


## Biology Curriculum Bundle #2

<b>Title</b>		<b>Suggested Dates</b>
Populations and Communities		9/14-10/2 (14 days)

<b>Big Idea/Enduring Understanding</b>	<b>Guiding Questions</b>
Organisms are interdependent and interact with each other and with their environment.	<ul style="list-style-type: none"> <li>▪ How does energy flow through ecosystems?</li> <li>▪ How do symbiotic interactions create dependencies between organisms?</li> </ul>

The resources included here provide teaching examples and/or meaningful learning experiences to address the District Curriculum. In order to address the TEKS to the proper depth and complexity, teachers are encouraged to use resources to the degree that they are congruent with the TEKS and research-based best practices. Teaching using only the suggested resources does not guarantee student mastery of all standards. Teachers must use professional judgment to select among these and/or other resources to teach the district curriculum.

<b>Knowledge &amp; Skills with Student Expectations</b>	<b>District Specificity/Examples</b>	<b>Suggested Resources</b> (See note above)
<p><b>9 The student knows metabolic processes and energy transfers that occur in living organisms.</b></p> <p><b>9D</b> Analyze the flow of matter and energy through different trophic levels and between organisms and the physical environment.</p>	<p><i>Including</i></p> <ul style="list-style-type: none"> <li>• Differentiate between autotrophs and heterotrophs                             <ul style="list-style-type: none"> <li>○ Chemoautotrophs</li> </ul> </li> <li>• Identify trophic levels                             <ul style="list-style-type: none"> <li>○ Autotrophs (producer)</li> <li>○ Heterotrophs (primary and secondary consumers)</li> </ul> </li> <li>• Explain the flow of energy in ecosystems including:                             <ul style="list-style-type: none"> <li>○ Food chains</li> <li>○ Food webs</li> <li>○ Energy pyramids</li> <li>○ Biomass pyramids</li> </ul> </li> <li>• Calculate the amount of biomass at each trophic level (10% rule) using a pyramid of energy.</li> </ul> <p><i>(12C) analyze the flow of matter and energy through trophic levels using various models, including food chains, food webs, and ecological pyramids;</i></p>	<p>BIO_2_Biomass</p>
<p><b>12 The student knows that interdependence and interactions occur within an ecosystem.</b></p> <p><b>12E</b> Investigate and explain the interactions in an ecosystem. Including:</p> <ul style="list-style-type: none"> <li>• Food chains</li> <li>• Food webs</li> </ul>	<p><i>Including</i></p> <ul style="list-style-type: none"> <li>• ecological pyramids, as examples of food pyramids</li> <li>• Autotrophs (producers)</li> <li>• Heterotrophs (consumers)</li> <li>• Herbivores</li> <li>• Carnivores</li> <li>• Omnivores</li> </ul>	<p>Fun with Food Webs (weblink)  <a href="http://www.harcourtschool.com/activity/food/food_menu.html">http://www.harcourtschool.com/activity/food/food_menu.html</a></p>

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<ul style="list-style-type: none"> <li>• Food pyramids</li> </ul>	<ul style="list-style-type: none"> <li>• Decomposer</li> </ul> <p><i>(12C) analyze the flow of matter and energy through trophic levels using various models, including food chains, food webs, and ecological pyramids;</i></p>	
<p><b>12 The student knows that interdependence and interactions occur within an ecosystem.</b></p> <p><b>12B</b> Interpret interactions among organisms exhibiting predation, parasitism, commensalism, and mutualism.</p>	<p>Including benefit analysis and energy flow</p> <p><i>(12A) interpret relationships, including predation, parasitism, commensalism, mutualism, and competition among organisms;</i></p>	<p>BIO_2_Looking at Lichens (this lab is ok as is but would benefit from development)</p>
<p><b>3 Uses critical thinking and scientific problem solving to make informed decisions.</b></p> <p><b>3A</b> Analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information.</p>	<p>NOTE: Can use debates on current topics and reading/discussing current events.</p> <p><i>(3A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student;</i></p>	
<p><b>2 Uses scientific methods during fields &amp; laboratory investigations.</b></p> <p><b>2D</b> Communicate valid conclusions</p>	<p>Such as lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports.</p> <p><i>(2H) communicate valid conclusions supported by the data through methods such as lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports.</i></p>	
<p><b>3 Uses critical thinking and scientific problem solving to make informed decisions.</b></p> <p><b>3D</b> Describe connection between biology and future careers.</p>	<p>Such as careers in wildlife management, soil and water conservation, landscape architecture.</p>	
<p><b>3 Uses critical thinking and scientific problem solving to make informed decisions.</b></p> <p><b>3F</b> Research and describe the history of biology and contributions of scientists</p>	<p>Such as James Audubon, Dian Fossey, Jane Goodall</p>	
<p><b>5 The student knows how an organism grows and how specialized cells, tissues, and organs develop.</b></p> <p><b>5C</b> Sequence the levels of organization in multicellular organisms to relate the parts to each other and to the whole.</p>	<p>Including (in sequence)</p> <ul style="list-style-type: none"> <li>• Atom, Molecule, Organelle, Cell, Tissue, Organ, Organ system, Organism, Population, Community, Ecosystem, Biome, Biosphere</li> </ul> <p><i>(10C) analyze the levels of organization in biological</i></p>	

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	<i>systems and relate the levels to each other and to the whole system.</i>	
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