
Life on the Flyway



Purpose:

Students will learn about how risky migration is for birds, and how the Cascade-Siskiyou National Monument offers some protection for birds along the Pacific Flyway. Students will also brainstorm about strategies and adaptations used by birds to decrease the stress of migration.

Objectives:

Students will...

- Discuss the dangers of migration in partners by listing 2 risks of migration and 2 adaptations/strategies birds have to overcome some of these risks.
- Analyze the effects of a habitat and its resources on migratory birds by participating in a migration obstacle course.

Time Required: 80-90 minutes

Appropriate grades: 6-8

NGSS and Common Core Standards:

MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.

Materials:

- 2 sets of 18 bird migration cards (provided)
- 2 sets of 100 colored poker chips (provided)
- 2 obstacle course diagrams (provided)
- 3 ropes (provided)
- Migratory bird specimens (provided)
 - Cooper's Hawk wing
 - Rufous Hummingbird wing
 - Black-headed Grosbeak wing and specimen
 - Varied Thrush specimen
 - Western Tanager specimen
 - Lesser Goldfinch specimen
 - Pine Siskin specimen
- Notecards (not provided)
- Chairs (not provided)
- Pencils and paper (not provided)

Activity:

Introduction (5 min.)	What is migration? Scientists define it as the seasonal movement of animal populations from one place to another. Why do animals migrate? It could be to find other sources of food, or to find a milder climate. These are important reasons to migrate, but how much effort does it take to migrate? How many
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	<p>animals survive migration? When it comes to birds, this is the one of the most dangerous parts of their life. About 20% of migrating birds don't survive the journey.</p> <p>The Cascade-Siskiyou National Monument is home to over 200 species of birds, many of which are migratory. Think about why the monument has so many bird species, and what it provides to those embarking on what could be the riskiest journey of their lives.</p>
<p>Body (70 min.)</p>	<p>Migration Discussion (10-15 min.)</p> <p>Birds have various adaptations or strategies to make migration a little bit easier. What is an adaptation? This is a trait or characteristic that a species has to help them survive in their environment, such as a duck's webbed feet for swimming. Remember that migration could cover hundreds of miles, often with very few rest stops. What risks might these birds encounter? Have students turn to their partner to discuss and write down 2 potential risks and 2 ideas of possible adaptations/strategies to reduce those risks. To give students some ideas, pass out migratory bird specimens, keeping them in their tubes/plastic bags. <i>[Note that some of these birds are migratory and are found in CSNM, but the populations around here are in CSNM year-round.]</i></p> <p>As a class, have students share their ideas and create lists for migration risks and strategies. Risks may include: lack of food, flying off-course, attacked by a predator, loss of habitat, and others. Strategies may include: flocking, having larger wings, flying at night to avoid predators, etc.</p> <p>Pacific Flyway (5 min.)</p> <p>One strategy that migratory birds have is to use a flyway- who has a guess for what a flyway is? A flyway is a flight path that birds follow as they cross continents and even oceans, kind of like a highway for birds. Flyways aren't always the shortest distance, but tend to avoid major obstacles to make these birds' flights easier. Here in Southern Oregon, we are part of the Pacific Flyway. A map of the Pacific Flyway can be found here: https://digitalmedia.fws.gov/digital/collection/document/id/72/ About where is the Cascade-Siskiyou National Monument located on this map?</p> <p>Flyways make migrations a little easier for birds, but the process is already quite challenging, not to mention different migrating birds have different needs. Let's see how everyone does as a migrating bird in Southern Oregon!</p> <p>Migration Obstacle Course (45 min.)</p>



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In this migration obstacle course, students will be assigned a bird from one of the attached bird cards. Red tags are raptors, green tags are songbirds, and blue tags are water birds. Throughout the course, each bird must pick up food tokens matching their tag color. One food token allows raptors to take 8 steps, water birds to take 6 steps, and songbirds to take 5 steps. If a bird runs out of steps before they can get another food token, they die, so birds should plan carefully for food as they navigate the obstacle course!

[For a simpler introduction, it may be helpful to start with a simpler obstacle course that only has a start and finish line and food tokens evenly scattered. Allow students to practice moving from start to finish, collecting their color of food token while keeping track of their number of steps.]

Begin with the city migration obstacle course (to make it more relatable, call it by the name of your city, e.g. Medford Migration Course).

Setup (see attached diagram):

- Designate a start and finish line.
- Scatter all colors of food tokens at start line.
- Create 3 piles of food tokens at different points in the course. Scatter just a few more tokens randomly throughout the course.
- One line of note cards placed face down across the course; half say “opening,” the other half say “window,” randomly shuffled and placed throughout the line.
- Ask for 1 student volunteer (or enlist any parent/staff helpers) to be a domestic cat guarding one of the bird feeders.
- Outline a pond space halfway through the course with rope/tape, making sure to leave food tokens (all colors but mostly blue). Place more note cards facedown in pond, with half saying “clean” and half saying “polluted.” Cards should be evenly mixed throughout pond space.
- Create two sets of power lines by placing a rope or pole across two chairs. One powerline should be much taller than the other, but still short enough to make students crouch.

Explain the course to the students, pointing out areas and ways that bird could die. Be sure to address special requirements for each bird: raptors must use the shorter powerline, water birds must stop at the pond, and since songbirds have to gather more food, they will need to stop at some of the bird feeders.

After completing the course, ask how many birds made it to their breeding grounds. Write on the board the names of the birds that survived, as well as



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	<p>the total number of surviving birds. Point out how many birds did not survive and ask students to reflect on how easy/hard it was, and why it was so easy/hard. Were any particular strategies used? How could we make the migration course easier for birds?</p> <p>Now switch to the Cascade-Siskiyou National Monument Migration Course. Setup (see attached diagram):</p> <ul style="list-style-type: none"> • Designate a start and finish line. • Scatter all colors of food tokens at start line. • Scatter more food tokens (all colors) evenly throughout the course • Outline 3 bodies of water (Sampson Creek, Hyatt Lake, and Jenny Creek) with rope/tape, making sure to leave food tokens (all colors but mostly blue). Place note cards facedown in each body of water, with most saying “clean” and only a few saying “polluted.” • Halfway through the course, create a forest using chairs or garbage cans to represent the trees. • Ask for one student volunteer (or a parent/staff helper) to be a predator in the forest. <p>Once again explain the course to students, pointing out areas and ways that birds could die. In this round, the only special requirement is for water birds to stop in at least one body of water of their choice.</p> <p>After completing the course, ask how many birds made it to their breeding grounds. Once again, write on the board the names of the birds that survived, as well as the total number of surviving birds. Ask students to reflect on how easy/hard it was, and why it was so easy/hard.</p> <p>Ending discussion (5 min.)</p> <p>Did more birds survive the CSNM round than in a city? How did the two rounds compare? There should be more survivors in the CSNM round; why did more birds survive? Discuss how CSNM was a decision made by humans to set aside land specifically to preserve biodiversity; in fact, it is the only national monument to have been made for this purpose.</p>
<p>Closure (10 min.)</p>	<p>Have students write two journal entries from the perspective of their bird: one for the city obstacle course, and one for the CSNM obstacle course. Encourage them to be creative but integrate facts from the back of their bird card.</p>



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Modifications:

- **4th-5th grade:**

Eliminate obstacles from the city obstacle course such as the window strikes or domestic cat, or skip over the city obstacle course and instead have students brainstorm impacts of human activity on bird migration

- **High School:**

Make gradual changes in obstacles between the city and CSNM obstacle courses. For example, start one round with the city obstacle course, then a second round without window strikes or power lines, a third round with food tokens more spread out, a fourth round with extra bodies of water, etc. Record the surviving bird species and number of survivors each round, then have students graph the trend in bird survivorship throughout the obstacle course rounds. If time allows, have students use graphs to investigate if any of the 3 types of birds survived more frequently than others.

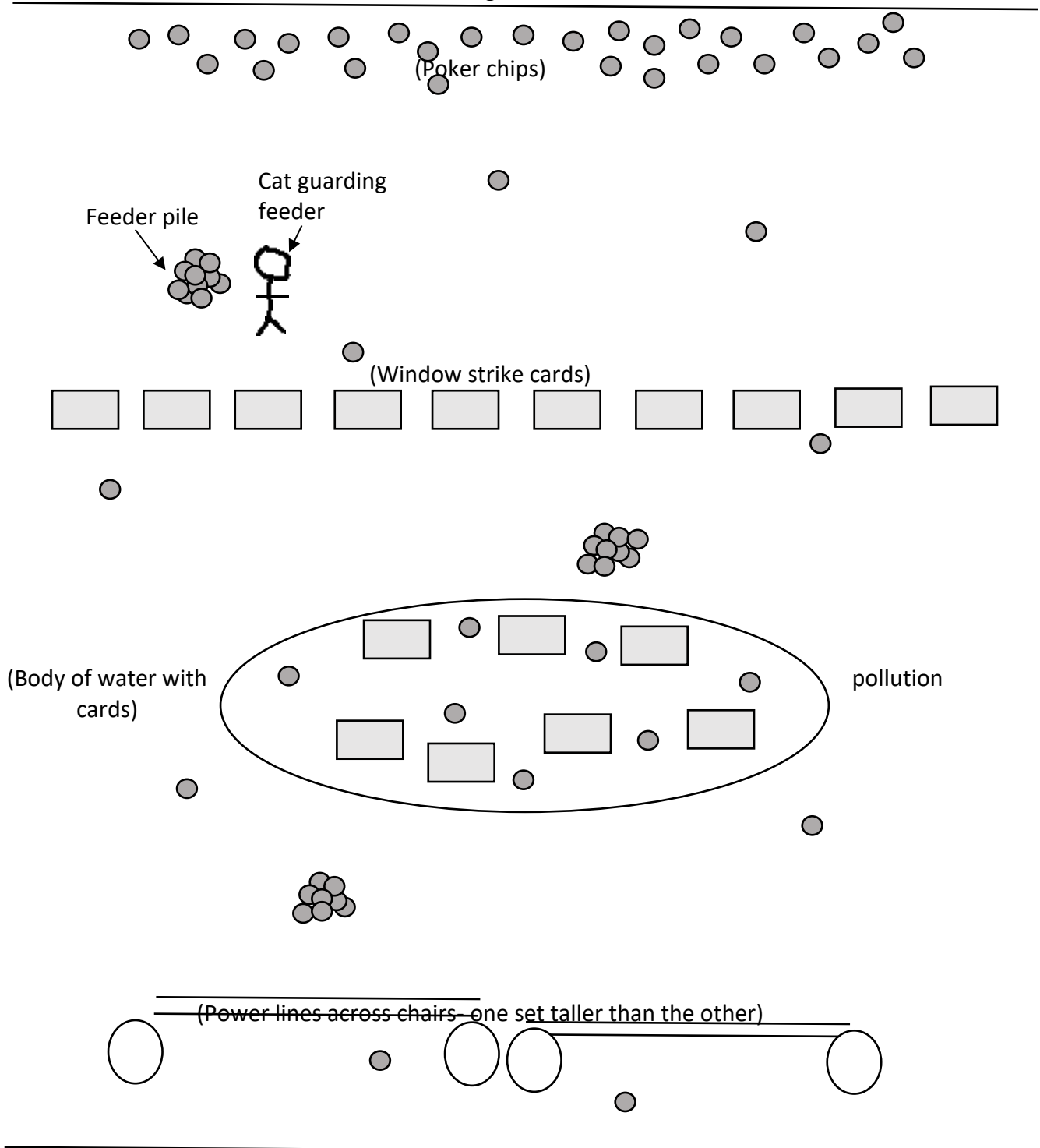


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City Migration Obstacle Course

Starting Line



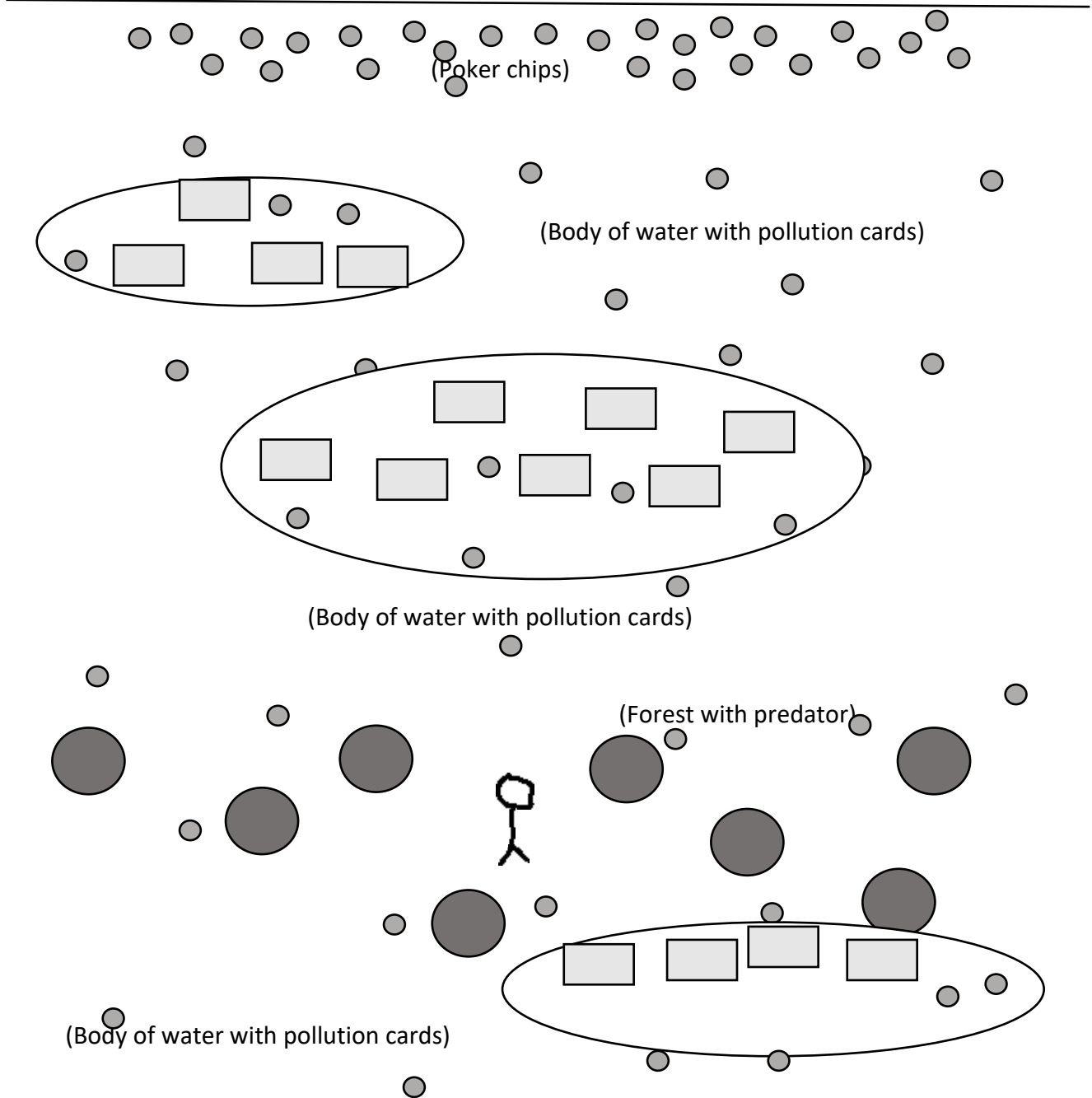
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Finish line

Cascade-Siskiyou National Monument Migration Obstacle Course

Starting Line



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Finish line



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