides explanations and examples.

Tip

Step 4: You can also record the *Know & Need to Know* chart with interactive tools or on a place easily accessible online.

Informal Assessment

Use students' answers from the various class and partner discussions, as well as their responses during the gallery walk and *Know & Need to Know* chart, to assess initial understanding of human impacts on animal migration.

Extending the Learning

- Find a story or fact about a migratory animal in a newspaper, magazine, or on the news. Students can bring these into the next class or share them through a private class online discussion board.
- Visit a local zoo, aquarium, or conservation center. This provides opportunities for students to see animals they might study, as well as add to their knowledge about animal migration and the need for conservation.

- Have students free-write in response to one of the photographs or a new photograph.
- Have students find their own photographs that showcase animal migration at the intersection of human activity.
- Visit a local art museum. Prompt students to look for representations of animals, human interactions, or impacts on animal migrations.

OBJECTIVES

Subjects & Disciplines

Biology

- Ecology
- Conservation
- Engineering

Geography

Learning Objectives

Students will:

- Explain their thinking about why human activity can harm animal migration.
- Explain to someone else what they need to do to create a successful unit project.
- Identify some things they know and some things they need to know about animal migration and how humans impact it.

Teaching Approach

- Project-based learning

Teaching Methods

- Brainstorming
- Discussions
- Multimedia instruction

Skills Summary

This activity targets the following skills:

- 21st Century Student Outcomes
 - Learning and Innovation Skills
 - Critical Thinking and Problem Solving
- 21st Century Themes
 - Global Awareness
- Critical Thinking Skills
 - Understanding
- Science and Engineering Practices
 - Obtaining, evaluating, and communicating information

National Standards, Principles, and Practices

COMMON CORE STATE STANDARDS FOR ENGLISH LANGUAGE ARTS & LITERACY

- **CCSS.ELA-LITERACY.SL.7.1:**

Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on Grade 7 topics, texts, and issues, building on others' ideas and expressing their own clearly.

NEXT GENERATION SCIENCE STANDARDS

- **Crosscutting Concept 1:**

Patterns

- **Crosscutting Concept 2:**

Cause and effect: Mechanism and prediction

- **Crosscutting Concept 7:**

Stability and change

- **MS. Ecosystems: Interactions, Energy, and Dynamics:**

MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

- **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 6:**

Constructing explanations and designing solutions

- **Science and Engineering Practice 8:**

Obtaining, evaluating, and communicating information

Preparation

What You'll Need

MATERIALS YOU PROVIDE

- Dry erase markers
- Markers
- Sticky notes, two colors, multiple sheets per student
- Whiteboard, chalkboard, or chart paper

REQUIRED TECHNOLOGY

- Internet Access: Required
- Tech Setup: 1 computer per classroom, Monitor/screen, Printer, Projector

PHYSICAL SPACE

- Classroom

SETUP

Print the photos from the *Human Impacts Photo Gallery* and hang them around your classroom. This can be done a few days before the first day of the unit to prime the students.

GROUPING

- Large-group instruction
- Large-group learning

RESOURCES PROVIDED: HANDOUTS & WORKSHEETS

- [Human Impact Gallery](#)

RESOURCES PROVIDED: REFERENCE

- Migration

BACKGROUND & VOCABULARY

Background Information

Animal migration is a pattern of behavior in which animals travel from one habitat to another in search of food, better conditions, or reproductive needs. Many different animal species migrate, and there are many different types of migration. Some are well-known like the monarch butterfly or the Arctic tern, which travel across countries, while others are lesser known, like plankton that migrate up the water column during the night, and down during the day.

Animal migration is an important component of many ecosystems, and migratory animals contribute to human economies, such as recreation, hunting, and tourism, in addition to having cultural and intrinsic value. Unfortunately, human infrastructure and behavior have altered animal migration patterns. From building roads that act as barriers to wildlife crossings, to constructing wind farms that create hazards for birds, bats, and insects, to causing climate change that renders ecosystems uninhabitable for many native organisms, humans are impacting animal migration.

Prior Knowledge

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Recommended Prior Activities

- None

Vocabulary

Term	Part of Speech	Definition
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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.
argument	<i>noun</i>	reason or set of reasons given with the aim of persuading others that an action or idea is right or wrong.
detour	<i>noun</i>	unplanned or temporary path.
ecosystem	<i>noun</i>	community and interactions of living and nonliving things in an area.
empirical	<i>adjective</i>	able to be proved with evidence or experience.
evidence	<i>noun</i>	data that can be measured, observed, examined, and analyzed to support a conclusion.
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.
migration route	<i>noun</i>	path followed by birds or other animals that migrate regularly.
solution	<i>noun</i>	an answer to a problem.
species	<i>noun</i>	group of similar organisms that can reproduce with each other.
stakeholder	<i>noun</i>	person or organization that has an interest or investment in a place, situation, or company.
wind turbine	<i>noun</i>	machine that produces power using the motion of wind to turn blades.

For Further Exploration

Articles & Profiles

- [Wired: See How Human Activity is Changing Animal Migration Patterns](#)

Books

- [W. W. Norton & Company: Where the Animals Go](#)
- [University of California Press: Animal Migration: Remarkable Journeys in the Wild](#)
- [Dawn Publications: Going Home: The Mystery of Animal Migration](#)
- [National Geographic: Great Migrations: Whales, Wildebeests, Butterflies, Elephants, and Other Amazing Animals on the Move](#)

Websites

- [National Geographic: Resource Library: Animal Migration](#)



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