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The Living World (Life Science)

Essential Question: What are the characteristics and components of an ecosystem?

Enduring Knowledge	Science Concepts	GE	Evidence of Understanding
<p><u>Interdependence within Ecosystems:</u> Energy enters an ecosystem in the form of sunlight and flows through the system to each cell. Matter interacts, changes, and recycles in an ecosystem. Populations of organisms survive by maintaining interdependent relationships with one another and by utilizing biotic and abiotic resources from the environment.</p>	<p>a. Energy within an ecosystem originates from the Sun. Plants use energy from the sun, carbon dioxide, and water, to make energy-rich food and oxygen. Plants are producers. b. Animals eat food that plants make and combine it with oxygen to produce energy, carbon dioxide, and water. Animals are consumers.</p>	34	Developing a model that shows how the flow of energy from the Sun is transferred to organisms as food in order to sustain life
<p><u>Interdependence within Ecosystems:</u> Energy enters an ecosystem in the form of sunlight and flows through the system to each cell. Matter interacts, changes, and recycles in an ecosystem. Populations of organisms survive by maintaining interdependent relationships with one another and by utilizing biotic and abiotic resources from the environment.</p>	<p>a. Food webs model the interdependent relationships that organisms engage in as they acquire their food and energy needs. Aquatic food webs (fresh water and marine) are supported by microscopic ocean plants. Land food webs are supported by land plants.</p>	35	Developing a model for a food web of a local aquatic and local terrestrial environment
<p><u>Interdependence within Ecosystems:</u> Energy enters an ecosystem in the form of sunlight and flows through the system to each cell. Matter interacts, changes, and recycles in an ecosystem. Populations of organisms survive by maintaining interdependent relationships with one another and by utilizing biotic and abiotic resources from the environment.</p>	<p>a. The number of organisms an ecosystem can support depends on the kinds of organisms present and the availability of biotic and abiotic resources (i.e., quantity of light and water, range of temperatures, and soil composition).</p>	36	Experimenting with a closed system, describing how an environmental change affects the system (e.g., bottle biology)

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Focusing Questions	Potential Inquiries/Activities	Resources/Notes
<p>How does energy move through an ecosystem?</p> <ul style="list-style-type: none"> - Energy flows one way through an ecosystem and isn't recycled. - All food can be traced back to producers. - All energy derives from photosynthesis. - Plants create energy rich food and oxygen in an ecosystem. - All organisms need an energy source to live and grow. - There are different orders of consumers. (ex. 1st order consumer, 2nd order consumer). - Animals produce energy, carbon dioxide, and water. - People are animals. 	<p>How can you demonstrate that plants need the Sun's energy? How would not having the sun affect our ecosystem?</p>	
<p>How are the components of an ecosystem interrelated?</p> <ul style="list-style-type: none"> - Energy flows in an ecosystem through food webs. - Plants and animals in a food web are dependent upon one another for survival. - All food webs are supported by producers. - Aquatic and terrestrial ecosystems are connected. - There are unique plants in aquatic and terrestrial ecosystems. 	<p>How would the loss of a native organism (e.g., fish, deer, rabbits, trees) affect the ecosystem?</p>	
<p>What are the similarities and differences between land and aquatic ecosystems?</p> <ul style="list-style-type: none"> - All ecosystems include biotic and abiotic resources. - Abiotic resources include: heat, sunlight, water, soil. - An increase or decrease in a population affects the whole ecosystem. - Biotic resources include plants, animals, and once-living materials. - An increase or decrease of abiotic resources impacts the ecosystem. - Organisms may compete for the same resources in an ecosystem. 	<p>Show how the change of biotic or abiotic factors impacts an ecosystem (bottle biology).</p>	

<p>How does changing one part of an ecosystem affect the whole ecosystem?</p> <ul style="list-style-type: none">- All organisms die.- Decomposers convert dead and waste materials into constituents of soil.- Matter is continually recycled.- All the matter on earth is all that has ever been on Earth.	<p>Design an investigation to show how decomposers affect an ecosystem.</p>	
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