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Lesson	Standard	Performance Expectations						Science and Engineering Practices							
		Interdependent Relationships in Ecosystems (HS-LS2)			Natural Selection and Evolution (HS-LS4)	Human Sustainability (HS-ESS3)			Asking Questions and Defining Problems	Developing and Using Models	Analyzing and Interpreting Data	Using Mathematics and Computational Thinking	Constructing Explanations and Designing Solutions	Engaging in Argument from Evidence	Obtaining, Evaluating, and Communicating Information
		2	6	7	5	1	4	6							
Lesson 1 - <b>The Curious Case of the Michigan Cherries</b>															
Lesson 2 - <b>Introduction to Modeling: Graphing and analyzing phenology data</b>															
Lesson 3 - <b>Application Using climate and phenology data and models to make predictions</b>															
Lesson 4 - <b>Field Trip Exploring citizen science and making connections between phenology and ecology</b>															

- HS-LS2-2.** Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.
- HS-LS2-6.** Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.
- HS-LS2-7.** Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.
- HS-LS4-5.** Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.
- HS-ESS3-1.** Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
- HS-ESS3-4.** Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.
- HS-ESS3-6.** Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.

Lesson	Standard					Disciplinary Core Ideas		Crosscutting Concepts					
						Earth and Space Science			Life Science		Patterns	Cause and Effect	Scale, Proportion, and Quantity
	Earth Materials and Systems	Weather and Climate	Global Climate Change	Ecosystem Dynamics, Functioning, and Resilience	Biodiversity and Humans								
<b>Lesson 1: The Curious Case of the Michigan Cherries</b>													
<b>Lesson 2: Introduction to Modeling: Graphing and analyzing phenology data</b>													
<b>Lesson 3: Application: Using climate and phenology data and models to make predictions</b>													
<b>Lesson 4 - Field Trip: Exploring citizen science and making connections between phenology and ecology</b>													

## NGSS Standards | Lesson 1

### *The Curious Case of the Michigan Cherries*

<b>Performance Expectations</b>	Interdependent Relationships in Ecosystems	<b>HS-LS2-2</b> Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.
	Human Sustainability	<b>HS-ESS3-1</b> Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
<b>Science and Engineering Practices</b>	Asking Questions and Defining Problems Constructing Explanations and Designing Solutions Engaging in Argument from Evidence	
<b>Disciplinary Core Ideas</b>	Life Science	Ecosystem Dynamics, Functioning, and Resilience Biodiversity and Humans
<b>Crosscutting Concepts</b>	Patterns Cause and Effect	

## NGSS Standards | Lesson 2

### *Introduction to Modeling: Graphing and analyzing phenology data*

<b>Performance Expectations</b>	Interdependent Relationships in Ecosystems	<b>HS-LS2-2</b> Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.
	Human Sustainability	<b>HS-ESS3-1</b> Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
<b>Science and Engineering Practices</b>	Asking Questions and Defining Problems Analyzing and Interpreting Data Constructing Explanations and Designing Solutions	Using and Developing Models Using Mathematics and Computational Thinking Engaging in Argument from Evidence
<b>Disciplinary Core Ideas</b>	Earth and Space Science	Weather and Climate
<b>Crosscutting Concepts</b>	Patterns Scale, Proportion, and Quantity	Cause and Effect Stability and Change

NGSS Standards | Lesson 3

**Application: Using climate and phenology data and models to make predictions**

<b>Performance Expectations</b>	Interdependent Relationships in Ecosystems	HS-LS2-2 Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.
		HS-LS2-7 Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.
	Human Sustainability	HS-ESS3-4 Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.
		HS-ESS3-6 Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.
<b>Science and Engineering Practices</b>	Asking Questions and Defining Problems Using and Developing Models Analyzing and Interpreting Data Using Mathematics and Computational Thinking Constructing Explanations and Designing Solutions Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information	
<b>Disciplinary Core Ideas</b>	Earth and Space Science	Earth Materials and Systems Weather and Climate Global Climate Change
	Life Science	Biodiversity and Humans
<b>Crosscutting Concepts</b>	Patterns Cause and Effect Scale, Proportion, and Quantity Systems and System Models Stability and Change	

NGSS Standards | Lesson 4 | Field Trip

*Exploring citizen science and making connections between phenology and ecology*

<b>Performance Expectations</b>	Interdependent Relationships in Ecosystems	<b>HS-LS2-6</b> Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.
	Natural Selection and Evolution	<b>HS-LS4-5</b> Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.
<b>Science and Engineering Practices</b>	Asking Questions and Defining Problems Obtaining, Evaluating, and Communicating Information	
<b>Disciplinary Core Ideas</b>	Life Science	Ecosystem Dynamics, Functioning, and Resilience Biodiversity and Humans
<b>Crosscutting Concepts</b>	Patterns Cause and Effect Stability and Change	