



Osprey Journey Lesson Plan

Overview

Ospreys are large, fish-eating birds that can be found throughout the United States. These birds have highly specialized migration patterns in that they often return to the same location year after year. In the Osprey Journey lesson plan, students will investigate the migration route of one bird, Osprey B4, using information gathered from satellites to track birds over a two-year period. By plotting data points on a map using longitude and latitude coordinates, students will “discover” that Osprey B4 follows nearly identical migratory paths in 1997 and 1998. Students will compare their graphs with maps of B4's migrations that have been plotted by bird migration scientists. The students will engage in a variety of discussion questions that encourage them to think about the seasonal migrations of the Osprey.

| | |
|--|--|
| Suggested Lesson Sequence | Please see the Migrations del Mundo and Maps and More module descriptions. |
| Lesson Level | Extended |
| Science Connections (Keywords in BOLD) | Students will investigate how osprey birds migrate to the same place each year over great distances. |
| Math Connections (Keywords in BOLD) | Students will graph points representing osprey migration on a coordinate grid using latitude and longitude points. |
| Technology Connections (Keywords in BOLD) | Students will explore how satellite communications technology is used to track birds in flight. |
| Lesson Assessment Tools | <p>Assessment and Standards Table (Word)</p> <p>Assessment Activity Description (below)</p> <p>Extensions for Authentic Assessment (below)</p> |

Materials

Powerpoint Reader ([Windows](#) / [Mac](#)), [Quicktime Player](#), and [Adobe Reader](#).

Migration Tracking activity sheet ([Word](#))

Scientists' Migration Maps ([Word](#))

Overhead transparency of Scientists' Migration Maps (optional)

Migration Tracking Questions ([Word](#))

Osprey Photo Essay ([Powerpoint](#))

Tracking the Motion interactive slide show ([Powerpoint](#))

Colored pencils

About the slideshows: These slideshows are not meant for students to read through on their own. They are intended to be viewed together, to outline and illustrate a discussion of the lesson's themes, led by the teacher. You might have a different student read each slide's text.

Vocabulary

Migration: Movement between two geographic areas that is important for the survival and reproduction of migrating animals

Migratory Path: The route an animal takes during migration

Procedure

I. Assessing Prior Knowledge

To begin this lesson, engage students in a conversation about birds. If students have recently completed the [Hawk in Flight](#) lesson, you can review what they have learned about migration so far. If this is your first lesson about migration, you might begin by making a list of birds that live in your area and identifying which birds remain throughout the year and which "go away" in the winter months. Ask students why they think certain birds might go away for part of the year and make a chart listing the reasons. The teacher should then introduce the students to the osprey, a migratory bird that returns to the same nest year after year. There are various websites on the Internet that contain excellent information about osprey.

II. Contextual Preparation

Introduce the activities in this lesson by viewing the [Osprey Photo Essay](#) with your students.

This collection of photos will highlight some of the things that make osprey such fascinating birds.

As students investigate the migratory path of the osprey, they will use information gathered from satellites to track the a bird over a two year period by plotting data points on a map with longitude and latitude coordinates. To prepare students for this activity, they should be introduced to the concepts of longitude and latitude - grid lines (degree markings) on a map that help us orient ourselves and locate particular places. If students have never plotted points on a coordinate plane before, they may learn more of the mathematical connections in the [Search and Rescue](#) lesson plan.

Students may also view the [Tracking the Motion](#) slide show in order to learn about how animals may be tracked over long distances using radio collars and satellite technology.

III. Student Activities

1) Pass out the [Migration Tracking](#) activity sheet. In this activity, students will plot on maps the actual locations of an osprey (named "Osprey B4") during its 1997 and 1998 fall migrations. For each entry in the data tables, students should identify the location of B4 based on the longitude and latitude data provided for each date. After plotting the points, students should find out that Osprey B4 follows nearly identical paths in 1997 and 1998 as it migrates to the same place each year. Students may compare their maps with the [Scientists' Migration Maps](#) from the [Raptor Center at the University of Minnesota](#).

2) Using their data and maps, students should answer the [Migration Tracking Questions](#). These questions are designed to help students interpret the data table and graphs in relation to the migratory path of the Osprey. Students should be able to locate the position of the Osprey using latitude and longitude at a particular date. In comparing the paths of Osprey B4 in 1997 and 1998, students will discover that ospreys follow nearly identical paths each year. If students plot the points correctly, they will find that their maps are nearly identical to the scientists' maps.

Answers to the Migration Tracking questions:

1. Looking at the data table and your graph of the migration path of Osprey B4 in 1997, where did Osprey B4 begin the journey (city and state)?
Orono, Minnesota
2. What is the latitude and longitude where the journey began?
Latitude: 45 N Longitude: 94 W
3. Where did Osprey B4 end the journey? *E of Villahermosa, Mexico*
What is the latitude and longitude of where the journey ended?

Latitude: 18 N Longitude: 92 W

4. How many days did it take Osprey B4 to complete its journey in 1997? *19*
Why do you think Osprey B4 migrated during this time? *Season changed; better food source in warmer climates.*
5. What is the last date given for the osprey location in 1997? *Oct. 17*
What is the first date for the osprey location in 1998? *Sept. 19*
Are the locations of the osprey for the two dates the same or different? *Different*
What do you think the osprey did between these dates? *Osprey migrated back to nesting site in Orono, Minnesota.*
6. How does the migratory path of Osprey B4 in 1997 compare with the path in 1998? *Path is very similar.*
What do you think the Osprey B4 migration path might have look like in 1999? *Path would look nearly the same.*
7. Ospreys eat only fish. Where would you expect to see an Osprey nest? *Near a river or lake.*
If you were to find an Osprey nest outside, what would be your plan to track its daily movements? *Answers will vary, although students may talk about using binoculars and observing at regular times throughout the day.* Would you be able to track an Osprey's seasonal movements by standing near its nest? *No* Explain. *Ospreys travel great distances as the seasons change.*
8. How do you think seasonal migration data for Osprey B4 was collected? *Osprey movements were tracked by satellites.*
9. How was math helpful in tracking the migration path of Osprey B4? *Students use coordinate systems of longitude and latitude to track osprey migrations.*

IV. Assessment

In this lesson, students will learn about the migratory pattern Osprey B4, a bird that spends half of each year in Minnesota, and the other half of the year in Mexico. Students should be able to explain the migration path of Osprey B4 by sharing how longitude and latitude readings may be used to locate and track an animal in migration. Students should also recognize that, like many other birds, the Osprey typically migrates to the same location(s) every year. Students should also be able to distinguish between the daily movements of Ospreys and seasonal migrations tracked by satellites. These issues are pursued in the 9 discussion/assessment questions that appear on the [Migrations Tracking Questions](#) activity sheet.

Lesson Extensions for Authentic Assessment

1. Students may wonder how scientists use satellites to track birds. Show the students the [Tracking the Motion](#) slide show that explains how scientists attach small electronic devices to birds that communicate with satellites.
2. In the [Biological Clock](#) lesson, the concept of photoperiod was introduced as a means for animals to know when to begin their migrations. Students could explore this concept by clicking on this website (http://riemann.usno.navy.mil/AA/data/docs/RS_OneDay.html) and entering the dates the Osprey B4 began its migrations in 1997 and 1998. How similar are the photoperiods in each case? Is it likely that the photoperiod contributed to Osprey B4's desire to begin to migrate?
3. Ask students to write a creative short story in which they imagine themselves as Osprey B4. This story could focus on what they think it is like to be an osprey before, during, and after "their" migration. In their stories, students should include information about migration that they learned in the lesson.