

Science	SCI.III.5.4	Grade: 5
<b>Strand III Using Scientific Knowledge in Life Science</b>		
<b>Standard 5 Ecosystems - All students will investigate and explain how communities of living things change over a period of time.</b>		
<b>Benchmark 4 Describe the likely succession of a given ecosystem over time.</b>		
<b>Constructing and Reflecting:</b>		
SCI.I.1.1 - Generate scientific questions about the world based on observation.		
SCI.I.1.4 - Use metric measurement devices to provide consistency in an investigation.		
SCI.I.1.6 - Write and follow procedures in the form of step-by-step instructions, formulas, flow diagrams, and sketches.		
SCI.II.1.3 - Show how common themes of science, mathematics, and technology apply in real-world contexts.		
SCI.II.1.5 - Develop an awareness of and sensitivity to the natural world.		
<b>Vocabulary / Key Concepts</b>	<b>Context</b>	
<ul style="list-style-type: none"> <li>• succession</li> <li>• stages</li> <li>• climax community</li> <li>• pioneer species</li> </ul>	Process of gradual change in ecological systems, such as in ponds or abandoned farm fields	
<b>Knowledge and Skills</b>	<b>Resources</b>	
Describe the likely succession of a given ecosystem over time.	<u>Coloma Resources:</u> Prentice Hall Science Explorer – Environmental Science pgs 74-78	
<u>Other Resources:</u> (continued from column at right)	Project Wild pgs 108-109, 110-111	
<ul style="list-style-type: none"> <li>• Michigan Teacher Network <a href="#">Resources</a></li> <li>• Scope Unit – <a href="#">Dynamics of an Ecosystem</a> (Fifth)</li> <li>• Project Learning Tree – American Forest Foundation – p. 306-310 “Nothing Succeeds Like Succession”</li> <li>• Ecosystems – NSRC – <a href="#">Teacher Page</a></li> </ul>	Project Wild – forest in a jar pgs 108-109 Pond succession pgs 110-111  <u>Other Resources:</u> <ul style="list-style-type: none"> <li>• The Franklin Institute – <a href="#">Investigate an Ecosystem</a></li> <li>• <a href="#">National Wildlife Federation</a></li> <li>• <a href="#">Project Wild</a> - “Fire Ecologies”; “Forest in a Jar”</li> </ul>	

Instruction	Assessment
<p><b>Focus Question: What evidence of succession can you observe in your community?</b></p> <ol style="list-style-type: none"> <li>Take the students on a field trip to a forest or grassland showing the stages of succession: <ul style="list-style-type: none"> <li>areas that have been burned recently</li> <li>areas burned 10+ years ago</li> <li>areas not burned in recorded history</li> </ul> </li> <li>On their field trip, have them find plant communities in different stages of succession. They can look for the following stages of succession: <ul style="list-style-type: none"> <li>grasses and non-woody plants only</li> <li>grasses, woody and non-woody plants</li> <li>grasses and shrubs, with young tree saplings (stem less than ½")</li> <li>ground vegetation and young trees (stem ½" – 2")</li> <li>mature trees (stem 2") can still be under canopy</li> </ul> </li> <li>Small groups of students will collect and organize the following data on each area: <ul style="list-style-type: none"> <li>types of plants</li> <li>plant density (number of stems per square meter)</li> <li>plant height (average)</li> <li>evidence of animal/human life</li> </ul> </li> <li>Each group will draw a map of the area. They should label the major landmarks and identify areas that fall into the different stages of succession.</li> <li>Following the field trip, each group will draw a flowchart showing the observed stages of succession that were observed.</li> <li>Extensions: observe succession in a pond, on a bare rock or from lake to forest</li> </ol>	<p>Students will work with a partner to draw a storyboard of the stages of succession in a specific ecosystem of their choice. Possible choices may include terrestrial or aquatic ecosystems – farm fields, beaches, sand dunes, fencerows, barren rock, abandoned wetland, pond, or lakes. They should research their ecosystem. Then students will illustrate their research using a flow chart, diorama, 3-D display or multimedia presentation. The project should illustrate the likely stages of succession of a given ecosystem from a pioneer species to a climax community. Students will present their projects to another class.</p> <p>(Give students rubric before activity.)</p> <p><b>Scoring Rubric</b></p> <p><b>Criteria: Accuracy of sequence:</b></p> <p><b>Apprentice</b> - Illustrates no successional stages from pioneer to climax communities.</p> <p><b>Basic</b> - Illustrates a few successional stages from pioneer to climax communities.</p> <p><b>Meets</b> - Illustrates most successional stages from pioneer to climax communities.</p> <p><b>Exceeds</b> - Illustrates detailed successional stages from pioneer to climax communities.</p> <p><b>Criteria: Quality of content:</b></p> <p><b>Apprentice</b> - Includes few details and lists few organisms.</p> <p><b>Basic</b> - Includes some details and lists different organisms.</p> <p><b>Meets</b> - Includes important details and lists different organisms.</p> <p><b>Exceeds</b> - Includes many additional details and lists a diverse variety of organisms.</p> <p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>Field trip to Sarett can show succession.</li> <li>Computer lab – research succession.</li> <li>See resources on previous page.</li> </ol>
<p><b>Teacher Notes:</b></p> <p>“All organisms, including the human species, are part of and depend on two main interconnected global food webs. One includes microscopic ocean plants, the animals that feed on them, and finally the animals that feed on those animals. The other web includes land plants, the animals that feed on them, and so forth. The cycles continues indefinitely because organisms decompose after death to return food material to the environment.” (BSL)</p> <p><b>Focus Question</b></p> <ul style="list-style-type: none"> <li>What evidence of succession is in your community?</li> </ul>	