Module 11: Bird Migration

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Outline - Bird Migration

Center for Urban Resilience

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Urban EcoLab Science Curriculum
Module 11 – Bird Migration
Special Focus on Studying Migratory Behavior in Pine Siskins Spinus pinus

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Dr. Heather Watts, Washington State University

Introduction/Purpose:
Module 11 introduces students to the topic of migration. Students will explore topics such as why some birds migrate while others do not; the differences between obligate (predictable) versus facultative (flexible) migrants; and the physical and environmental factors or cues that impact migration, including food availability, temperature, photoperiod, and hormone levels. This module is being funded by a National Science Foundation grant (IOS: 1456954/1756976), which aims to study the migratory behavior in Pine siskins Spinus pinus. Special focus on this bird species will be included in this module. The module concludes with students using their knowledge of migration to observe migratory birds in a laboratory setting. By the end of this module, students will better understand bird migration and the environmental cues that drive migratory behavior.

Module Outline:
- Lesson 1 – Why Do Birds Migrate?
  o Why some birds migrate while others do not
- Lesson 2 – Migratory vs. Non-Migratory Birds
  o Characteristics and adaptations
  o Diet / Food Variation / Digestive tract
  o Behaviors
- Lesson 3 - Obligate vs. Facultative Migrants
  o Characteristics and adaptations
  o Diet
  o Location / Timing
- Lesson 4 - Cascading Factors Affecting Bird Migration
  o Sun Position/Photoperiod
  o Climate/Weather/Length of Temperature
  o Temporal/Seasons
  o Food Resources/Nutrition Levels
  o Hormone Levels
- Lesson 5 – Observing Seasonal Expression of Migratory Behavior in Pine Siskins
  o Facultative migrants
  o Pine Siskin Spinus pinus
  o Ethograms
  o Scientific process
- Lesson 6 – Obligate Migrants
  o Discover and Explore the World of Seasonal Migrants
- Migration Resources and Citizen Science
- Reference Materials