
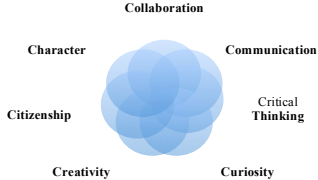


	Course: Natural Resources Management Year B	
	<b>R14 The Seven Cs of Learning</b> 	
<b>Unit Titles</b>	<b>Length of Unit</b>	
● <i>Tree Identification</i>	4-6 weeks	
● <i>Water quality</i>	4-6 weeks	
● <i>Wildlife management</i>	4-6 weeks	
● <i>Maple Syrup Production</i>	4-6 weeks	
● <i>Invasive Species in Connecticut</i>	2-4 weeks	
● <i>FFA Proficiency Awards</i>	2 weeks	
● <i>Sawmill operation</i>	2-4 weeks	



<b>Strands</b>	<b>Course Level Expectations</b>
<b>Physical Preparedness</b>	The student needs to come physically prepared to perform field work in all weather conditions. The students will need to walk distances, climb fences and trees, wade rivers and carry weight up to forty pounds.
<b>Equipment Use and Safety</b>	Through the course of the year the class will use equipment to process products, move materials and improve the school grounds for various class needs. Examples include loader operation, chainsaw and sawmill use, and woodworking tool use.
<b>Natural Resources Products Production</b>	The students will use their abilities to produce and package honey, maple syrup, firewood, lumber, and wildlife mounts and pelts.
<b>Natural Resources Identification</b>	The student will learn to identify species of trees and wildlife native to Connecticut.

<b>Unit Title</b>	<b>Tree identification</b>	<b>Length of Unit</b>	4-6 weeks
<b>Inquiry Questions (Engaging &amp; Debatable)</b>	<ul style="list-style-type: none"> <li>• Why is tree identification important to conservation?</li> <li>• What can a tree teach us?</li> <li>• Is there more than one method in identifying trees?</li> <li>• How do we prepare ourselves to work outdoors?</li> </ul>		
<b>Standards*</b>	<p><b>Natural Resource Systems (NRS):</b> Pathway Content Standard: The student will demonstrate competence in the application of scientific principles and techniques to the management of natural resources.</p> <p><b>NRS.01</b> Performance Element: Explain interrelationships between natural resources and humans necessary to conduct management activities in natural environments.</p> <p><b>NRS. 01.01</b> Performance Indicator: Classify. Measure and survey natural resources to create planning data.</p>		
<b>Unit Strands &amp; Concepts</b>	<p><b>Identification of natural resources. Understanding Conservation, Identifying Trees</b> Leaf shapes, tree barks, conservation, native trees, genus</p>		
<b>Key Vocabulary</b>	Keying, botany, dendrology, arboretum, deciduous, conifer		

\* The agriculture, food and natural resources (AFNR) industry standards

<b>Unit Title</b>	<b>Tree Identification</b>	<b>Length of Unit</b>	4-6 weeks
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<b>Critical Content:</b> My students will <b>Know</b> ...	<b>Key Skills:</b> My students will be able to <b>(Do)</b> ...
<ul style="list-style-type: none"> <li>• terms used to describe tree parts..</li> <li>• structures that occur on trees.</li> <li>• typical uses for the species of trees native in Connecticut.</li> <li>• ways to prepare for work outdoors.</li> </ul>	<ul style="list-style-type: none"> <li>• identify 50 native trees by leaf.</li> <li>• identify 10 trees by bark.</li> <li>• key a leaf specimen.</li> <li>• preserve a specimen.</li> <li>• explain the value of trees.</li> <li>• prepare for outdoor work.</li> </ul>

<b>Assessments:</b>	<ul style="list-style-type: none"> <li>• Performance assessments</li> <li>• Unit based formative assessments</li> </ul>
<b>Teacher Resources:</b>	❖ Tree identification guides

<b>Unit Title</b>	<b>Water Quality</b>	<b>Length of Unit</b>	4-6 weeks
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<b>Inquiry Questions (Engaging &amp; Debatable)</b>	<ul style="list-style-type: none"> <li>• What can water teach us?</li> <li>• Why is it important to continually monitor water quality?</li> <li>• How does a watershed impact the water?</li> </ul>
<b>Unit Strands &amp; Standards</b>	<p><b>Natural Resource Systems (NRS):</b> Pathway Content Standard: The student will demonstrate competence in the application of scientific principles and techniques to the management of natural resources.</p> <p><b>NRS.02</b> Performance Element : Apply scientific principle to natural resources management activities.</p> <p><b>NRS 02.03</b> Performance Indicator: Demonstrate natural resource enhancement techniques.</p> <p><b>NRS.06</b> Performance Element: Apply scientific principles to environmental service systems. NRS 06.01 Performance Indicator: Apply water science principles to environmental service systems.</p> <p><b>NRS.08</b> Performance Element: Apply knowledge of equipment of equipment and tools usage to natural resources management activities.</p> <p><b>NRS 08.01</b> Performance Indicator: Develop skill in the safe use of natural resources related tools and equipment.</p>
<b>Concepts</b>	Identify key components in clean water, The role of the watershed, reading maps, running bio assessments, and testing water. Aquifer, bioassessment, point vs. non-point pollution, employment in the water industry
<b>Key Vocabulary</b>	Macroinvertebrate, riffle, watershed, drainage basin

<b>Unit Title</b>	<b>Water Quality</b>	<b>Length of Unit</b>	4-6 weeks
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<b>Critical Content: My students will Know...</b>	<b>Key Skills: My students will be able to (Do)...</b>
<ul style="list-style-type: none"> <li>ways to identify a drainage basin.</li> <li>identify potential sources of water pollution.</li> <li>know various employment opportunities in the water quality field.</li> </ul>	<ul style="list-style-type: none"> <li>key aquatic insects.</li> <li>read topographic maps.</li> <li>conduct a bioassessment.</li> <li>conduct chemical testing on river water samples.</li> <li>explain how a watershed impacts water.</li> </ul>

<b>Assessments:</b>	<ul style="list-style-type: none"> <li>Performance Assessment</li> <li>Water Quality Formative and Interim Assessments</li> </ul>
<b>Teacher Resources:</b>	❖ Chest waders, chemical test kits, insect keys

<b>Unit Title</b>	<b>Wildlife Management</b>	<b>Length of Unit</b>	4-6 weeks
<b>Inquiry Questions (Engaging &amp; Debatable)</b>	<ul style="list-style-type: none"> <li>• Why should we proactively manage wildlife?</li> <li>• Why is it important to track wildlife in a specific habitat?</li> <li>• How are all species in a habitat connected?</li> <li>• Discussion only: What are the pros and cons of hunting?</li> </ul>		
<b>Standards</b>	<p><b>Natural Resource Systems (NRS) &amp; Animal Systems:</b></p> <p><b>NRS.01</b> Performance Element : Explain interrelationships between natural resources and humans necessary to conduct management activities in natural environments.</p> <p><b>NRS 01.01</b> Performance Indicator: Classify, measure and survey natural resources to create planning data.</p> <p><b>NRS.02</b> Performance Element: Apply scientific principles to natural resource management activities.</p> <p><b>NRS 02.01</b> Performance Indicator: Develop a safety plan to work with natural resources.</p> <p><b>NRS.04</b> Performance Element: Demonstrate techniques used to protect natural resources.</p> <p><b>NRS 04.01</b> Performance Indicator: Diagnose plant and wildlife diseases and follow protocol to prevent their spread.</p> <p><b>AS.02</b> Performance Element: Classify, evaluate, select and manage animals based on anatomical and physiological characteristics.</p> <p><b>AS 02.01</b> Performance Indicator: Classify animals according to hierarchical taxonomy and agricultural use.</p>		
<b>Unit Strands &amp; Concepts</b>	<p><b>Use several methods to determine what wildlife is present., identifying animal calls, reading animal tracks, how habitats influence wildlife</b></p> <p>Tracking, skull identification (animal anatomy), scat identification, wildlife management. Habitats impact, Scat, Signs</p>		
<b>Key Vocabulary</b>	Carrying capacity, conservation, anadromous, habitat, presence, classification		

<b>Unit Title</b>	<b>Wildlife Management</b>	<b>Length of Unit</b>	4-6 weeks
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<b>Critical Content:</b> My students will <b>Know</b> ...	<b>Key Skills:</b> My students will be able to <b>(Do)</b> ...
<ul style="list-style-type: none"> <li>• feeding habits for native wildlife.</li> <li>• classification of native wildlife.</li> <li>• habitat and its effects on wildlife population.</li> <li>• pros and cons of hunting.</li> </ul>	<ul style="list-style-type: none"> <li>• key a native wildlife skull.</li> <li>• identify signs of wildlife presence.</li> <li>• identify calls of native owls.</li> <li>• identify families of native wildlife.</li> <li>• explain how wildlife are connected.</li> </ul>

<b>Assessments:</b>	<ul style="list-style-type: none"> <li>• Performance Assessment</li> <li>• Class Presentation</li> </ul>
<b>Teacher Resources:</b>	❖ Wildlife skulls, keys for skulls, scat and tracks. Pelts and mounts.



<b>Unit Title</b>	<b>Maple Syrup Production</b>	<b>Length of Unit</b>	4-6 weeks
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<b>Inquiry Questions (Engaging &amp; Debatable)</b>	<ul style="list-style-type: none"> <li>• How does maple syrup production teach us about natural resources?</li> <li>• What does maple syrup production teach us about business?</li> </ul>
<b>Standards</b>	<p><b>Natural Resource Systems (NRS):</b></p> <p><b>NRS.01</b> Performance Element: Explain interrelationships between natural resources and humans necessary to conduct management activities in natural environments. Identify native New England tree species and their products.</p> <p><b>NRS.02</b> Performance Element: Apply scientific principles to natural resources management activities. Demonstrate safety practices when working in an outdoor environment.</p> <p><b>NRS.03</b> Performance Element: Apply knowledge of natural resources to production and processing industries. Process forest products.</p>
<b>Unit Strands &amp; Concepts</b>	Maple syrup production is used as a vehicle to teach students: tree identification, proper preparedness for outdoor work, food safety standards, equipment operation, and teamwork. Management of our resources for sustainability and production, bottling,
<b>Key Vocabulary</b>	Sustainability, evaporator, sanitary, tapping

<b>Unit Title</b>	<b>Maple Syrup Production</b>	<b>Length of Unit</b>	4-6 weeks
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<b>Critical Content:</b> My students will <b>Know</b> ...	<b>Key Skills:</b> My students will be able to <b>(Do)</b> ...
<ul style="list-style-type: none"> <li>determine correct trees to tap and proper techniques for tapping maple trees.</li> <li>explain the history of the maple industry.</li> </ul>	<ul style="list-style-type: none"> <li>operate maple syrup evaporator.</li> <li>demonstrate acceptable quality control and sanitary practices.</li> <li>demonstrate proper bottling of maple syrup.</li> <li>demonstrate how to make maple candy.</li> <li>operate equipment necessary to collect sap.</li> </ul>

<b>Assessments:</b>	<ul style="list-style-type: none"> <li>Performance assessments</li> <li>Various formative and interim assessments throughout the unit.</li> </ul>
<b>Teacher Resources:</b>	❖ Industry safety manuals

<b>Unit Title</b>	<b>Invasive Species Identification and Control</b>	<b>Length of Unit</b>	2-3 weeks
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<b>Inquiry Questions (Engaging &amp; Debatable)</b>	<ul style="list-style-type: none"> <li>● Why is learning about invasive species important to natural resources?</li> <li>● Why do invasive species establish themselves so quickly?</li> <li>● Can we control invasive species?</li> </ul>
<b>Standards</b>	<p><b>Natural Resource Systems (NRS):</b>  <b>NRS.02</b> Performance Element: Apply scientific principles to natural resource management activities.  <b>NRS 02.01</b> Performance Indicator: Develop a safety plan for work with natural resources.  <b>NRS.08</b> Performance Element: Apply knowledge of equipment and tool usage to natural resource management activities.  <b>NRS 08.01</b> Performance Indicator: Develop skill in the safe use of natural resources related tools and equipment.</p>
<b>Unit Strands &amp; Concepts</b>	<p>Students will be taught to identify and control invasive plants occurring on school property in order to apply skills in identification, pest control, equipment use and teamwork.  Integrated pest management (IPM), native species, best management practices</p>
<b>Key Vocabulary</b>	<p>Pesticide, invasive, balance, pest, management</p>

<b>Unit Title</b>	<b>Invasive Species Identification and Control</b>	<b>Length of Unit</b>	2-3weeks
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<b>Critical Content: My students will Know...</b>	<b>Key Skills: My students will be able to (Do)...</b>
<ul style="list-style-type: none"> <li>• how to identify common invasive plants and animals.</li> <li>• what are invasive plants and animals?</li> <li>• ways to control invasive species.</li> <li>• different tools used in pest management.</li> </ul>	<ul style="list-style-type: none"> <li>• describe controls of invasive species using concepts in Integrated Pest Management. (IPM)</li> <li>• safely mix and apply pest controls.</li> <li>• explain how species spread and how they can be controlled.</li> <li>• use appropriate tools in pest management.</li> </ul>

<b>Assessments:</b>	<ul style="list-style-type: none"> <li>• Performance assessments</li> <li>• Formative Assessment Series</li> </ul>
<b>Teacher Resources:</b>	❖ Industry safety manuals

<b>Unit Title</b>	Sawmill Operation	<b>Length of Unit</b>	2-4 weeks
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<b>Inquiry Questions (Engaging &amp; Debatable)</b>	<ul style="list-style-type: none"> <li>• How does a portable sawmill assist the natural resource manager?</li> </ul>
<b>Standards</b>	<p><b>Natural Resource Systems (NRS): The student will demonstrate competence in the application of scientific principles and techniques to the management of natural resources.</b></p> <p><b>NRS.01</b> Performance Element : Explain interrelationships between natural resources and humans necessary to conduct management activities in natural environments. NRS 01.01 Performance Indicator: Classify, measure and survey natural resources to create planning data.</p> <p><b>NRS.02</b> Performance Element: Apply scientific principles to natural resource management activities. <b>NRS 02.01</b> Performance Indicator: Develop a safety plan for work with natural resources.</p> <p><b>NRS.03</b> Performance Element: Apply knowledge of natural resources to production and processing industries. NRS 03.01 Performance Indicator: Produce, harvest, process and use natural resource products.</p>
<b>Unit Strands &amp; Concepts</b>	Using the school sawmill the students will apply skills learned in safety, forest products production, equipment operation and teamwork. Measurement, safety, lumber identification, equipment operation, renewable resources,
<b>Key Vocabulary</b>	Sawtimber, board foot, defect, renewable

<b>Unit Title</b>	Sawmill Operation	<b>Length of Unit</b>	2-4 weeks
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<b>Critical Content:</b> My students will <b>Know</b> ...	<b>Key Skills:</b> My students will be able to <b>(Do)</b> ...
<ul style="list-style-type: none"> <li>• native species that have excellent value as lumber species.</li> <li>• proper drying and storage of lumber.</li> <li>• proper preparedness for outdoor mill operation.</li> </ul>	<ul style="list-style-type: none"> <li>• identify native New England trees and their products.</li> <li>• measure saw logs and lumber for volume.</li> <li>• demonstrate operation and maintenance of sawmill.</li> <li>• demonstrate safety practices when working in an outdoor environment.</li> <li>• process forest products.</li> <li>• identify ten tree species by wood grain.</li> <li>• explain employment opportunities in the wood products industry.</li> </ul>

<b>Assessments:</b>	<ul style="list-style-type: none"> <li>• Performance assessments</li> <li>• Various formative and interim assessments throughout the unit.</li> </ul>
<b>Teacher Resources:</b>	❖ Woodmizer sawmill