**Ecosystems-Unit 6**

**Time frame- 5 weeks**

**6th Grade**

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| **Essential Questions** | **Phenomenon** |
| 1. What are the different levels of ecology? | **Population, community, ecosystem, biosphere** |
| 2. What are the factors within an ecosystem? | **Abiotic (non-living) and Biotic (living)** |
| 3. What are the requirements of living things? | **Food, water, space, shelter** |
| 4. How do organisms compete for resources? | **Adaptive radiation**  |
| 5. What is the effect of predators in an ecosystem? | **Helps keep the ecosystem balanced by keeping herbivores in check.****Yellowstone wolf reintroduction** |
| 6. What are the mutually beneficial relationships in an ecosystem? | **Symbiotic relationships (mutualism)** |
| 7. How is matter and energy transferred in food webs? | **Starting with the sun (most energy) and transferred to producers and then on to consumers. Less energy available at each level as you move through the food web.**  |
| 8. What is the relationship among producers, consumers, and decomposers? | **Energy flow in the ecosystem…..producers > consumers > decomposers** |

**Learning Targets:**

* **We are learning how energy derived from the sun is used by plants to produce sugars.**
* **We are learning how plants produce sugars through the process of photosynthesis**
* **We are learning how to explain that energy is transferred within a food chain or food web**

 **from producers to consumers.**

* **We are learning how the abiotic factors (such as temperature, water, sunlight, and soil quality) of biomes (freshwater, marine, forest, grasslands, desert, and tundra) affect the ability of organisms to grow, survive and/or create their own food through photosynthesis.**

**Vocabulary:**

**Ecosystem, organism, habitat, biotic factors, ecology, abiotic factors, consumer, producer, carrying capacity**

**Core Standards:**

**NSTA Classroom Resources:** [**http://ngss.nsta.org/Classroom-Resources.aspx**](http://ngss.nsta.org/Classroom-Resources.aspx)

**Duck Soup**

**EdPuzzle**

[**Interactive STEM Activities - All areas**](https://learn.concord.org/) **Concord Consortium**

**Video Links: 1.** [**How the wolves changed the rivers - Yellowstone Park Introduction**](https://www.youtube.com/watch?v=ysa5OBhXz-Q)

**2.** [**TED Talk about how wolves changed the wild**](https://www.youtube.com/watch?v=8rZzHkpyPkc)

**3.** [**How Whales Changed the Climate**](https://www.youtube.com/watch?v=M18HxXve3CM)

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| **Standard** | **Website Links** | **Activities** |
| MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems. | <https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-LS2-2%20Evidence%20Statements%20June%202015%20asterisks.pdf> | [NSTA Vetted Activities](http://ngss.nsta.org/Classroom-Resources.aspx) |
| MS-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem. | <https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-LS2-3%20Evidence%20Statements%20June%202015%20asterisks.pdf> |  |
| MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem. | <https://www.nextgenscience.org/pe/ms-ls2-1-ecosystems-interactions-energy-and-dynamics> |  |
| MS-PS1-3. Gather and make sense of information to describe that synthetic materials come from natural resources and impact society. | <https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-PS1-3%20Evidence%20Statements%20June%202015%20asterisks.pdf> |  |
| MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.  | <https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/MS-ETS1-1%20Evidence%20Statements%20June%202015%20asterisks.pdf> |  |