

Lesson Plan

Grade: Grade 2
School: Fair Hill Nature Center
Subject: Outdoor Education
CCPS Lesson: Insects and Lifecycles
Season: Fall 2016 & Spring 2017

Time Frame: 1.5 hour lesson

STEM Approach: Science, Social Studies

Overview:

Students will be visiting 4 different habitats (pond, creek, meadow and forest) and will observe different insects and plants that inhabit them. A lifecycle demonstration, interactive insect building, Integrated Pest Management, “pests vs. guests”, aquatic insect lifecycle, social effects on insect populations and catching live bugs will be covered. Throughout the field trip, students will check off items on a Bug Scavenger Hunt worksheet.

Introduction: Student-led Insect Building Activity and Butterfly Lifecycle Demonstration. *Define: compound eye, proboscis, antennae, spiracle, exoskeleton, ovipositor, larvae, pupa, metamorphosis, arachnid.*

Creek: Show students aquatic insects in the tubs, discuss aquatic insect lifecycle, show images of adult insects, allow students to view insects up close in creature peepers. Ask the students if the presence of water bugs is good or bad? *Define: gills, pollution, indicator species.*

Woods: Show students evidence of insects in the woods. Discuss which animals rely on bugs as a food source. Ask students if bugs are an important part of the ecosystem? Have students use their Bug Scavenger Hunt worksheet. *Define: food chain, woodpecker food, pollinator.*

Meadow: Sweep for bugs in the grass, have students use their magnifying glasses to see insects up close.

Bug Room: Students get to look and touch bug items: bald-faced hornets’ nest, mud wasp nest, bag beetle nests, compound eye kit, insect display case. Students participate in Pollination Activity. *Discuss the social effects on insect populations. Are insects important? Do people need bugs? How can we tell a pest from a guest? Where are all the bees going? What is integrated pest management?*

Essential Questions and Enduring Understandings:

- What is an insect?
- What are the steps in the insect lifecycle?
- Why are insects important?
- What is pollination?
- What is a pest vs. a guest insect?

Contents (X)	Science	Technology	Engineering	Math	ELA	SS
	X					X

Standards Addressed in Lesson:

Science

Maryland Environmental Literacy Standards (MELS)

Standard 4: Topic C: Community and Ecosystem Dynamics

Indicator 1: Explain how the interrelationships and interdependencies of organisms and populations contribute to the dynamics of communities and ecosystems.

Standard 5: Topic A: Human Impact on Natural Processes

Indicator 1: Analyze the effects of human activities on earth’s natural processes.

Indicator 2: Analyze the effects of human activities that deliberately or inadvertently alter the equilibrium of natural processes.

Standard 5: Topic B: Human Impact on Natural Resources

Indicator 1: Analyze, from local to global levels, the relationship between human activities and the earth’s resources.

NGSS

4-ESS3-2 Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans

Social Studies

Maryland Content Standards- MP 4

3.D.1.a – Describe ways, such as clearing trees and farming land, that people modify their environment and the impact of those modifications

3.D.1.b – Describe how and why people protect or fail to protect the environment

3.D.1.c – Explain how people adapt to changes in the environment

Materials/Resources:

- Dry erase board and markers
- Butterfly lifecycle props
- Nets, buckets, creature peepers
- Sweep nets
- Laminated Scavenger Hunt handouts
- Laminated ID handouts of aquatic insects
- Laminated lifecycle diagram of aquatic insects
- Sweep nets
- Bug Room displays and props
- Pollinator Activity props

Know	Understand	Do
The definition of: <ul style="list-style-type: none"> ● Insects ● Lifecycle ● Metamorphosis ● Food chain ● Pesticide 	<ul style="list-style-type: none"> ● Insects are different than “bugs” (spiders, worms, centipedes, etc.) ● Insects go through the lifecycle. ● Insects are an important 	<ul style="list-style-type: none"> ● Create an insect. ● Participate in Lifecycle demonstration. ● Check items off of the Scavenger Hunt. ● Look at aquatic insects.

<ul style="list-style-type: none"> ● Pests vs. Guests (IPM) ● Pollination 	<p>food source for many animals.</p> <ul style="list-style-type: none"> ● Some insects pollinate plants. ● Pest insects and guest insects. ● Pesticides can kill good and bad insects. ● There are other ways to get rid of pest insects other than pesticides. 	<ul style="list-style-type: none"> ● Hike through the woods and see evidence of insects. ● Catch insects in the meadow and look at them closely. ● See and touch insect items in Bug Room. ● Participate in Pollination Activity. ● Talk about IPM.
<p><u>Assessments: (Evaluation)</u></p> <ul style="list-style-type: none"> ● Scavenger Hunt results ● Macro-invertebrate biological stream testing ● Teacher evaluation forms ● Post field trip discussion 		
<p><u>STEM Careers:</u></p> <ul style="list-style-type: none"> ● Environmental Engineer ● Agricultural Engineer ● Entomologist ● Forestry Management 		