

Science: Environmental Science
Unit 2: Forestry

<p>Essential Understandings</p>	<ul style="list-style-type: none"> ▪ Forests are an important natural resource. ▪ Forest ecosystems provide clean water, oxygen, soil nutrients, carbon storage, temperature regulation and rainfall, and wildlife habitat. ▪ Primary and secondary succession produces a mature forest biome. ▪ Humans can modify a forest in many ways both positively and negatively. ▪ Trees have many functional parts. ▪ The main function of forests is to support living habitats..
<p>Essential Questions</p>	<ul style="list-style-type: none"> ▪ What is a forest and how is forestry related?. ▪ What are the functional parts of a tree? ▪ How is a forest inventory growth plot determined and used? ▪ What are the benefits of a single tree species? ▪ How does a forester measure diameter, height, and volume of a tree? ▪ What is the calculated board footage of a tree and how is it used? ▪ What are the common softwood and hardwood trees in Maine and how can we identify, harvest, and use them? ▪ Is a forest sustainable?
<p>Essential Knowledge</p>	<ul style="list-style-type: none"> ▪ Trees absorb carbon dioxide and give off oxygen through photosynthesis. ▪ Forests provide us with resources to produce more than 5000 different commercial products. ▪ There are two major types of trees commonly known as softwoods and hardwoods with numerous tree species of each type. ▪ Succession produces a mature forest. ▪ The major types of terrestrial climax communities are known as biomes. ▪
<p>Vocabulary</p>	<ul style="list-style-type: none"> ▪ <u>Terms:</u> Forest, forestry, Tree: diameter, height, volume, species identification; coniferous, deciduous, softwood, hardwood, Biltmore stick, diameter tape, clinometer, Garmin etrex gps unit, handheld compass, crown, trunk, roots, medullary rays, root hairs, leaves, pith, heartwood, sapwood (xylem), cambium, inner bark (phloem), outer bark, pioneer community, desert, grassland, boreal forest, tundra, savanna, harvesting; clear-cutting, selective, patch-work clear-cutting, reforestation, forest sustainability. <p style="text-align: center;">○</p>
	<ul style="list-style-type: none"> ▪ Carefully read and highlight the provided Forest Station information

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<p>Essential Skills</p>	<p>packet and understand through class activities and presentations the ecological, economic, and social importance of trees in Maine.</p> <ul style="list-style-type: none"> ▪ Set up a prescribed FIG plot and complete all parts of the Forest Inventory Growth laboratory activity. ▪ Determine the type of tree, diameter, and height using a Forest Trees Maine booklet, Biltmore stick, Diameter tape, and Clinometer ▪ Understand the GPS system and then use a GPS unit and a compass to locate and identify directions of latitude and longitude. ▪ Review and answer practice assessment questions for textbook chapters 6 and 12 by matching terms and definitions, determining true or false statements, identifying correct multiple choice responses, or writing complete sentences to answer challenging questions.
<p>Related Maine Learning Results</p>	<p>D2 Earth E1 Biodiversity E2 Ecosystems</p>
<p>Sample Lessons And Activities</p>	<ul style="list-style-type: none"> ▪ Student groups will set up a Forest Inventory Growth (FIG) plot and identify, measure, and estimate the volume of trees using various lab activities. Also not suitable wildlife habitat. ▪ Read Chapters 6 and 12 and answer the end of chapter review questions and practice test questions for each. ▪ Read and complete both parts of the Reading the Rings Activity. ▪ Determine What Leaf Is It by completing the Laboratory Activity in student pairs. ▪ Working in pairs practice with a Biltmore Stick, Diameter Tape, and Clinometer for Calculating Board Footage in a Tree Activity. ▪ Read and highlight before answering review questions on the Forests Are More Than Trees handout packet. ▪ Evaluate the benefit of a tree using the web-site treeenefits.com ▪ Select and research one piece of Maine logging equipment before presenting to the class. ▪ Read Forest Invaders and then work in pairs to determine the best ways to prevent invasive species in the Maine forest.
<p>Sample Classroom Assessment Methods</p>	<ul style="list-style-type: none"> ▪ Maine Deciduous (hardwood) and Coniferous (softwood) Tree Identification Quizzes. ▪ Textbook Chapters 6 and 12 Quizzes and Test. ▪ Previous Envirothon Test Questions for Forestry ▪ Functional Tree Parts Quizzes and Tests
<p>Sample Resources</p>	<ul style="list-style-type: none"> ▪ <u>Publications: Environmental Science: A Study of Interrelationships Eighth Edition by Enger/Smith</u> ▪ <u>Maine Envirothon Forestry Station Packet</u> ▪ <u>Forest Trees of Maine Booklet Centennial Edition 1908-2008</u> ▪ <u>Trees of the Northeast Leaf Identification Guide</u>

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	<ul style="list-style-type: none">▪ <u>Tree Finder A Manual for the Identification of Trees By Their Leaves by May Theilgaard Watts 1998</u>▪ <u>Tree Growth Study Kit/Tree Ring Dating Simulation Student Activity Kit by Flinn Scientific Inc.</u><ul style="list-style-type: none">○▪ <u>Videos: Maine Forests Forever Green DVD</u>▪ <u>Using the Compass DVD</u>▪ <u>You Tube: Various Photos of Trees of Maine</u><ul style="list-style-type: none">○
Technology Link	<ul style="list-style-type: none">▪ http://www.brunswick.k12.me.us/curriculum