

Key Topics	Learning Objectives	Learning Materials (LO Alignment)	Optional/Supplemental Materials
<b>KT 1: Forest Ecology</b>  <i>HS-LS1-2, HS-LS1-5, HS-LS1-7, HS-LS2-1, HS-LS2-3, HS-LS2-5, HS-ESS2-5, HS-ESS2-6</i>	LO 1.1: List the biotic and abiotic components of a forest ecosystem.	<a href="#">Chapter Two: Forest Ecosystems</a> (LO 1.1-1.3) <a href="#">5.2 Crown Classes</a> (LO 1.2) <a href="#">Biogeochemical Cycles</a> (LO 1.4) <a href="#">4 Elements of a Healthy Forest</a> (LO 1.5) <a href="#">Forest Stewardship: Wildlife</a> (LO 1.5-1.6)	
	LO 1.2: Explain the structure of a forest ecosystem and identify different crown classes.		
	LO 1.3: Diagram the energy flow in a forest ecosystem and describe the relationships between trophic levels.		
	LO 1.4: Describe the role that plant communities play in nutrient cycling, including carbon, nitrogen, and phosphorus cycles.		
	LO 1.5: Describe how plant communities provide important habitat types for wildlife.		
	LO 1.6: Identify how wildlife can impact a forest ecosystem both positively and negatively.		
<b>KT 2: Fire Ecology</b>  <i>HS-LS2-6</i>	LO 2.1: Describe the role of fire in ecosystems (including fire-dependent and non-fire-dependent systems)	<a href="#">Wildland Fire in Ecosystems</a> (LO 2.1) <a href="#">Wildlife Habitat as it Relates to Forestry</a> (LO 2.2) <a href="#">The Benefits of Downed Wood</a> (LO 2.2) <a href="#">Chapter Two: Forest Ecosystems</a> (LO 2.3) <a href="#">Chapter Introduction: Fire Ecology</a> (LO 2.4)	
	LO 2.2: List the benefits of snags and downed logs to wildlife species		
	LO 2.3: Identify stages of plant succession within the context of a given ecosystem.		
	LO 2.4: Identify adaptive features of plants and animals that have evolved in response to fire.		
<b>KT 3: Field Skills</b>	LO 3.1: Identify common local trees and plants by leaves, bark, branching patterns, buds, fruit, and other characteristics.	<a href="#">New Mexico FFA Tree Identification Study Guide</a> (LO 3.1) <a href="#">Dendrochronology: How to Use an Increment Borer</a> (LO 3.2) <a href="#">FFA Forestry CDE Handbook</a> (LO 3.2) <a href="#">How to Read a Topo Map</a> (LO 3.2) <a href="#">How to Use a Clinometer</a> (LO 3.2) <a href="#">How to Use Diameter Tape</a> (LO 3.2) <a href="#">Measuring Tree Height with a Merritt Hypsometer</a> (LO 3.2) <a href="#">Measuring Tree Volume with a Biltmore Stick</a> (LO 3.2) <a href="#">Using a Prism to Measure Basal Area</a> (LO 3.2) <a href="#">Field Guide to Insects and Diseases of Arizona and New Mexico Forests</a> (LO 3.3) <a href="#">Basal Area: A Measure Made for Management</a> (LO 3.4) <a href="#">Measuring Standing Trees</a> (LO 3.4)	
	LO 3.2: Use common forestry tools, such as a Biltmore Stick, Merritt Hypsometer, D-tape, Wedge Prism, Tree Caliper, Clinometer, Increment Borer, GPS, Topographic Maps, etc.		
	LO 3.3: Identify common plant pests and diseases		
	LO 3.4: Produce common forestry measurements, such as diameter at breast height (DBH), chain, cord, total tree height, merchantable height, board feet, log, and basal area.		
<b>KT 4: Forest Management</b>  <i>HS-LS2-5, HS-LS2-7, HS-LS4-6, HS-ESS2-5, HS-ESS3-4</i>	LO 4.1: Explain how forested ecosystems benefit water quality	NM Envirothon Forestry Resource: Watersheds (LO 4.1-4.3) <a href="#">Evapotranspiration and the Water Cycle</a> (LO 4.2) <a href="#">What Do Plants Have to Do with Flooding?</a> (LO 4.2) <a href="#">Forest Management Basics</a> (LO 4.4) <a href="#">Forest Management Video</a> (LO 4.4) <a href="#">Forest Products</a> (LO 4.5) <a href="#">Idaho Forest Products Video Series</a> (LO 4.5) <a href="#">Why Forests are Important for People</a> (LO 4.5)	
	LO 4.2: Describe the role that plant communities play in the water cycle, including major events such as flooding, droughts, and storms		
	LO 4.3: Explain the concept of Best Management Practices (BMPs) in forestry and list examples.		
	LO 4.4: Make management recommendations based on ecological conditions of the forest and management goals (such as wildlife habitat, timber production, recreation, et cetera).		
	LO 4.5: Describe human uses for forest and plant products and how these products are obtained from natural resources.		