



Birds on the Move

Lesson Plan

Overview

In this lesson, students will be introduced to the idea of animal migrations and, in particular, the migration of one Swainson's Hawk. Using satellite imagery of the earth, students will observe the migrational path of the Swainson's Hawk from northern Minnesota to the southern portion of South America. Not only will students study the migratory path of the hawk, they will also be able to observe how the vegetation in a particular region of the earth changes with the seasons. When viewed from space, seasonal vegetation change can be tracked across entire continents, and large scale "green-up" or "brown-down" of regions through time can be explored. Specifically, students will explore the actual path of the Swainson's Hawk relative to time-lapsed satellite images that reveal the relative "greenness" of North and South America over an 8-month period of time. Students will use this imagery to investigate the connections between migratory patterns of the hawk and seasonal climatic change.

Module	Earth Systems Foundations "Animals, Migrations, and Seasonal Changes" Theme
Lesson Level	Entry
Mathematics Connection	<ul style="list-style-type: none"> Children develop spatial visualization skills as they view satellite images of the earth
Science Connections	<ul style="list-style-type: none"> Students will examine color changes in satellite images representing the green-up and brown-down of earth Students will explore the notion of animal habitat Students will explain why animals migrate during different seasons
Technology Connections	<ul style="list-style-type: none"> Students will use satellite imagery to observe the migratory path of a Swainson's

	<p>hawk</p> <ul style="list-style-type: none"> • Students will learn that animals can be located using satellite technology
Lesson Assessment Tools	<ul style="list-style-type: none"> • Assessment and Standards Table (Word) • Assessment Activity Description (below) • Authentic Assessments (below)

Materials

- This lesson requires Powerpoint Reader ([Windows](#) / [Mac](#)), [Quicktime Player](#), and [Adobe Reader](#).
- [Did you Know? Activity Sheet](#) (Powerpoint)
- [Hawk Migration Photo Essay](#) (Powerpoint)
- [On the Move Assessment](#) (Powerpoint)
- [Pixel the Satellite Animation](#) (Quicktime)
- World map
- Optional: Tracking the Motion slideshow ([Powerpoint](#)), stored in the "Osprey Journey" folder

Vocabulary Words

Swainson's Hawk: A hawk commonly found in North and South America

Vegetation: The plants of an area or region

Northern and Southern Hemisphere(s): half of the earth as divided by the equator

Habitat: The environment in which an animal lives

Procedure

1. Assessing Prior Knowledge: Animal migrations are among the most fascinating science topics for children. Some primary students may already be aware that animals spend different parts of the year in different locations. Some of the best known examples of animal migration involve birds. Many birds spend the year in more than one location, often flying for long periods of time in transition between winter and summer locations. Begin this lesson by assessing students' prior knowledge about bird migrations.

Initial questions for discussion might include:

- What time of year do most birds build their nests? (*Springtime*)
- Before building their nests in the spring, where do you think the birds *used* to live? (*Motivate the idea that many kinds of birds are moving into the area in the spring from some other location - hence, they must migrate.*)
- Do you see more or fewer birds in the winter, or in the summer? Why? (*Summer - in the winter, many birds fly [migrate] to warmer climates.*)

2. Contextual Preparation: Distribute the "Did You Know...?" activity sheet. As a class or in small groups, students may discuss the various facts about bird migrations contained in the activity sheet. These questions are meant to heighten students' curiosity about bird migrations. During this discussion, it is very helpful to have a world map available so that you may point out the geographic features listed on the Did You Know? activity sheet to emphasize some of the amazing facts about bird migrations.



Following this discussion, show students the Pixel the Satellite animation as a bridge into the lesson activity described below. The animation transcript follows:

1. "In this lesson, we'll explore the life of a very interesting bird called a hawk.
2. There are about 16 different kinds of hawks that live on our continent of North America.
3. Did you know that some hawks, like the Swainson's Hawk (gesturing towards the Swainson's Hawk on the blackboard), don't spend the whole year in North America?
4. Instead, they migrate thousands of miles to the southern part of South America and back every year! (shows map on the blackboard)
5. Of course, these hawks can't buy a ticket on an airplane—they have to fly all this way by themselves!
6. Why do you think a bird would want to fly so far to spend several months of the year thousands of miles away from its nest in North America?
7. And, what clues do you think we might be able to gather in order to understand a hawk's migration?
8. Well, I just heard the news that our fine feathered friends are soon to be on the move, so your teacher will take it from here.
9. See you soo-oon!"

3. Student Activities: Students should view (either on individual computer work stations or projected for the whole class) the Hawk Migration Photo Essay. This photo essay is "narrated" by Pixel the Satellite. On each page of the photo essay, Pixel directs questions and comments toward the students with the intent of arousing their curiosity about the hawk migration. You may wish to discuss these questions as a whole class, or have students share their ideas in more

intimate groups. In either case, the teacher should point students toward the connections between seasonal change, habitat and vegetation of regions of the earth (as viewed by satellite), and migrational tendencies of birds. All of the locations of the hawk shown here are from *actual hawk location data* gathered by scientists. Because the satellite imagery shown in this activity sheet shows North and South America, it will be helpful to the students to point out these areas in the classroom on a world map.

4. You may also want to watch the *Tracking the Motion* slideshow, which discusses in more detail how scientists track animals with satellites.

Assessment: Distribute the On the Move Assessment sheet. Students should be expected to analyze the image to determine what season it is in a particular location on the image. Students should also put an “X” on a location that they might expect to find a migrating bird given the environmental clues they can decipher from the satellite image. This assessment will help illuminate students’ understandings of seasonal change, as well as bird ecology and migration.

Please see also the [Assessment and Standards table](#) of this lesson.

Extension of Lesson for Authentic Assessment

Students may choose to write or narrate a story based on the migratory journey of the hawk. The story might include what the hawk might have seen on the ground as it was flying, the changes in landscape it may have seen on its journey, etc. Students may choose to draw a picture from the perspective of the hawk as an additional element of the story.

Connections

Several of the concepts introduced in this lesson are further developed throughout the [Migrations del Mundo](#) module. In particular, a more thorough treatment of investigating the migrations of birds is given in the [Hawk in Flight](#), [Osprey Journey](#), and [Separate Vacations](#) lessons.

Acknowledgments

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