



**Performance Expectations: Next Generation Science Standards:**

**MS-LS2-3.**

Develop a model to describe the cycling of matter and flow of energy among living and non-living parts of an ecosystem.

<http://www.nextgenscience.org/msl-s2-ecosystems-interactions-energy-dynamics>

**Key Understandings**

Organisms, and populations of organisms, are dependent on their environmental interactions both with other living things and with nonliving factors.

**Key Vocab:**

- Mutualism
- Competition
- Consumer
- Producer
- Decomposer

## Lesson 7: Relationships in Ecosystems

Determine relationships within the system for your local species.

**Grade Level:** Middle School 6-8

**Essential Question:**

How does your local system work?

**Objectives:**

At the end of this lesson, students will:

- *Understand* the interconnectedness of all of their individual species.
- *Understand* that every species is dependent on abiotic factors within the ecosystem, as well as other biotic factors.

**Assessment opportunities:**

At the end of this lesson, you will be able to assess students through:

- Having them describe where their species is within the food web, and its connections to other species and its environment.

**Background Information**

The students will need to understand:

- The concept of food chains, habitats, life cycles, and threats.

**Common Student Misconceptions or Challenges**

Students may understand how species are connected to each other through predator-prey relationships but not necessarily mutualism or through different trophic levels. Students may also not recognize the role of abiotic factors such as sun, water availability, soil nutrients, or topographic location on species.



# Lesson 7: Ecosystem Relationships

## Local system Investigation

### Materials:

- Student field guide
- Paper
- Pens
- Tape

### Time Commitment:

1 45-class period

### Preparation:

- Write each species on sheet of paper (small).
- Have arrows drawn out (or use white board).
- Have “relationships” written out such as mutualisms, primary, secondary consumer, decomposer etc. These terms should come from the students’ original web (Lesson 1), plus new relationships they have discovered during the course of this unit.

### Directions:

1. As a class challenge, create a large food web using the species from students’ individual species accounts. Have students put their species on the board with connecting arrows to other parts of the ecosystem. (If important species or functional groups are missing, such as dominant plant species or decomposers, add those to the food web).
2. Once all of the species are on the board have students come back up and use descriptive words to label the

arrows between species in the system.

3. Use the completed food web as a basis to discuss the flow of energy through the system, and cycling of carbon, nitrogen and water.
4. Have students individually draw and describe how their species is connected to the rest of the ecosystem, to be added to the students’ species accounts.

Have them include: the habitat in which their species lives (Where is it found? Where does it find food, water and shelter? Does it live in different places at different times of year?) Plus the topics included in lesson 7.

