Introduction

In this inquiry-based unit, students investigate how a bird community and individual forest animals respond to a clearcut timber harvest using real scientific data.

Students:
1. Use the scientific process to gain knowledge and answer questions
2. Apply that knowledge to the engineering design process
3. Design a viable management solution given the constraints and trade-offs they discover

Target Audience: Grade 6-8 Science or Environmental Science
Estimated Time: Three 45-60 minute lessons

Lesson One:

How do bird communities change after clearcuts?

• Discuss importance of forests and wood products
• Learn about the Hardwood Ecosystem Experiment
• Scientific method and graphing activity with real-life bird community data
• Make quantitative and qualitative predictions
• Revise predictions
• Formulate questions to future investigations

Lesson Two:

Do I use clearcuts? Why?

• Groups investigate a forest animal using packets of graphs, pictures, and excerpts from scientific papers
• Discover how their animal responds to clearcuts and why
• Create a forest habitat map as a class

Lesson Three:

Big management decisions in the boardroom!

• Use engineering design process to cooperatively formulate a management plan
• Optional performance-based assessment

Discussion

Optional final assessment
• Write formal business letter to state forester or land manager describing a forest management plan
• Explain importance of forest management and the class’s management plan using specific examples from Lesson 2

Where to find this unit
• Present at Indiana educator conferences
• Will be available summer/fall 2017 on Purdue Extension Nature of Teaching (www.purdue.edu/nature)

Unit Objectives

1. Analyze how a clearcut affects the total number of bird species in a forest and the abundance of individual animals
2. Explain how and why an animal’s life history traits influence its habitat preference
3. Describe how to use outside information to interpret scientific data
4. Design an appropriate forest management plan based on investigation of scientific data
5. Critique a promotional video; explain how media can be misleading; and describe how to check for misinformation
6. Explain why it is important to manage forests for multiple species

Methods

• Unit aligns with:
  - Next Generation Science and Engineering Practices
  - Indiana Science and Engineering Process Standards
  - Includes: Active, Inquiry-based, and Contextual Learning Approaches
  - Incorporates: Formative, Summative, and Continuous Assessments

Results

References


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