

Local Flights The Classroom's Tropical Connection

Youth Leader & Educator Activity by Jeff Cantrell



Materials:

- one compass per group;
- forestry flagging (brightly colored string will work) to mark off the orienteering course;
- 4 – 6 zip lock baggies;
- marker and index cards

Class Time: two class periods

Preparation: Mark off migration course.

Vocabulary: adaptation, habitat, hazards, niche, migration, orienteering

Introduction

Every spring and fall, our region sets the stage for a fascinating natural phenomenon, the migration of thousands of Neotropical songbirds & shorebirds to/from their wintering grounds in Latin America. Roughly, half of Missouri's birdlife are migrants spending their winter season in the Caribbean, Central or South America. They make up one of three categories of North American birds: **year-round resident** birds, **Near-Arctic migrants** (nesting in Canada's boreal forest or tundra habitats; then wintering in lower latitudes) and the third classification, the **Neotropicals**.

It is not easy being a migratory bird, especially these days. They have many obstacles to avoid or overcome. Habitat changes on both destinations and their "stop-over" habitats highly affect their populations. Other dangers include guide wires of cell towers, window collisions, enduring with non-native species (from winter creeper to house cats) and the misuse of many pesticides.

There are a variety of practices people can implement in their daily lives to help our native birdlife. This scenario sets up the basis for a classroom's Project Based Learning unit. The conservation practices and student solution ideas are suitable for PBL, having students investigate and respond to authentic and complex problems or challenges in their real world.

I use a compass and orienteering exercise for university's pre-service teachers, high school clubs like Future Teachers of America, and in educator training classes to give the educator background, manipulatives, and different teaching strategies. The summary of the compass application gives the students scrambled content vocabulary at each station they are orienting toward along the route. At the end of the exercise, the student group will possess a list of vocabulary (hints) reinforcing the life history or migration destination and hurdles of the chosen bird (perhaps the ruby-throated hummingbird, house wren or oriole in their yard). These terms may be starting points of research for a PBL unit.

Migration Course Set-up & Compass Basics

The class will need one compass per group of students.

There are many types of compasses, for a beginning class it is best to use the type with a hard plastic, flat handheld base plate. The red end of the needle always points to magnetic north. Exam the compasses before the activity to make sure they are in good working order. Compass readings may be inaccurate if held close to certain types of jewelry, binoculars, or anything else containing metal.

Instruct the students to turn the base plate to match the coordinates provided. Students will rotate the bottom plate and the round compass housing where the coordinate (the declination number) and the base plate arrow line up. Make sure the students are holding their compasses level in front of them with the arrow on the base plate pointed in the direction they wish to move. Students should rotate their hand or body so where the compass housing's "North" lines up with the red arrow inside the housing.

The students should walk in the direction of the coordinates (base plate arrow) while keeping the arrow aligned with "North" on the compass the whole time. The "heading" is the direction you want to travel, and it is measured in degrees (e.g. East = 90 degrees, Northwest 320 = degrees).

If you would like more direction, contact your local Missouri Dept. of Conservation, scouting office or me (jeff.cantrell@mdc.mo.gov).

Map out a simple (three- to five-point) orienteering course for the class outside in the school grounds or nearby park. First, wrap flagging or bright string around a tree, fence post, utility pole, etc. On each flagging, fold in a zip-lock bag where it is positioned so the students can read it. One index card should be placed in each bag.

Prior to each activity, the instructor(s) should run through the course. Note: To assure students understand how to use the equipment, it is recommended for the course to be fashioned where the orienteering points are not all within view from the original spot. Instructors positioned with their back to the starting point will record the heading in degrees of their first landmark. This heading will be given to the students as they start their migration from the instructor.

Students will begin by turning the compass housing so this heading lines up with the direction of travel arrow on the base plate. Then turning their bodies so the magnetic needle lines up with the north sign; they proceed walking toward the first landmark.

Next, the instructor backs up to that landmark, faces the second landmark, and takes a compass reading. Write down the heading on the index card at the first landmark. The card will tell students which direction to continue. Follow through the course, writing compass headings on index cards at each landmark. Students will use these headings to locate successive landmarks.

After you have mapped the migration course, go back to each landmark and put a letter or some letters from a scrambled word on each index card. This is a good way to check and see if the student group stayed on course. Examples of scrambled words could be nocturnal, flight, migration or feather. At each landmark, students will record the letters. The students will then unscramble the word(s) when their migration is over.

Depending on the students' skill-level, the instructor may want to add more than one course overlapping, thus student groups having different words to unscramble and makes the course more challenging. This will ensure students use compass readings and not visual cues to find the landmarks.

Procedure

1. Ask students, how they know how to get from one place to another? The discussion should include experience (memory), verbal directions from someone else, signs, maps, phones etc. Ask them, how a bird knows where to travel? Answers may include some of the same ways people find direction, such as memory and landmarks. What about direction for migration? How does a bird travel to a place it has never been before? Tell the students they are going to take an imaginary migration. They may go over some life history information of the bird they select to research (spotted sandpiper, purple martin, and Baltimore orioles are suitable class suggestions; see websites listed in the extension for research resources).
2. Divide the class into small cooperative groups (ideally 2 or 3 students). Demonstrate use of a compass to the class. Give each group a compass and have them practice with each other. Tell them to practice by finding a particular landmark, like a flagpole or basketball goal post, and determine its compass heading (e.g., 224 degrees, 90 degrees, etc.). The groups are responsible for making sure each member understands how the compass works.
3. Have student groups, one group at a time; complete the course as quickly as possible. Give the first compass heading at the starting point. One group member is responsible for reading the compass and orienting the group to the first landmark. Tell them to record the letters of the scrambled word written on the index card. Pass the compass to another group member and move the direction indicated to the next landmark.
4. Continue until the end of the course.
5. After the migration, bring students together for a discussion.
6. Ask students how this songbird/shorebird orienteering activity relates to bird migration. Discuss the different ways birds determine which way to travel when they migrate, including the use of the earth's magnetic field, reading the night sky's star pattern, and geography.
7. Ask students to relate how they functioned in cooperative groups (if they took on certain roles with readings, recording ...).

Discussion

- What obstacles might indigo buntings face during their migration south? North?
- In what ways do birds navigate differently than people?

- Would having a map have made it easier? Would it have helped to view the compass route beforehand? Do birds make the trip more than once? Would experience help older birds?
- How can we help songbirds increase their population in the school's neighborhood?
- How can we improve songbird and shorebird success in migration? (abcbirds.org is a recommended resource)

Extensions

1. Students may lay out their own migration routes with colored chalk on an approved sidewalk or parking area. This may entail the Gulf of Mexico, land features, major cities, and final destination.
2. Research the value of landscaping with native wildflowers (grownative.org).
3. Have students or future educators research the benefits of websites such as allaboutbirds.org, journeynorth.org, ebird.org and abcbirds.org