

Bay Area Scientists in Schools Presentation Plan

Lesson Name Why do animals migrate?

Presenter(s) Rachel Frank

Grade Level 4th **Standards Connection(s)** Ecosystems- Animal Migrations

Next Generation Science Standards:

3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

3-LS4-4. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.

<i>Science & Engineering Practices</i>	<i>Disciplinary Core Ideas</i>	<i>Crosscutting Concepts</i>
<p>Analyzing and Interpreting Data Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.</p> <p>Analyze and interpret data to make sense of phenomena using logical reasoning. (3-LS4-1)</p>	<p>LS2.C: Ecosystem Dynamics, Functioning, and Resilience</p> <p>When the environment changes in ways that affect a place’s physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die. (secondary to 3-LS4-4)</p> <p>LS2.D: Social Interactions and Group Behavior</p> <p>Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and</p>	<p>Cause and Effect</p> <p>Cause and effect relationships are routinely identified and used to explain change. (3-LS2-1),(3-LS4-3)</p> <p>Connections to Nature of Science Scientific Knowledge Assumes an Order and Consistency in Natural Systems</p> <p>Science assumes consistent patterns in natural systems. (3-LS4-1)</p>

Common Core Standards:

ELA/Literacy:

RI.3.3 Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.

SL.3.4 Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.

Mathematics:

MP.2 Reason abstractly and quantitatively.

MP.5 Use appropriate tools strategically.

FOSS Connections:

Grade 4 Module: *Environments*

Abstract: This lesson will explore how and why animals move across the landscape of the world. Students will learn about the grey whale's migration along the California coast, the recent discoveries of the world's longest insect and bird migrations, and others. Activities will include coloring pictures of animals and plotting migrations on a map, covering some world geography as well.

Vocabulary/Definitions:

- **Reproductive migration:** The movement of animals to bear young
- **Latitudinal migration:** movement of animals between north and south
- **Nomadic migration:** movement of animals between not known locations- what looks to us like wandering, but are animals following resources
- **Seasonal migration:** The most common kind of migration, animals moving with the seasons

Materials:

What you'll bring with you:

- coloring books
- inflatable globes

What students should have ready (pencils, paper, scissors):

- coloring materials

Classroom Set-up:

I will have a powerpoint presentation including pictures, so I'll need a projector

Classroom Visit

1. Personal Introduction:

2 Minutes

My name is Rachel Frank, and I'm a college student studying ecology.

Ecology is basically the study of relationships of things in nature. I study how organisms work with one another in their environment. And one thing that I find really interesting is that some animals are not just part of one environment, but several different environmental communities, sometimes across many different places in the world. Some animals, even though they are very small, can travel thousands of miles.

We're going to look at some examples of animals that travel across great distances and look at why they do it.

2. Topic Introduction:

8 Minutes

Students will form groups and brainstorm on the following questions: What kinds of animals migrate? Why do they migrate (e.g. food, weather, reproduction)? Are there any animals that migrate past your school? How many ecosystems is a migrating animal a part of? What do humans do/ make that can interfere with migration (e.g. roads, water systems, hunting/fishing, fences)?

3. Learning Experience(s):

30 Minutes

Demonstrations, hands-on activities, images, games, discussion, writing, measuring... What will you do, what will kids do? Describe in order, including instructions to kids.

Students will receive worksheets with various animals. Each worksheet will have a picture of the animal, a map of its range, and a few questions related to the animal. While the students color each animal, I will tell them where animals migrate and why.

Wildebeest and Zebra- an example of nomadic migration; also constricted by human influences now.

Monarch butterflies - an example of multi-generational migration; threats include logging in Mexico and pesticide use on milkweed across North America.

California Gray Whale- another example of latitudinal migration; reproductive migration. An example of a migratory animal that was once threatened, which now is back at a healthy population size.

Each student will also get an inflatable globe and stickers, to mark where the migrating animals go & get a better idea of the global interconnectedness of ecosystems through migratory paths

Many of the world's great migrations are threatened; one quarter of the world's terrestrial migratory animals no longer migrate. Discuss how migration is integral to species survival and how ecosystem conservation helps these animals survive.

4. Wrap-up: Sharing Experiences and Building Connections

10 Minutes

Putting the pieces together – how will students share learning, interpret experience, build vocabulary?

Compare/ contrast different species' migrations from what we've learned.

Review terms: terrestrial migration, latitudinal migration, nomadic migration, reproductive migration.

Discuss how ecosystems are connected.

5. Close & Connections:

10 Minutes

How can kids learn more? Thanks and good-bye! Clean-up.

I'll close with a story about how humans can help, too.

TOTAL 60 Minutes

Differentiated Instruction:

English Learners: Repeat directions, if necessary, and physically model how to map out migration patterns. Write vocabulary words on the board and read words aloud. Vocabulary words can also be visually demonstrated using an illustration or action and redefined in very simplistic terms.

Advanced Learners: Have students think of other animals that may migrate. Students should explain why they think these animals migrate.

Follow-up Possibilities

ELA Activity:

-Suggest students write a letter explaining "How we learned about animal migration?"

Reading Connections:

Great Migrations by Elizabeth Carney Illustrated with photographs. National Geographic Children's Books. 48pp. Trade ISBN 978-1-4263-0700-3, \$17.95. Library ISBN 978-1-4263-0701-0, \$27.90. (3-8) This book captures the motion of migrating animals in photographs and describes how these incredible journeys are driven by the animals' survival mechanisms. Index.
<http://www.nsta.org/recommends/ViewProduct.aspx?ProductID=20607>

Monarch and Milkweed. Helen Frost. Illustrated by Leonid Gore. Atheneum Books for Young Readers, an imprint of Simon & Schuster Children's Publishing Division. 40pp. Trade ISBN 978-1-4169-0085-6, \$17.99. (P) In one of nature's most perfect relationships, the milkweed plant is the food supply for the monarch butterfly as their life cycles complement each other and the seasons change. While reading simple factual narratives and viewing colorful illustrations, young readers can make observations of change over time.
<http://www.nsta.org/recommends/ViewProduct.aspx?ProductID=19079>

- Being Caribou: Five Months on Foot With a Caribou Herd. Karsten Heuer. Walker & Company. 48pp. Trade ISBN 978-0-8027-9565-6, \$17.95; Library ISBN 978-0802795663, \$18.85. (E) The amazing five-month migration of a caribou herd to the Alaskan calving grounds is articulately told through firsthand accounts of the author. Vivid details and extraordinary photographs vicariously take readers on the journey, and readers become aware of the importance of protecting these grounds. Maps, Index, Suggested Bibliographic and Internet Resources.
<http://www.nsta.org/recommends/ViewProduct.aspx?ProductID=18460>
- The Journey: Stories of Migration by Cynthia Rylant Newbery Medalist Cynthia Rylant joins naturalist painter Lambert Davis to create a vibrant picture book that follow the migratory journeys of some magnificent creatures: locusts, gray whales, American silver eels, monarch butterflies, caribou, and terns. Rylant's lively, poetic prose and Davis' exquisite, dramatic paintings offer an awe-inspiring look at the animal world and the outstanding tests of endurance and strength that the animals have undergone for centuries, and which continue to cycle on and inspire us today. <http://www.scholastic.com/teachers/book/journey-2>
- Serengeti Migration: Africa's Animals on the Move by Lisa Lindblad Spotlights one of the most awesome natural spectacles in the world, the wildebeest and zebra migration through the Serengeti National Park in East Africa, across its wide lakes and rivers, and through the

dangerous predators preying on the migrating animals. <http://www.amazon.com/Serengeti-Migration-Africas-Animals-Move/dp/B005Q5ZE28/>

- **How Animals Migrate (One the Move: Animal Migration – series)** by Susan Labella
<http://www.amazon.com/How-Animals-Migrate-Move-Migration/dp/0836884213>

Mathematics Activity: Students can research how many animals in each category migrate. This data can be used to create a scaled picture or bar graph. The mean and median can then be calculated from the graph's data.

Other:

Great Migrations: Why Animals Migrate (National Geographic) Students discuss reasons animals migrate. Then they watch video clips from the series Great Migrations, organize factual information about species, and compare and contrast two migratory species.

http://education.nationalgeographic.com/activity/why-animals-migrate/?ar_a=1

Related Resources: http://education.nationalgeographic.com/education/program/great-migrations-education-outreach/?ar_a=1

3-DVD Set: <http://shop.nationalgeographic.com/ngs/product/dvds/animals-and-nature/animals-and-wildlife/great-migrations-3-dvd-set>

Migration (Brain Pop Jr) Short video clip and activity ideas – map animals, create a short play or puppet show, research and prepare traditional celebrations that highlight a particular animal migration, list reasons why humans move, research if your school is along the path of any animal's migration. <http://www.brainpopjr.com/science/animals/migration/grownups.weml>

Migratory Animal Print-Outs (EnchantedLearning.com)
<http://www.enchantedlearning.com/coloring/migrate.shtml>