



STEMPILOT[®]

Engaging Students in STEM with Flight Simulation



**Birds on the Move:
A Migration Mystery**

Birds on the Move: A Migration Mystery

Introduction

Get ready to solve one of nature's greatest mysteries—where do the birds go when the seasons change? In this lesson, we're cracking the case of bird migration! Each year, birds travel thousands of miles, and today we're going to uncover the "how" and "why" behind these epic journeys. Not only will we track their flight paths, but we'll also discover what drives them to embark on such long trips. So, put on your detective hats, and let's follow the clues that birds leave on their incredible travels!

Understanding Migration

Migration is a behavior where animals, like birds and whales, travel from one habitat to another in search of food, better living conditions, or for reproductive needs. There are various types of migration, and in this lesson, we'll focus on latitudinal, longitudinal, seasonal, altitudinal, loop, nomadic, reverse, and leapfrog migration.

Types of Migration

Did you know that while some birds travel thousands of miles each year, others just move short distances to find food or shelter? This is all part of bird migration! But not all birds migrate the same way—some follow the same route every year, while others only migrate when their environment changes. In this lesson, we'll dive into the different types of migration—longitudinal, latitudinal, nomadic, loop, seasonal, reverse, leapfrog, and altitudinal migration—and uncover why birds make these incredible journeys. Get ready to explore the amazing world of birds on the move!

- **Latitudinal or longitudinal** - Birds migrate between different latitudinal or longitudinal locations, such as north to south or east to west
- **Nomadic** - Birds stay in one place until resources are available, then migrate.
- **Seasonal**- Birds will migrate to other regions temporarily when conditions are too harsh for them to survive
- **Altitudinal**- Birds migrate when conditions in high altitude areas become harsh.
- **Loop**- Birds migrate annually to take advantage of resources in two locations.
- **Leapfrog**- Birds migrate long distances to skip a sedentary population.
- **Reverse**- Birds are confused and migrate in the opposite direction.

How We Track Birds on Their Journey

To study bird migration, biologists use tools that allow them to follow and learn from these amazing animals. Here are some methods:

- **Radio Telemetry:** Scientists use colored bands and radio tags attached with small harnesses on birds to send location data.
- **Light-Level Geolocators:** These devices use daylight to help scientists estimate a bird's location based on light exposure.
- **GPS Tracking:** A low-power system that captures quick snapshots from GPS satellites to give scientists accurate bird tracking information. BirdMap and 50 Ducks are online tools used to track bird movement.

Activity

In this interactive activity, students become detectives in teams of 3-4. At each station, they'll collect clues about a bird's identity, examining physical traits, feeding habits, navigation methods, and migration patterns. Each station involves hands-on tasks like examining feathers and beaks, plotting migration routes, and analyzing bird calls. The final challenge is piecing together all the clues to identify the bird and its migration route before time runs out!

Materials

- World and regional maps
- Props like feathers, wing pictures, mock nests, and sample food items
- Timer
- Chromebooks/tablets for bird research
- Clue Cards (if needed)

Instructions

- Before starting, ensure all materials are prepared, and each station is labeled with clues. For example, if the bird is a Swallow, place at least two Swallow-related clues and a similar bird at each station.
- Begin with a short discussion about migration: "Imagine you're a bird, flying thousands of miles to a new home. How would you know where to go?"
- Explain what migration is, the different types, and how scientists track these journeys. Introduce the activity: students will be "detectives" working in teams to solve the mystery of which bird they're tracking by visiting stations and gathering clues.
- Divide the class into teams, and have each group start at a station, spending 5-7 minutes per station to record findings on their Migration Worksheet.
- After all stations, students will review their clues to reveal the bird and its migration route.

Extended Activities

Some extended activities for this lesson are:

- **Mapping Migration Paths (Grades 3-6):** Students research and map migration patterns of their chosen bird.
- **Bird Migration Simulation (Grades 3-12):** Students can simulate the migration of a Canada Warbler using a flight simulator.
- **Adopt a Bird Project (Grades 3-8):** Students "adopt" a bird, researching its migration path, habitat, diet, and threats, then create a poster or presentation.
- **Create a Bird Passport (Grades 4-6):** Students create a "passport" for their bird, marking the regions it visits throughout the year with stamps.

Migration Mystery Stations - Worksheet

Names: _____

Date: _____

Instructions: Work with your group to go through each station and find clues to help identify the bird and its migration path. Write down your answers at each station.

Station 1: Bird Description

What color is the bird? _____

How big is it? _____

Does it have any special features (like a long beak or colorful feather?) _____

Station 2: Habitat and Food

Where does this bird live? (Forest, wetland, desert, etc.) _____

What does this bird eat? (Insects, seeds, fish, etc.) _____

Station 3: Migration Clues

When does this bird migrate? (Spring, fall, etc.) _____

What direction does it fly? (North, south, east, west) _____

Station 4: Map Clues

Look at the map. Where does the bird start and where does it go?

Start Location: _____

Destination: _____

Final Guess:

Write down the name of the bird if you think you know it!

Bird Name: _____

Migration Mystery Stations - Worksheet

Names: _____

Date: _____

Instructions: Work with your group to move through each station, gathering clues to identify the bird and its migration route. Use what you learn at each station to fill in the answers below.

Station 1: Physical Characteristics

- Describe the bird's size, shape, and colors.
- Any unique features (e.g., long wings, bright colors)?

Station 2: Habitat and Diet

- In what type of habitat does this bird live?
- What is its main food source?

Station 3: Migration Patterns

- What time of year does the bird migrate?
- Is it a short-distance, medium-distance, or long-distance migrator?

Station 4: Navigation Clues

- How does this bird find its way? (e.g., follows the sun, earth's magnetic field)

Station 5: Map Analysis

- Study the map provided. Mark the start and end locations of the bird's journey.
- Start Location: _____
- End Location: _____

Final Bird Guess:

Using all the clues, write down the name of the bird and its migration route.

Bird Name: _____

Migration Route: _____

Migration Mystery Stations - Worksheet

Names: _____

Date: _____

Instructions: Rotate through each station with your group to uncover clues that will help you identify the bird species and its migration route. Use critical thinking to connect all the clues and verify your final guess.

Station 1: Physical and Behavioral Characteristics

- Note the bird's size, colors, and unique physical traits.
- Any distinctive behaviors (e.g., hunting technique, flight style)?

Station 2: Habitat, Range, and Diet

- Describe the bird's natural habitat and geographic range.

Habitat: _____

Geographic Range: _____

- Identify its primary diet and any specific feeding habits.

Station 3: Migration Timing and Route Analysis

- When does the bird typically migrate? (Specify months if possible)
- Analyze the map to determine the distance and direction of its migration route.

Station 4: Environmental Navigation and Challenges

- How does this bird navigate its route? (e.g., magnetic field, star patterns, landmarks)
- What challenges does it face during migration (e.g., weather, predators)?

Station 5: Migration Map and Route Confirmation

- Examine the provided migration map, marking the bird's starting point, route, and destination.

Starting Point: _____

Route Overview: _____

Destination: _____

- Cross-reference the map data with clues from previous stations.

Final Bird Identification and Route Summary

Summarize your findings below, including the bird's name and an explanation of how you arrived at your answer based on the clues gathered.

Bird Name: _____

Migration Route Summary: _____

Explanation:
