Next Generation Science Standards

Lesson: Food Web II
Activity: Who's Hungry?

Prior Knowledge Should Include:
- Animals obtain food they need from plants and/or other animals.
- The food of almost any animal can be traced back to plants.
- Organisms are related to food webs in which some animals eat plants for food, and other animals eat the animals that eat plants, while decomposers restore some materials back to the soil.
- Matter cycles between the air and soil and among organisms as they live and die.

Performance Expectations:
- MS-LS2-1 Ecosystems: Interactions, Energy and Dynamics. Observe how lower links in a food web affect the highest links by analyzing and interpreting data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
- MS-LS2-2 Ecosystems: Interactions, Energy and Dynamics. Compare a food web to a food chain and list similarities and differences by explaining and predicting patterns of interactions among organisms across multiple ecosystems.
- MS-LS2-3 Ecosystems: Interactions, Energy and Dynamics. Diagram a food web to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

Disciplinary Core Ideas:
- **LS2.A: Interdependent Relationships in Ecosystems:** Organisms and populations of organisms are dependent on their environmental interactions both with biotic and abiotic factors. Growth of organisms and populations are limited by access to resources. In any ecosystem, organisms and populations with similar requirements for food, water, oxygen or other resources may compete with each other for limited resources. This limits their growth and reproduction. Predation may also reduce their growth and reproduction or eliminate populations or organisms. Relationships where each organism depends on each other are called mutually exclusive relationships.
- **LS2.B Cycles of Matter and Energy Transfer in Ecosystems:** Food webs are models that demonstrate how matter and energy is transferred between producers, consumers and decomposers as the three groups interact — primarily for food — within an ecosystem. Transfers of matter into and out of the physical environment occur at every level. Decomposers recycle nutrients from dead plant or animal matter back to the soil in terrestrial environments or to the water in aquatic environments.

Practices:

- **Developing and Using Models (2) –** Progresses to developing, using and revising models to describe, test and predict more abstract phenomena and design systems.
- **Analyzing and Interpreting Data (4) –** Progresses to extending quantitative analysis to investigations, distinguishing between correlation and causation, and basic statistical techniques of data and error analysis.
- **Constructing Explanations and Designing Solutions (6) –** Progresses to include constructing explanations and designing solutions supported by multiple sources of evidence consistent with scientific ideas, principles and theories.

Crosscutting Concepts:

- **Patterns**: Observed patterns of forms and events guide organization and classification, and prompt questions about relationships and the factors that influence them.
- **Cause and Effect:** Mechanisms and explanation. Events have causes, sometimes simple, sometimes multifaceted. A major activity of science is investigating and explaining causal relationships and the mechanisms by which they are mediated. Such mechanisms can then be tested across given context and used to predict and explain events in new contexts.
- **Energy and Matter: Flows, Cycles and Conservation:** Tracking fluxes of energy and matter into, and out of, and within systems helps one understand the systems' possibilities and limitations.

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