

LS-HHMI Outreach Curriculum Project Information		
<b>Title</b>	Biodiversity in Berkshire Country Ma. (but easily converted to another location)	
<b>Resource Type</b>	Lesson Plan <input type="checkbox"/> Classroom Activity <input checked="" type="checkbox"/> Laboratory Activity <input type="checkbox"/> Homework Assignment <input type="checkbox"/> Bioinformatics <input type="checkbox"/> Other <input type="checkbox"/> <Specify>	
<b>Description</b>	<Write a 50-word description of your resource for publication on the Web.>	
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<b>Author Institution(s)</b>	Lee Middle and High School	
<b>Objective</b>	Students will be able to: <ol style="list-style-type: none"> <li>1. Understand biodiversity in Berkshire County Ma.</li> <li>2. Understand the interconnections between organisms in Berkshire Country</li> <li>3. How to classify local organisms.</li> <li>4. To identify unthreatened, threatened, endangered, invasive species.</li> <li>5. Develop an appreciation for their surrounding (!)</li> </ol>	
<b>Key Concepts</b>	Biodiversity Taxonomy Food webs and changes Energy transfer	
<b>Student Prep</b>	Before doing this lesson students should have- <ol style="list-style-type: none"> <li>1. Local knowledge of native organisms</li> <li>2. Knowledge of how to research on the internet and value of the information found</li> <li>3.</li> </ol>	
<b>Materials</b>	Material for collecting small nets, jars, ... Students with digital cameras Copies of various forms for each stage Printer of printing final reports	
<b>Grade and Level(s)</b>	Introductory level biology (9-10 <sup>th</sup> grade)	
<b>Teacher Prep Time</b>	30 -60 minutes	<b>Class Time</b> 6 class periods (48 minutes ea
<b>National Standards</b> (From current draft)	<p><b>LS4.D. What is biodiversity and how do humans affect it and how does it affect humans?</b> (Biodiversity and Humans)</p> <p><b>LS3.A. How do organisms depend on the feeding relationships of one another and of the physical (abiotic) environment?</b> (Interdependent Relationships in Ecosystems)</p> <p><b>LS3.B. How do organisms in an ecosystem get the materials and energy they need?</b> (Flow of Matter and Energy Transfer in Ecosystems)</p> <p><b>LS3.C. What happens to organisms and ecosystems when there are changes in the environment?</b> (Ecosystems Dynamics, Stability, and Resilience)</p>	
<b>State Standards</b>	<p><b>Scientific Inquiry Skills Standards</b></p> <p><b>High School</b></p> <p>SIS1. Make observations, raise questions, and formulate hypotheses.</p> <ul style="list-style-type: none"> <li>• Pose questions and form hypotheses based on personal observations, scientific articles, experiments, a</li> </ul> <p>SIS2. Design and conduct scientific investigations.</p> <ul style="list-style-type: none"> <li>• Articulate and explain the major concepts being investigated and the purpose of an investigation.</li> <li>• Select required materials, equipment, and conditions for conducting an experiment.</li> </ul> <p>SIS3. Analyze and interpret results of scientific investigations.</p>	

	<ul style="list-style-type: none"> <li>• Present relationships between and among variables in appropriate forms.</li> <li>• Use results of an experiment to develop a conclusion to an investigation that addresses the initial question and hypothesis.</li> </ul> <p>SIS4. Communicate and apply the results of scientific investigations.</p> <ul style="list-style-type: none"> <li>• Develop descriptions of and explanations for scientific concepts that were the focus of one or more investigations. Review information, explain statistical analysis, and summarize data collected and analyzed as the result of an investigation.</li> </ul> <p>5.2 Describe species as reproductively distinct groups of organisms. Recognize that species are further classified into a taxonomic system (kingdom, phylum, class, order, family, genus, species) based on morphological, behavioral, and genetic characteristics. Explain the role that geographic isolation can play in speciation.</p> <p>5.3 Explain how evolution through natural selection can result in changes in biodiversity through the increase in genetic diversity within a population.</p> <p>6.2 Analyze changes in population size and biodiversity (speciation and extinction) that result from the influence of natural climate, human activity, and the introduction of invasive, non-native species.</p> <p>6.3 Use a food web to identify and distinguish producers, consumers, and decomposers, and explain the transfer of energy and matter. Describe how relationships among organisms (predation, parasitism, competition, commensalism, mutualism) affect biological communities.</p>
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<b>Sources</b>	<p>MassWildlife  <a href="http://www.mass.gov/dfwele/dfw/index.htm">http://www.mass.gov/dfwele/dfw/index.htm</a></p> <p>New England Biolabs inc  <a href="http://www.neb.com/nebecomm/biodiversity0203.asp">http://www.neb.com/nebecomm/biodiversity0203.asp</a></p> <p>Flora of Berkshire County, Massachusetts (historical)  <a href="http://www.biodiversitylibrary.org/title/7639#1">http://www.biodiversitylibrary.org/title/7639#1</a></p> <p>Bartholomew's_Cobble  <a href="http://en.wikipedia.org/wiki/Bartholomew's_Cobble">http://en.wikipedia.org/wiki/Bartholomew's_Cobble</a></p> <p>Save the Housatonic river  <a href="http://savethehousatonic.org">http://savethehousatonic.org</a></p> <p>State Mammal list  <a href="http://www.mass.gov/dfwele/dfw/wildlife/facts/mammals_list.htm">http://www.mass.gov/dfwele/dfw/wildlife/facts/mammals_list.htm</a></p> <p>State Reptiles and Amphibians List  <a href="http://www.mass.gov/dfwele/dfw/wildlife/facts/reptiles/herp_list.htm">http://www.mass.gov/dfwele/dfw/wildlife/facts/reptiles/herp_list.htm</a></p> <p>Ma. Birds  <a href="http://en.wikipedia.org/wiki/List_of_birds_of_Massachusetts">http://en.wikipedia.org/wiki/List_of_birds_of_Massachusetts</a></p> <p>Ma. Plants  <a href="http://plants.usda.gov/java/stateSearch?searchTxt=&amp;searchType=Sciname&amp;stateSelect=US25&amp;searchOrder=1&amp;">http://plants.usda.gov/java/stateSearch?searchTxt=&amp;searchType=Sciname&amp;stateSelect=US25&amp;searchOrder=1&amp;</a></p> <p>Mushrooms  <a href="http://www.bio.brandeis.edu/fieldbio/mgoldin/Alpha_Scientific.html">http://www.bio.brandeis.edu/fieldbio/mgoldin/Alpha_Scientific.html</a></p> <p>Invasive species  <a href="http://www.invasivespeciesinfo.gov">http://www.invasivespeciesinfo.gov</a></p> <p>National standards- newest draft  <a href="http://www7.nationalacademies.org/bose/Standards_Framework_Homepage.html">http://www7.nationalacademies.org/bose/Standards_Framework_Homepage.html</a></p> <p><a href="#">Mass Frameworks</a></p>
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	<a href="http://www.doe.mass.edu/frameworks/current.html">http://www.doe.mass.edu/frameworks/current.html</a>
<b>References</b>	Berkshire BioBlitz- a STEM pipeline/MCLA/Berkshire Museum project last spring in Pittsfield State Park. One of the goals of the Berkshire BIOblitz was to create a list of species in the forest
<b>Assessment</b>	Rubric for group work (teacher generated) Rubric for the data collected (teacher generated)