



## Environmental Literacy Unit Plan

Grade: 5

Title: *What's for Dinner?*

Authors: Amy Johnson, Key; Mike Mangiaracina, Brent; Catherine Osman, Langley; Elizabeth Quevedo, Bruce Monroe

### NGSS Unit Plan

<b>Title of Unit</b>	What's for Dinner	<b>Grade Level</b>	5
<b>Curricular Theme</b>	<i>Life Science</i> <i>Physical Science</i>	<b>Time Frame</b>	18 sessions (45 min each)
<b>Essential Question(s) to be Addressed</b>	<ul style="list-style-type: none"> <li>• How do the non-living elements of an ecosystem support the balance of life in the ecosystem?</li> <li>• We are what we eat: how does matter and energy cycle through a food web?</li> <li>• How is a food web model useful in representing interactions in an ecosystem? Where does the model fall short?</li> <li>• How does the introduction of a new element into an ecosystem alter the interactions of all members? Which populations benefit? Which suffer?</li> <li>• How can human beings affect the interactions in an ecosystem, both through their actions and their inaction?</li> </ul>		

### Background Information and Context

**NGSS Performance Task Expectations:** Students who demonstrate understanding can:

- **5-LS1-1.** Plants and relationship to sun. Support an argument that plants get the materials they need for growth chiefly from air and water.
- **3-LS4-3.** Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all
- **5-LS4.D.** Biodiversity and humans populations live in a variety of habitats, and change in those habitats affects the organisms living there.

**NGSS Performance Expectations:** Students who demonstrate understanding can:

- **5-PS3-1.** Use models to describe that that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.
- **5-LS2-1.** Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

### Applicable Common Core Standards (CCSS ELA and CCSS Math)

#### ELA/Literacy

- 

#### Mathematics

-



## Environmental Literacy Unit Plan

Grade: 5

Title: *What's for Dinner?*

Authors: Amy Johnson, Key; Mike Mangiaracina, Brent; Catherine Osman, Langley; Elizabeth Quevedo, Bruce Monroe

### Prior Understandings

Prior to this unit, student should be able to:

- Use observations to describe patterns.
- Understand basic needs of plants and animals for survival.
- Basic plant/animal lifecycles.

### Community Connections: Sustainability Initiative

- DC Greens: [www.dcgreens.org](http://www.dcgreens.org)
- U.S. National Arboretum: [www.usna.usda.gov](http://www.usna.usda.gov)
- Washington Youth Garden: [www.washingtonyouthgarden.org](http://www.washingtonyouthgarden.org)
- Living Classrooms Shipboard Education Program: [www.livingclassrooms.org](http://www.livingclassrooms.org)
- Rocklands Farm: [www.rocklandfarmmd.com](http://www.rocklandfarmmd.com)
- Anacostia Watershed Society: <http://www.anacostiaws.org/>
- Kenilworth Aquatic Gardens: [www.nps.gov/keaq/](http://www.nps.gov/keaq/)
- Aquatic Resources Education Center: <http://doee.dc.gov/arec>
- U.S. Botanic Gardens: [www.usbg.gov](http://www.usbg.gov)
- Smithsonian National Zoo: <http://nationalzoo.si.edu/Education/ClassroomResources/>
- National Aquarium (Baltimore): <http://www.aqua.org/learn/student-programs>
- Food chain worksheets: <http://www.superteacherworksheets.com/food-chain.html>

### Disciplinary Core Ideas: (Students will know...)

- **5-LS1-1.** Plants acquire their material for growth chiefly from air and water.
- **5.PS3-1.** The energy released [from] food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water). Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion.
- **5-LS2-1.** The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as “decomposers.” Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life.
- **5-LS2-1.** Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gases, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment.



## Environmental Literacy Unit Plan

Grade: 5

Title: *What's for Dinner?*

Authors: Amy Johnson, Key; Mike Mangiaracina, Brent; Catherine Osman, Langley; Elizabeth Quevedo, Bruce Monroe

### Science and Engineering Practices: (Students will...)

#### **Planning and Carrying Out Observations**

- Students will make observations (firsthand or from media) to collect data that can be used to make comparisons.
- Use materials to design a device that solves a specific problem or a solution to a specific problem.

#### **Obtaining, Evaluating, and Communicating Information**

- Read grade-appropriate texts and use media to obtain scientific information to determine patterns in the natural world.
- Support an argument with evidence that energy is never created or destroyed, but is instead transferred.

#### **Analyzing and Interpreting Data**

- Students will share observations and analyzing data they collected and recorded.
- Students will use observations to describe patterns in the natural world in order to answer scientific questions.
- Develop a model to describe food webs, using artifacts (bones and fur from owl pellets, plants and dead insects from schoolyard, etc.), as well as photographs and drawings.

#### **Connections to Nature of Science**

- Scientists look for patterns and order when making observations about the world.

#### **Constructing Explanations and Designing Solutions**

- Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena.
- Use materials to design a device that solves a specific problem or a solution to a specific problem.

#### **Scientific Knowledge is Based on Empirical Evidence**

- Scientists look for patterns and order when making observations about the world



## Environmental Literacy Unit Plan

Grade: 5

Title: *What's for Dinner?*

Authors: Amy Johnson, Key; Mike Mangiaracina, Brent; Catherine Osman, Langley; Elizabeth Quevedo, Bruce Monroe

### Crosscutting Concepts: (Students will connect...)

#### Patterns

- Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence. (1-LS1-2, 1-LS3-1)

#### Structure and Function

- The shape and stability of structures of natural and designed objects are related to their function(s). (1.LS1-1)
- Students will see food webs as a closed system model in which energy is transferred from the sun to all of the animals in the web, and in which all of the animals in the web influence the lives of the others through the energy they have and impart.
- Students will also recognize that actual food webs are not, in fact, closed systems and that many other factors influence the amount of energy at any point in a food web.

#### Influence of Science, Engineering, and Technology on Society and the Natural World

- Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world. (1-LS1-1)

#### Scientific Knowledge Assumes an Order and Consistency in Natural Systems

- Science assumes natural events happen today as they happened in the past.
- Many events are repeated.
- Students will demonstrate some of the various effects that a change in the population of any animal in the food web has on other populations in the food web.

### Performance Task

#### **Performance Task Description:**

Students are biologists commissioned by Chesapeake Bay Foundation (or other local watershed organization) to evaluate the impact of an invasive species. Students will create a food web using pictures of plants and animals from the Chesapeake Bay Watershed (or can use local watershed) labeling producers, consumers, decomposers, environmental components and their interactions. Then, students will be introduced to an invasive species and evaluate the consequences, short and long term in the ecosystem by building a second food web for analysis.



## Environmental Literacy Unit Plan

Grade: 5

Title: *What's for Dinner?*

Authors: Amy Johnson, Key; Mike Mangiaracina, Brent; Catherine Osman, Langley; Elizabeth Quevedo, Bruce Monroe

<b>Goal</b>	Determine impacts the invasive species have on the food web. (predictive food web).
<b>Role</b>	Biologist.
<b>Audience</b>	Chesapeake Bay Foundation or other local watershed organization.
<b>Situation</b>	A new species has been introduced to the area for which they have already designed a food web and now the impact must be determined.
<b>Product/Performance</b>	New food web resulting from the addition of the invasive species both showing short and long-term impact.
<b>Other Evidence</b>	Students will create their own food webs that include 2 decomposers, 3 producers, 3 consumers, energy flow, matter flow, food chain, and ecosystem.

<b>Grouping Strategies</b>	<b>Materials and Equipment Required</b>
Student groups of four	<ul style="list-style-type: none"> <li>• Baggies of large pictures of plants and animals, and decomposers</li> <li>• Two sets of smaller pictures of plants and animals, and decomposers for each student</li> <li>• Arrows with single direction and multi-direction</li> <li>• Envelope with invasive species photo and fact sheet</li> <li>• Glue</li> <li>• Two sheets of paper per student (minimum)</li> </ul>

### Comments:

- Small groups will create first web using large pictures and create larger food web as a group.



## Environmental Literacy Unit Plan

Grade: 5

Title: *What's for Dinner?*

Authors: Amy Johnson, Key; Mike Mangiaracina, Brent; Catherine Osman, Langley; Elizabeth Quevedo, Bruce Monroe

### Performance Task Rubric

#### *Performance Task Rubric for Group Food Web*

<b>Science Content of Parts of a Food Web</b>	
3 Points	Choose and label the sun, 3 producers, 3 primary consumers, 2 secondary consumers, 2 decomposers correctly
2	Choose and label most of the producers, consumers, and decomposers and the sun
1	Choose and label at least one of each category and the sun
0	Labels are all missing or placed incorrectly
<b>Interactions of Food Web</b>	
6 points	All Arrows indicate the correct flow of matter and energy through the web with at least two paths for consumers and decomposers.
4 points	Some are incorrect or missing arrows to indicate the correct flow of matter and energy through the web with at least two paths for consumers and decomposers.
2 points	At least one arrow indicates the correct flow of matter and energy
0 points	No indication of at least one interaction.
<b>Written Responses to Group Web</b>	
3	Describe all interactions correctly using the scientific vocabulary
2	Describe some interactions using scientific vocabulary or using common vocabulary
1	Describe one interaction using scientific or common vocabulary
<b>Group Cooperation</b>	
3	Individual shared and heard from all members of the group and work was shared equitably among members
2	Individual shared and heard from most of the members of the group



## Environmental Literacy Unit Plan

Grade: 5

Title: *What's for Dinner?*

Authors: Amy Johnson, Key; Mike Mangiaracina, Brent; Catherine Osman, Langley; Elizabeth Quevedo, Bruce Monroe

	and work was done somewhat equitably
1	Individual did not share or listen cooperatively in the group, but produced work
0	Individual did not share in the production of the web even with prompting from the group

### *Performance Task Rubric for Introduction of Invasive Species*

<b>Part 2 Science Content of Parts of a Food Web</b>	
3 Points	Choose and Label 3 Producers, 3 primary consumers, 2 secondary consumers, 2 decomposers correctly and the sun
2	Choose and label most of the producers, consumers, and decomposers and the sun
1	Choose and label at least one of each category and the sun
0	Labels are all placed incorrectly
<b>Part 2 Interactions of Food Web with Introduction Species</b>	
3 points	All Arrows indicate the correct flow of matter and energy through the web with at least two paths for consumers and decomposers.
2 points	Some arrows are incorrect or missing or arrows indicate the correct flow of matter and energy through the web with at least two paths for consumers and decomposers.
1 points	At least one arrow indicates the correct flow of matter and energy
0 points	No indication of at least one interaction.
<b>Written Responses to Group Web</b>	
8	Describe more than 3 consequences of the impact of the change agent on the group web using scientific vocabulary, describing at least one element of the ecosystem that benefits and at least one element (other than the introduced element) of the ecosystem that is harmed



## Environmental Literacy Unit Plan

Grade: 5

Title: *What's for Dinner?*

Authors: Amy Johnson, Key; Mike Mangiaracina, Brent; Catherine Osman, Langley; Elizabeth Quevedo, Bruce Monroe

6	Describe 3 consequences of the impact of the change agent on the group web using scientific vocabulary, describing at least one element of the ecosystem that benefits and at least one element (other than the introduced element) of the ecosystem that is harmed
4	Describe 2 consequences of the impact of the change agent on the group web using scientific vocabulary, describing at least one element (other than the introduced element) of the ecosystem that benefits and at least one element of the ecosystem that is harmed,
2	Describe 2 or 3 consequences of the impact of the change agent on the group but without describing at least one element of the ecosystem (other than the introduced element) that benefits and at least one element of the ecosystem that is harmed
0	Does not describe any consequences of the introduction of the change agent

### Learning Plan/Instructional Sequence

*Note: A series of lessons (3-10) Explain and Elaborate in this 5E Sequence*

#### 5E Stage: Engage

**Lesson 1 Title:** What's for Dinner?

**Science/Engineering Practice or Crosscutting Concept:**

- **5-LS1-1.** Support argument with evidence, data, or a model.
- **5-LS2-1.** A system can be described in terms of its components and their interactions.

#### Teacher does:

- Provide a picture of a sample dinner. Ask: Why do we eat? What is the source?
- Introduce and set up game "Oh, Deer!"

#### Students do:

- Students discuss what the purpose of food. Students try to trace the dinner plate food back to plants.
- Students play game, learning linkages.

#### Evidence of learning:

- Students use basic vocabulary for prior knowledge expectations of plants (sun, energy, light, photosynthesis, air, respiration, oxygen, and carbon dioxide), producers, decomposers, consumers, web, and line.
- Using dinner plate, able to draw a basic food chain.
- Play "Oh, Deer!" according to the rules.

#### Common Core Connections:





## Environmental Literacy Unit Plan

Grade: 5

Title: *What's for Dinner?*

Authors: Amy Johnson, Key; Mike Mangiaracina, Brent; Catherine Osman, Langlely; Elizabeth Quevedo, Bruce Monroe

### 5E Stage: Explore

Lesson 2 Title: Make a Food Web

#### Science/Engineering Practice or Crosscutting Concept:

- 5-LS2-1. A system can be described in terms of its components and their interactions.
- 5-LS2-1. Develop a model to describe phenomena.

#### Teacher does:

- Provide small groups with cut out pictures of the sun and various producers, consumers and decomposers found in the Chesapeake Bay watershed. (A more localized watershed can be used as well).
- Provide the whole group with additional pictures and more yarn for the activity on the rug.

#### Students do:

- Students create food webs in small groups using cards and yarn.
- Students in a whole class group on the rug will create a food web model using pictures and yarn.

#### Evidence of learning:

- Students will respond in writing and/or verbally to questions about how the interactions in an ecosystem can be described using a food web, referring both to the models made in small groups and with the whole class.

#### Common Core Connections:

### 5E Stage: Explore

Lesson 3 Title: Owl Pellet Dissection and Analysis

#### Science/Engineering Practice or Crosscutting Concept:

- 5-LS2-1. A system can be described in terms of its components and their interactions.
- 5-LS2-1. Develop a model to describe phenomena.

#### Teacher does:

- Introduce owl pellets as “mystery pellets” and demonstrate how to dissect one.
- Instruct students to dissect owl pellets and sort their findings using a system of their devising. As students work, teacher will guide students to consider a food web as they sort their findings.

#### Students do:

- Dissect owl pellets.
- Sort their findings naively, then they will attempt to fit their findings into a larger food web model.



## Environmental Literacy Unit Plan

Grade: 5

Title: *What's for Dinner?*

Authors: Amy Johnson, Key; Mike Mangiaracina, Brent; Catherine Osman, Langley; Elizabeth Quevedo, Bruce Monroe

### Evidence of learning:

- Students will demonstrate verbally and/or in writing how they sorted their owl pellet findings and use a food web as one organizer.

### Common Core Connections:

#### 5E Stage: Explore

**Lesson 4 Title:** Altering the Equilibrium in a Food Web

#### Science/Engineering Practice or Crosscutting Concept:

- 5-LS2-1. A system can be described in terms of its components and their interactions.
- 5-LS2-1. Develop a model to describe phenomena.
- 5-LS2-1. **Science explanations** describe the mechanisms for natural events.

#### Teacher does:

- Direct students in the re-creation of a food web model on the rug, but add a disturbance to the web in the form of an invasive species or a non-living factor such as drought or fire.
- Direct students in the Anacostia Watershed Society game, “Snakehead.”

#### Students do:

- Create a food web model on the rug with pictures and yarn.
- Work as a whole class to change the food web model in response to an introduced change.
- Play the “snakehead” game as a whole class.

### Evidence of learning:

- Students will respond verbally and in writing to explain how a food web model helps explain changes in an ecosystem in response to a change in one factor.

### Common Core Connections:

#### 5E Stage: Explore

**Lesson 5 Title:** Decomposers

#### Science/Engineering Practice or Crosscutting Concept:

- 5-LS2-1. A system can be described in terms of its components and their interactions.
- 5-LS2-1. Develop a model to describe phenomena.
- 5-LS2-1. **Science explanations** describe the mechanisms for natural events.

#### Teacher does:

- Introduce decomposers through short readings.
- Lead students in an exploration of the worm bin and in ongoing maintenance of the bin.

#### Students do:

- Read short passages describing decomposers and their role.
- Observe the worm bin and record observations.



## Environmental Literacy Unit Plan

Grade: 5

Title: *What's for Dinner?*

Authors: Amy Johnson, Key; Mike Mangiaracina, Brent; Catherine Osman, Langley; Elizabeth Quevedo, Bruce Monroe

### Evidence of learning:

- Students will refer to the worm bin as an example of decomposers at work in later phases' evaluations.

### Common Core Connections:

#### 5E Stage: Explore

Lesson 6 Title: Schoolyard Food Webs

#### Science/Engineering Practice or Crosscutting Concept:

- 5-LS2-1. A system can be described in terms of its components and their interactions.
- 5-LS2-1. Develop a model to describe phenomena.
- 5-LS2-1. Science explanations describe the mechanisms for natural events.

#### Teacher does:

- Lead students in the creation of a food web using organisms found in the schoolyard.

#### Students do:

- Create food web using organisms found in the schoolyard.

#### Evidence of learning:

- Students will create a food web that correctly places and shows the interactions between at least 5 organisms in the schoolyard.

### Common Core Connections:

#### 5E Stage: Explain

Lesson 7 Title: Food Webs: Naming the Concepts and Vocabulary

#### Science/Engineering Practice or Crosscutting Concept:

- 5-LS2-1. A system can be described in terms of its components and their interactions.
- 5-PS3-1. Energy can be transferred in various ways and between objects.

#### Teacher does:

- Show video “You and the Food Web” (Discovery Education): [www.discoveryeducation.com](http://www.discoveryeducation.com)
- Introduce unit vocabulary.
- Ask for labeling and interconnections on their food webs with justification.

#### Students do:

- Watch video and then go back to food web and add labels for components and connections, including direction of energy flow arrow.
- Play “Oh, Deer!” with new factors and observe impact.



## Environmental Literacy Unit Plan

Grade: 5

Title: *What's for Dinner?*

Authors: Amy Johnson, Key; Mike Mangiaracina, Brent; Catherine Osman, Langley; Elizabeth Quevedo, Bruce Monroe

### Evidence of learning:

- Can play “Oh, Deer!” with rule changes that represents a new factor and its impact on the system (weather conditions, disease, etc.).

### Common Core Connections:

#### 5E Stage: Explain

**Lesson 8 Title:** Food Webs: Reinforcing Concepts and Vocabulary

#### Science/Engineering Practice or Crosscutting Concept:

- **5-LS2-1.** A system can be described in terms of its components and their interactions.
- **5-PS3-1.** Energy can be transferred in various ways and between objects.

#### Teacher does:

- Connect the “Explore” lessons with new knowledge
- Provide print/digital resources to students to refer back to in applying labels and connections.

#### Students do:

- Use new vocabulary to ask questions and to write observations in journal.

### Evidence of learning:

- Complete ECR using a set number of new vocabulary words (e.g., write a short story from the perspective of a worm or a fox).
- Complete a math graphing problem using ecosystem population numbers (i.e., desert, ocean, jungle, tundra, marsh, or forest).

### Common Core Connections:

#### 5E Stage: Elaborate

**Lesson 9 Title:** From Yellowstone to Rock Creek Park – Yellowstone National Park

#### Science/Engineering Practice or Crosscutting Concept:

- **5-LS2-1.** A system can be described in terms of its components and their interactions.

#### Teacher does:

- Show the video on reintroduction of wolves at Yellowstone National Park: <http://sustainableman.org/blog/2014/02/17/how-wolves-change-rivers/>
- Ask students to discuss the role of the wolf in the ecosystem. How did the wolf help restore the balance? How did the overpopulation of the elk change the land?

#### Students do:

- Create a food web using evidence from the video for Yellowstone National Park labeling the parts and relationships using unit vocabulary.
- Discuss and write about the role of the wolf in the restoration of the ecosystem in Yellowstone.



## Environmental Literacy Unit Plan

Grade: 5

Title: *What's for Dinner?*

Authors: Amy Johnson, Key; Mike Mangiaracina, Brent; Catherine Osman, Langley; Elizabeth Quevedo, Bruce Monroe

### Evidence of learning:

- Food web in notebook with parts labeled and flow identified
- The relationship described orally and in writing that bringing back the wolf rebalanced the ecosystem and why.

### Common Core Connections:

RI.5.9

### 5E Stage: Elaborate

**Lesson 10 Title:** From Yellowstone to Rock Creek Park – Rock Creek Park

### Science/Engineering Practice or Crosscutting Concept:

- **5-LS2-1.** A system can be described in terms of its components and their interactions.

### Teacher does:

- Give students article on Rock Creek park deer population or bring in park ranger from Rock Creek Park: <http://www.washingtonpost.com/wp-srv/special/metro/urban-jungle/pages/130409.html>

### Students do:

- Read article using graphic organizer as guide to find information about the deer population and its impact on Rock Creek Park.
- Create food web of Rock Creek Park. Evaluate what might change if too many deer. Discuss in groups and write down reflections.

### Evidence of learning:

- Graphic organizer complete with deer population and how it is affecting the ecosystem.
- Food web of Rock Creek Park currently and with an expanded population.

### Common Core Connections:

RI.5.9

### 5E Stage: Elaborate

**Lesson 11 Title:** From Yellowstone to Rock Creek Park – Reflections

### Science/Engineering Practice or Crosscutting Concept:

- **5-LS2-1.** A system can be described in terms of its components and their interactions.

### Teacher does:

- Ask students to compare and contrast Yellowstone National Park with Rock Creek Park? How are the situations similar? What can we learn about the Yellowstone experience?

### Students do:



## Environmental Literacy Unit Plan

Grade: 5

Title: *What's for Dinner?*

Authors: Amy Johnson, Key; Mike Mangiaracina, Brent; Catherine Osman, Langley; Elizabeth Quevedo, Bruce Monroe

- Discuss questions from teacher and describe the future of Rock Creek Park if deer population continues to rise.

### Evidence of learning:

- Evidence from discussion and writing that points to the similarities and differences between Yellowstone and Rock Creek Park.

### Common Core Connections:

W.5.1

### 5E Stage: Elaborate

**Lesson 12 Title:** From Yellowstone to Rock Creek Park – Designing Possible Solutions

### Science/Engineering Practice or Crosscutting Concept:

- **5-LS2-1.** A system can be described in terms of its components and their interactions.

### Teacher does:

- Ask students: What will happen to Rock Creek Park if the deer population continues to expand? What can be done to bring it back into balance?

### Students do:

- Discuss questions from teacher and brainstorm possible solutions to controlling the deer population in Rock Creek Park.

### Evidence of learning:

- Brainstorm ideas of possible solutions to the Rock Creek Park from table groups.

### Common Core Connections:

W.5.1

### 5E Stage: Evaluate

**Lesson 13 Title:** Invader to the Chesapeake!

### Science/Engineering Practice or Crosscutting Concept:

- 

### Teacher does:

- Describe that students are biologists commissioned by the Chesapeake Bay Foundation or other local watershed organization. A new species has been introduced to the watershed and they are concerned about the impact.
- Provide materials for groups to make food webs and then provide students with invasive species and fact sheet about it.

### Students do:

- Create a food web using the large bag of pictures and arrows. Students will then use their own set of smaller pictures and create a food web by gluing on paper - labeling parts and using arrows showing the flow of energy.



## Environmental Literacy Unit Plan

Grade: 5

Title: *What's for Dinner?*

Authors: Amy Johnson, Key; Mike Mangiaracina, Brent; Catherine Osman, Langley; Elizabeth Quevedo, Bruce Monroe

- Use invasive species and create a new food web labeling the parts and the interactions.
- Write their analysis of how the invasive species will impact the balance of the ecosystem both in the short term and the long term.

### Evidence of learning:

- See rubric.

### Common Core Connections:

W.5.1

SL.5.5

## Resources

### Vocabulary Unit

- Consumer – an organism that obtains energy by feeding on living things.
  - A cow chewing grass, a person eating a steak, earthworms digesting manure, and mold growing on bread all represent consumers in action. In each case the organism is consuming living things.
- Ecosystem – a community of living things along with their natural environment.
- Equilibrium – a stable situation in which opposing forces are balanced.
  - If an ecosystem is in equilibrium, the population of each organism will not change much from year to year.
- Food chain – a sequence of organisms in which each organism feeds on the one below.
  - Example: Grass □ Rabbit □ Snake □ Hawk.  
In this food chain, rabbits eat grass, snakes eat rabbits, and hawks eat snakes.
- Population – all organisms of a certain kind within a defined region.
- Predator – an animal that kills and eats other animals.
- Prey – an animal that is killed and eaten by other animals.
- Producer – an organism that converts simple inorganic matter (such as water and carbon dioxide) into organic matter (such as sugar and protein).
  - Most plants use the energy of the Sun to create organic matter from carbon dioxide and water. This process is called photosynthesis.
  - No sunlight reaches the ocean floor, but some bacteria can use energy from hot water vents on the ocean floor to produce organic material. These producers support entire ecosystems deep below the ocean surface.
- Primary consumer – an animal that feeds on plants; an herbivore.
- Secondary consumer – a carnivore that feeds only upon herbivores.
- Sun – a star that provides Energy to the ecosystem,
- Energy – a power that is used to do work,
- Flow – the action or fact of moving along in a steady, continuous stream
- Interactions – the direct effect one element has on other



## Environmental Literacy Unit Plan

Grade: 5

Title: *What's for Dinner?*

Authors: Amy Johnson, Key; Mike Mangiaracina, Brent; Catherine Osman, Langley; Elizabeth Quevedo, Bruce Monroe

- Native species – species that occurs naturally within a region, either evolving there or arriving and becoming established without human assistance
- Non-native species – species that have been introduced into new areas that have not historically been part of their native range. Same as “exotic,” “alien,” or “nonindigenous.”
- Invasive species – an organism that causes ecological or economic harm in a new environment where it is not native.
- Balance – a state of equilibrium between different elements
- Imbalance – a state or condition in which different things do not occur in equal or proper amounts
- Decomposer – a special group of consumers who only eat living things that have died, and break down the material into their simplest form, so the producers and consumers can reuse.
- Transfer – an act of moving something or someone from one place to another
- Food web – a series of organisms related by predator-prey and consumer-resource interactions
- Living things – organisms that can grow, breathe, reproduce, excrete, respond to stimuli, and have similar basic needs like nourishment.
- Non-living – the condition of never being alive. Non-living could refer to inorganic matter.
- Watershed – an area or ridge of land that separates waters flowing to different rivers, basins, or seas.
- Impact – the effect of someone or something.
- Trophic level – a feeding level within a food web.
- Biosphere – regions of the surface, atmosphere, and hydrosphere of the earth (or analogous parts of other planets) occupied by living organisms.

### Universal Access

#### Supporting English Language Learners

Reading, Writing, or Speaking Activity	Supports for <u>Emerging</u> Learners	Supports for <u>Expanding</u> Learners	Supports for <u>Bridging</u> Learners
Learning Objectives: Develop a model of the food web in a specific ecosystem. Evaluate the impact of the invasive species in	Provide short readings in their native language, before the lesson. They would have a correct content illustration. Sentence stems.	Provide the same article in both languages, they read on the second language and have the native language in case. Show videos with closed caption so they can read and listen at the same time.	Short reading in the second language.





## Environmental Literacy Unit Plan

Grade: 5

Title: *What's for Dinner?*

Authors: Amy Johnson, Key; Mike Mangiaracina, Brent; Catherine Osman, Langley; Elizabeth Quevedo, Bruce Monroe

your previous ecosystem.			
<p>Language Objectives: Name all parts of the ecosystem Write a description of the interactions in the ecosystem. Write a report naming two possible impacts of the invasive species.</p>	<p>Create a bilingual word wall, with pictures. Post cognates and false cognates list. Work in teams that have at least one language buddy. Pictures with names in both languages. Directions written in both languages.</p>	<p>Sentence starters to build in a short paragraph using correctly some of the new vocabulary words.</p>	<p>Students will write a short paragraph integrating most of the content words.</p>

### Supporting Struggling Learners

Activity	Supports for Students who need <i>Minor</i> Support	Supports for Students who Need <i>Intensive</i> Support
Performance Tasks	Aide available to student for help with reading questions and with encouragement	Aide to read material to student and to record responses. Limit number of pictures to create fewer choices to see if can find relationships with limited choices.
		Sentence starters for reflection writing Extended time Provide completed food chains so they can create food webs



## Environmental Literacy Unit Plan

Grade: 5

Title: *What's for Dinner?*

Authors: Amy Johnson, Key; Mike Mangiaracina, Brent; Catherine Osman, Langley; Elizabeth Quevedo, Bruce Monroe

### Supporting Advanced Learners

Activity	Extensions for Advanced Students
Owl Pellet Lessons	<p>Provide additional material for independent and small group so that learning occurs from more than one source.</p> <p>Provide research links for barn owl decline.</p>
Food web	<p>Provide extensions for additional learning opportunities such as creating board games,</p> <p>Create alternative model to the food web model that illustrates the relationships among components in the local watershed.</p>

### Connecting to the Core: NGSS Aligned Performance Task

**ELA Connections** (*Reading, Writing or Speaking Activity*) listed in Learning and Instructional Sequence

- Write opinion pieces on topics or texts, supporting a point of view with reasons and information. (5-LS1-1)
  - Elaborate
  - Evaluate
- Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes. (5-PS3-1)

**Math Connections** (*Listed in Learning and Instructional Sequence*)

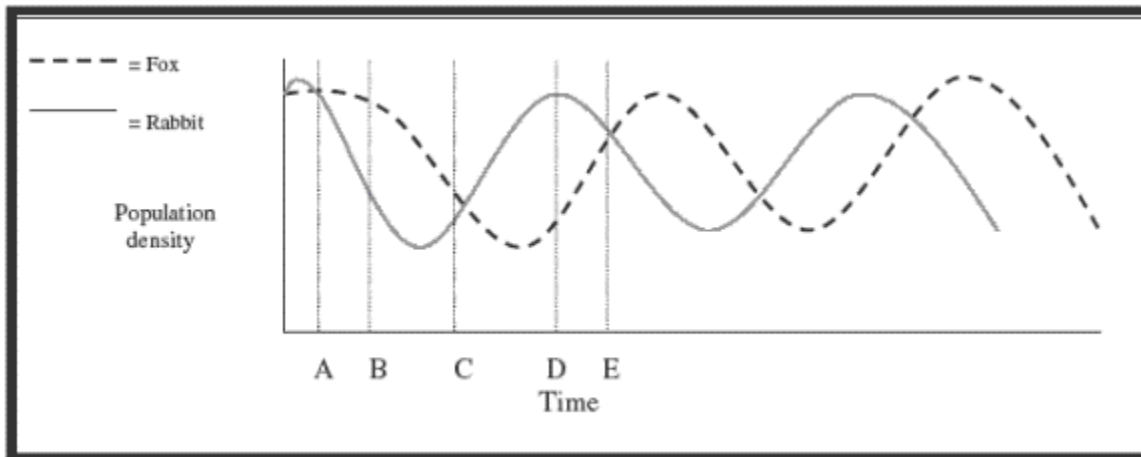
- Reason abstractly and quantitatively. (5-LS1-1)
  - Webs and changes to webs.
- Model with mathematics. (5-LS1-1)
  - “Explain” lesson: complete a math graphing problem using ecosystem population numbers (ex. desert, ocean, jungle, tundra, marsh, or forest) that shows relationships among producers, consumers, and/or decomposers.
  - Example of end product:

## Environmental Literacy Unit Plan

Grade: 5

Title: *What's for Dinner?*

Authors: Amy Johnson, Key; Mike Mangiaracina, Brent; Catherine Osman, Langley; Elizabeth Quevedo, Bruce Monroe



- Using appropriate tools strategically.

### Source for the Science and Engineering Practices

[A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas \(2012\)](http://www.nap.edu/openbook.php?record_id=13165) ) [http://www.nap.edu/openbook.php?record\\_id=13165](http://www.nap.edu/openbook.php?record_id=13165)

### Source for the Disciplinary Content and CrossCutting Concepts:

NGSS Lead States. 2013. *Next Generation Science Standards: For States, By States*. Washington, DC: The National Academies Press.

**Web Version: Authors:** NGSS Lead States. **Title:** Next Generation Science Standards: For States, By States (insert specific section title(s) being used if not referring to entirety of the NGSS). **Publisher:** Achieve, Inc. on behalf of the twenty-six states and partners that collaborated on the NGSS. **Copyright Date:** 2013. **URL:** [www.nextgenscience.org](http://www.nextgenscience.org).