



# Oregon Forest Resources Institute

## **Grades 9–12 Forest Connections: A Correlation of the Oregon Forest Literacy Plan with Other Educational Resources**

The [Oregon Forest Literacy Plan](#) gives educators in our forest-rich state a strong foundation for incorporating forest and natural resources in their classrooms and programs, and provides a conceptual framework for teaching about Oregon’s forests. This correlation document helps them further by identifying connections between each of the Oregon Forest Literacy Plan’s 73 concepts and:

- [Oregon Environmental Literacy Plan](#) strands
- [Oregon Science Standards](#) performance expectations
- [Oregon Forest Resource Institute \(OFRI\)](#) materials
- [Project Learning Tree \(PLT\)](#) activities
- [Project WILD](#) activities

### **Forest Literacy in Grades 9-12**

High school students are able to apply sophisticated reasoning to difficult concepts, particularly when the learning context is familiar to them. Using forests as a context for learning is beneficial for students this age, as it provides them with a “real-world” basis for applying new knowledge. Many high school students still have difficulty proposing explanations based on logic and evidence instead of on their prior conceptions of the natural world. Providing many opportunities to collect evidence and develop explanations based on that evidence can help them develop this skill.

Forest literacy activities at the high school level may explore:

- What factors contribute to the biodiversity of Oregon’s forests?
- How do people manage forests to achieve desired forest outcomes and ensure the sustainability of our forests?
- What role do governments, private companies and individuals play in managing Oregon’s forests?
- What can individuals do to help sustain forests?

Forests can become the focus of increasingly sophisticated research, in which students can use data to drive their decisions. Forests can also provide a meaningful context for high school students to examine the implications of issues on a variety of levels, both locally and globally.

For more information about forest literacy by grade level, see the Oregon Forest Literacy Plan, available at [learnforests.org](http://learnforests.org).

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# Grades 9–12 Forest Connections

## About the Resources

This document identifies connections between the Oregon Forest Literacy Plan concepts and the following resources for Grades 9-12.

**Oregon Environmental Literacy Plan** – The goal of the [Oregon Environmental Literacy Plan](#) is to promote environmental literacy, which is defined in the plan as “an individual’s understanding, skills and motivation to make responsible decisions that consider his or her relationships to natural systems, communities and future generations.” The plan identifies five learning strands designed to support the cultivation of environmentally literate students and to integrate learning experiences inside and outside the classroom.

The following table outlines what environmentally literate students should know at each grade level. For more information about the Oregon Environmental Literacy Plan, see [oelp.oregonstate.edu](http://oelp.oregonstate.edu).

Grade Level Progression for Environmentally Literate K-12 Students		
Elementary	Middle School	High School
Know they have influence on their environment and community by the way that they care for themselves, others and places.	Are gaining a sense of self in their natural and human community, including their impact on others in those systems. Are able to discuss issues, take in multiple perspectives, back up personal opinions with evidence, and distinguish between opinion and fact.	Are inspired to be lifelong learners, stewards and enthusiasts of the natural world. Are prepared to make informed decisions that consider the economic, social and environmental impacts of issues using credible evidence.

Source: Standards Integration: A Framework for Incorporating NGSS, Social Sciences and Environmental Literacy into Classroom Curriculum. Oregon State University Extension Service

**Oregon Science Standards (PEs)** – Oregon Science Standards identify expectations for what students should be able to do by the end of the year or grade band. Adapted from the Next Generation Science Standards (NGSS), these Performance Expectations (PEs) also incorporate three dimensions of science: disciplinary core ideas, science and engineering practices, and crosscutting concepts. For more information, see [oregon.gov/ode](http://oregon.gov/ode).

**OFRI Materials** – A variety of publications and videos from OFRI help to strengthen forest literacy. They provide information and learning activities to support K-12 teachers and their students in learning about the environment. See [learnforests.org](http://learnforests.org) to order or download these free materials.

**PLT Activities** – Relevant activities are identified from PLT’s *Global Connections: Forests of the World* (FOTW) and *Focus on Forests* (FoF) secondary environmental education modules, *Green Jobs: Exploring Forest Careers* (GJ), and *Teaching with i-Tree*. Educators can receive these activity guides by participating in a PLT professional development event. For more details, contact the Oregon Natural Resources Education Program at 541-737-9121 or [onrep@oregonstate.edu](mailto:onrep@oregonstate.edu).

**Project WILD Activities** – Relevant activities are identified from the *Project WILD K-12 Curriculum and Activity Guide*. Educators can receive this guide by participating in a Project WILD workshop. For more details, contact the Oregon Natural Resources Education Program at 541-737-9121 or [onrep@oregonstate.edu](mailto:onrep@oregonstate.edu).

## Grades 9–12 Forest Connections

Oregon Forest Literacy Plan Concepts	Oregon Environmental Literacy Strands	Oregon Science Standards (PEs)	OFRI Materials*	PLT Activities**	Project WILD Activities***
1.A.1. A forest is an ecosystem dominated by trees, and includes a variety of other organisms .	2) Physical, living and human systems		Forest Fact Break: Ecosystems (v) Inside Oregon's Forests: A High School Forestry Curriculum	FoF: 1: Monitoring Forest Health  GJ: 3: Monitoring Forest Health  FOTW: 2: What Is a Forest?	
1.A.2. Different forest biomes exist around the world. Examples include tropical forests, temperate forests and boreal forests. Oregon is in the temperate forest biome.	2) Physical, living and human systems			FOTW: 3: Mapping the World's Forests	
1.A.3. Many different forest types exist within a biome, typically named by their dominant tree species. Common forest types in Oregon include spruce-hemlock, Douglas-fir, ponderosa pine, mixed conifer, and juniper.	2) Physical, living and human systems		Forest Fact Break: Forest Types (v) Inside Oregon's Forests: A High School Forestry Curriculum Oregon's Forests (poster)	FOTW: 3: Mapping the World's Forests	
1.A.4. Woodlands, such as oak savannas, are areas with trees that are less dense than forests but function similarly.	2) Physical, living and human systems		Forest Fact Break: Forest Types (v) Inside Oregon's Forests: A High School Forestry Curriculum Oregon's Forests (poster)	FOTW: 3: Mapping the World's Forests	
1.A.5. An urban forest is a type of forest that includes all the publicly and privately owned trees within a city, town, or suburb working together as an ecosystem.	2) Physical, living and human systems			FOTW: 4: Analyzing Patterns of Forest Change  Teaching with i-Tree	
1.B.1. A tree is a woody perennial plant, usually more than 12 feet (4 meters) tall at maturity, with a single main stem and a more or less distinct crown of leaves or needles.	2) Physical, living and human systems		Forest Essays, Grades 7-12 Forest Fact Break: Tree Biology (v) Forest Fact Sheet: Woody Biomass Inside Oregon's Forests: A High School Forestry Curriculum	FOTW: 2: What Is a Forest?	
1.B.2. Trees can be identified based on seeds, leaves, flowers, bark, shape and other parts. They are classified into genus, family and species groups.	1) Systems thinking		Forest Essays, Grades 7-12 Forest Fact Break: Tree Biology (v) Inside Oregon's Forests: A High School Forestry Curriculum		

\* OFRI materials marked with a (v) are videos. Otherwise, they are publications.

\*\* Activities are from *Focus on Forests (FoF)* and *Global Connections: Forests of the World (FOTW)* secondary environmental education modules, *Green Jobs: Exploring Forest Careers (GJ)*, and *Teaching with i-Tree*.

\*\*\* Activities are from *Project WILD K-12 Curriculum & Activity Guide*.

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1.B.3. Trees are generally categorized as broadleaf (having broad, flat leaves and producing seeds in fruits, flower or nuts) or conifer (having needle-like or scale-like leaves and producing seeds in cones).	2) Physical, living and human systems		Forest Essays, Grades 7-12 Forest Fact Break: Tree Biology (v) Inside Oregon's Forests: A High School Forestry Curriculum		
1.B.4. Trees have life stages that include seed germination, growth, maturity, reproduction, decline and death.	2) Physical, living and human systems		Forest Essays, Grades 7-12 Forest Fact Break: Tree Biology (v)	FOTW: 1: Monitoring Forest Health  GJ: 3: Monitoring Forest Health	
1.B.5. As part of the forest ecosystem, trees have many roles (e.g., supplying oxygen, providing habitat and food, holding soil, moderating temperature, capturing and storing carbon, and cycling water and nutrients). They may have different roles at different life stages.	2) Physical, living and human systems	(Somewhat relevant) HS-LS1-5. Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.  HS-LS2-5. Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.	Forest Essays, Grades 7-12 Forest Fact Break: Carbon Capture (v) Forest Fact Break: Ecosystems (v) Forest Fact Break: Water (v) Forest Fact Sheet: Carbon & Climate Forest Fact Sheet: Drinking Water Inquiry at Hinkle Creek (v) Inside Oregon's Forests: A High School Forestry Curriculum	FoF: 1: Monitoring Forest Health 6: Forest to Faucet 8: Climate Change and Forests  GJ: 3: Monitoring Forest Health  Teaching with i-Tree	
1.B.6. Trees have complex relationships with other organisms. They may compete or cooperate with each other and with other organisms for nutrients, sunlight, space and water.	2) Physical, living and human systems	HS-LS2-1. Use mathematical and/or computational representations to support explanations for factors that affect carrying capacity of ecosystems at different scales.  HS-LS2-2. Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.	Forest Essays, Grades 7-12 Inside Oregon's Forests: A High School Forestry Curriculum	FoF: 1: Monitoring Forest Health 2: Story of Succession  GJ: 3: Monitoring Forest Health	
1.B.7. Tree health is affected by many factors, including competition (for space, light, water and nutrients), climate, weather, natural and human-caused disturbances, pests and	2) Physical, living and human systems		Forest Essays, Grades 7-12 Forest Fact Break: Ecosystems (v) Forest Fact Break: Sustainability (v)	FoF: 1: Monitoring Forest Health 4: Tough Choices 6: Forest to Faucet  FOTW:	Phenology at Play

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disease, as well as human interventions.				6: Seeking Sustainability: A Global Response 7: Exploring the World Marketplace  GJ: 3: Monitoring Forest Health 4: Seeking Sustainability	
1.C.1. Forest ecosystems consist of different types of living organisms and nonliving components, both above and below ground, interacting within a given environment, space and time.	2) Physical, living and human systems		Forest Essays, Grades 7-12 Inquiry at Hinkle Creek (v)	FoF: 1: Monitoring Forest Health  FOTW: 2: What Is a Forest? 4: Analyzing Patterns of Forest Change  GJ: 3: Monitoring Forest Health (GI)	Birds of Prey
1.C.2. Forest ecosystems include processes such as photosynthesis, energy flow and the cycling of nutrients, water, carbon and other matter. Energy and matter are transferred between producers, consumers and decomposers.	2) Physical, living and human systems	HS-LS1-5. Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.  HS-LS2-4. Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem.	Forest Essays, Grades 7-12 Forest Fact Break: Carbon Capture(v) Forest Fact Break: Photosynthesis (v) Forest Fact Break: Water (v) Forest Fact Sheet: Carbon & Climate Forest Fact Sheet: Drinking Water Forest Fact Sheet: Photosynthesis Inquiry at Hinkle Creek (v) Inside Oregon's Forests: A High School Forestry Curriculum Where's All the Carbon? (poster)	FoF: 6: Forest to Faucet 8: Climate Change and Forests	Birds of Prey
1.C.3. Forest ecosystems are complex and dynamic, and continuously undergo change or adaptation, ranging from gradual change (e.g., succession and climate) to abrupt change (e.g., fire and disease).	2) Physical, living and human systems	HS-LS2-2. Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.  HS-LS2-6. Evaluate claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions,	Forest Essays, Grades 7-12 Forest Fact Break: Fire (v) Forest Fact Sheet: Fire Inquiry at Hinkle Creek (v) Inside Oregon's Forests: A High School Forestry Curriculum	FoF: 1: Monitoring Forest Health 2: Story of Succession 5: The Nature of Fire 7: Forest Invaders  FOTW: 4: Analyzing Patterns of Forest Change	Forest in a Jar

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		but changing conditions may result in a new ecosystem.			
1.C.4. Disturbance events are a part of forest ecosystems. These events may be natural (e.g., wind and disease outbreaks), human-caused (e.g., harvesting timber and development) or a combination of both (e.g., fire). Disturbance events can change the makeup of the forest because different tree species respond differently to different types of events.	2) Physical, living and human systems 3) Interconnectedness of people and the environment	HS-LS2-6. Evaluate claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.  HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.	Forest Essays, Grades 7-12 Forest Fact Break: Fire (v) Forest Fact Break: Fire Safety (v) Forest Fact Sheet: Fire	FoF: 2: Story of Succession 5: The Nature of Fire 8: Climate Change and Forests  FOTW: 4: Analyzing Patterns of Forest Change	Fire Ecologies
1.C.5. Wildfire plays major roles in Oregon's forest ecosystems, including opening the forest canopy to sunlight and creating new habitat. Many forest plants and trees have adapted to wildfire, and some species cannot survive without it.	2) Physical, living and human systems 3) Interconnectedness of people and the environment	HS-LS2-6. Evaluate claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.  HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.	Forest Essays, Grades 7-12 Forest Fact Break: Fire (v) Forest Fact Break: Fire Safety (v) Forest Fact Sheet: Fire	FoF: 2: Story of Succession 5: The Nature of Fire  FOTW: 4: Analyzing Patterns of Forest Change	Fire Ecologies
Theme 1, C.6. Forests are interconnected with other terrestrial ecosystems (e.g., grasslands, meadows and agricultural lands) and aquatic (e.g., estuaries, riparian areas and wetlands).	2) Physical, living and human systems		Inquiry at Hinkle Creek (v)	FOTW: 3: Mapping the World's Forests	

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1.C.7. Oregon’s regions vary in soil types, elevation, topography, temperature, wind and rainfall patterns. These variations create the different forest types and species composition that, together with disturbance histories, contribute to the region’s biodiversity.	2) Physical, living and human systems		Forest Fact Break: Forest Types (v) Inside Oregon's Forests: A High School Forestry Curriculum Oregon's Forests (poster)	FOTW: 3: Mapping the World's Forests 4: Analyzing Patterns of Forest Change	Bottleneck Genes
1.C.8. Climate change may affect Oregon’s forest ecosystems in many ways, such as more frequent and intense fires, severe weather events, increased insect outbreaks, and changes in species composition.	2) Physical, living and human systems 3) Interconnectedness of people and the environment	HS-LS2-6. Evaluate claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.  HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.	Forest Essays, Grades 7-12 Forest Fact Break: Fire (v) Forest Fact Break: Fire Safety (v) Forest Fact Sheet: Fire	FoF: 2: Story of Succession 5: The Nature of Fire 8: Climate Change and Forests  FOTW: 4: Analyzing Patterns of Forest Change	Fire Ecologies
2.A.1. Forests improve air and water quality, and help stabilize soil.	2) Physical, living and human systems		Forest Essays, Grades 7-12 Forest Fact Break: Water (v) Forest Fact Sheet: Drinking Water Inquiry at Hinkle Creek (v) Inside Oregon's Forests: A High School Forestry Curriculum	FoF: 1: Monitoring Forest Health 6: Forest to Faucet  GJ: 3: Monitoring Forest Health	
2.A.2. Forests provide habitat for fish and wildlife. Many species depend on forest habitats for their survival.	2) Physical, living and human systems		Forest Essays, Grades 7-12 Forest Fact Break: Wildlife (v) Forest Fact Sheet: Wildlife Inquiry at Hinkle Creek (v) Inside Oregon's Forests: A High School Forestry Curriculum	FoF: 1: Monitoring Forest Health  GJ: 3: Monitoring Forest Health	
2.A.3. Forests sequester carbon from the atmosphere and are an essential component of the global carbon cycle.	2) Physical, living and human systems	HS-LS1-5. Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.  HS-LS2-4. Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem.	Forest Essays, Grades 7-12 Forest Fact Break: Carbon Capture (v) Forest Fact Sheet: Carbon & Climate Forest Fact Sheet: Woody Biomass Inside Oregon's Forests: A High School Forestry Curriculum Where's All the Carbon? (poster)	FoF: 8: Climate Change and Forests  FOTW: 8: Making Consumer Choices	

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2.A.4. Forests help mitigate the effects of climate change by storing carbon and regulating air temperature and water flow.	2) Physical, living and human systems	HS-LS1-5. Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.  HS-LS2-4. Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem.	Forest Essays, Grades 7-12 Forest Fact Break: Carbon Capture (v) Forest Fact Sheet: Carbon & Climate Forest Fact Sheet: Woody Biomass Inside Oregon's Forests: A High School Forestry Curriculum Where's All the Carbon? (poster)	FoF: 8: Climate Change and Forests  FOTW: 8: Making Consumer Choices	
2.A.5. Oregon's forests are important ecological systems that are interconnected with other ecosystems.	2) Physical, living and human systems	HS-LS2-2. Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.	Oregon Forest Facts & Figures	FoF: 7: Forest Invaders  FOTW: 4: Analyzing Patterns of Forest Change 7: Exploring the World Marketplace	
2.B.1. Forests provide multiple economic benefits, including jobs, a source of forest products and business opportunities (e.g., recreation and tourism).	3) Interconnectedness of people and the environment	HS-LS1-5. Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.	Find Your Path Find Your Path videos (v) Forest Essays, Grades 7-12 Forest Fact Break: Carbon Capture (v) Forest Fact Break: Green Building (v) Forest Fact Break: Wood Products (v) Forest Fact Sheet: Carbon & Climate Forest Fact Sheet: Drinking Water Forest Fact Sheet: Forests Inside Oregon's Forests: A High School Forestry Curriculum Inquiry at Hinkle Creek (v)	FoF: 1: Monitoring Forest Health 3: Who Owns America's Forests? 6: Forest to Faucet 8: Climate Change and Forests  GJ: 1: Who Works in this Forest? 2: If You Were the Boss 3: Monitoring Forest Health 4: Seeking Sustainability  FOTW: 1: Making the Global Connection 5: Understanding the Effects of Forest Uses 6: Seeking Sustainability: A Global Response 7: Exploring the World Marketplace 8: Making Consumer Choices	

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2.B.2. Oregon’s forest sector is one of the state’s largest economic sectors. It provides living-wage employment that is important for all communities, particularly in rural areas of Oregon.	3) Interconnectedness of people and the environment	HS-ESS3-2. Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.	Forest Essays, Grades 7-12 Forest Fact Break: Green Building (v) Forest Fact Break: Wood Products (v) Inside Oregon's Forests: A High School Forestry Curriculum Oregon Forest Facts & Figures	FOTW: 1: Making the Global Connection 5: Understanding the Effects of Forest Uses 7: Exploring the World Marketplace 8: Making Consumer Choices 9: Researching Forests of the World	
2.B.3. Forests and forest products are important components of Oregon’s green economy, which supports sustainable and efficient resource use. Forests are a renewable resource, and forest products store carbon and are also reusable and recyclable.	3) Interconnectedness of people and the environment	HS-ESS3-2. Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.	Forest Fact Break: Carbon Capture (v) Forest Fact Break: Green Building (v) Forest Fact Break: Wood Products (v) Inside Oregon's Forests: A High School Forestry Curriculum Oregon Forest Facts & Figures Where's All the Carbon? (poster)	FoF: 8: Climate Change and Forests	
2.B.4. Financial gains, economic benefits and returns on investment help incentivize forest landowners to keep their land as forestlands and prevent the loss of forests to other uses.	3) Interconnectedness of people and the environment	HS-ESS3-2. Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.	Inside Oregon's Forests: A High School Forestry Curriculum	FOTW: 7: Exploring the World Marketplace  FoF: 3: Who Owns America's Forests? 8: Climate Change and Forests	
2.B.5. Oregon’s forest sector is innovative and changing, contributing to scientific research and new product development (e.g., mass timber, medical products and nanotechnology).	3) Interconnectedness of people and the environment	HS-ESS3-2. Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.	Forest Fact Break: Green Building (v) Forest Fact Break: Wood Products (v) Inside Oregon's Forests: A High School Forestry Curriculum		Sustainability: Then, Now, Later
2.C.1. Forests have been central to the region’s history and are an integral part of Oregon as we know it today.	3) Interconnectedness of people and the environment	HS-ESS3-1. Construct an explanation based on evidence for how the availability of natural resources, occurrence of hazards, and changes in climate have influenced human activity.	Forest Essays, Grades 7-12 Inside Oregon's Forests: A High School Forestry Curriculum		Sustainability: Then, Now, Later
2.C.2. Forests have always been – and continue to be – important to people who live on the land and within forest-dependent communities, including Indigenous peoples.	3) Interconnectedness of people and the environment	HS-ESS3-1. Construct an explanation based on evidence for how the availability of natural resources, occurrence of hazards, and changes in climate have influenced human activity.	Forest Essays, Grades 7-12		Let’s Talk Turkey

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2.C.3. Forests provide many valuable benefits for Oregon communities, including clean water, fresh air, forest products, wildlife habitat and employment.	3) Interconnectedness of people and the environment	HS-ESS3-3. Create a computational simulation to illustrate the relationships among the management of natural resources, the sustainability of human populations, and biodiversity.	Forest Fact Break: Green Building (v) Forest Fact Break: Wood Products (v) Forest Fact Sheet: Drinking Water Forest Fact Sheet: Forests Inside Oregon's Forests: A High School Forestry Curriculum	FoF: 1: Monitoring Forest Health 6: Forest to Faucet  GJ: 3: Monitoring Forest Health 4: Seeking Sustainability  Teaching with i-Tree	
2.C.4. Forests provide a variety of foods through hunting or foraging, including deer, elk, salmon, berries and nuts. These traditional forest foods are known as “first foods” by Indigenous people.	3) Interconnectedness of people and the environment	HS-ESS3-1. Construct an explanation based on evidence for how the availability of natural resources, occurrence of hazards, and changes in climate have influenced human activity.		GJ: 2: If You Were the Boss	Let's Talk Turkey
2.C.5. Forests provide places for people to socialize, learn, recreate and enhance both physical and mental well-being.	3) Interconnectedness of people and the environment	HS-ESS3-1. Construct an explanation based on evidence for how the availability of natural resources, occurrence of hazards, and changes in climate have influenced human activity.		GOTW: 1: Making the Global Connection 9: Researching Forests around the World	
2.C.6. Forests have religious, spiritual and cultural significance for many groups and individuals.	3) Interconnectedness of people and the environment	HS-ESS3-1. Construct an explanation based on evidence for how the availability of natural resources, occurrence of hazards, and changes in climate have influenced human activity.		FOTW: 2: What Is a Forest?  GJ: 2: If You Were the Boss	
3.A.1. For thousands of years, all Oregon forests were Indigenous lands. Federal laws and policies led to the displacement of the Indigenous peoples from these lands.	3) Interconnectedness of people and the environment	HS-ESS3-3. Create a computational simulation to illustrate the relationships among the management of natural resources, the sustainability of human populations, and biodiversity.			
3.A.2. The history of forest ownership in Oregon shapes our forests and how they are managed.	3) Interconnectedness of people and the environment	HS-ESS3-3. Create a computational simulation to illustrate the relationships among the management of natural resources, the sustainability of human populations, and biodiversity.	Forest Fact Sheet: Ownership Into the Forest: A High School Forestry Curriculum Oregon Forest Facts & Figures	FoF: 3: Who Owns America's Forests?	

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3.A.3. Today, the size and scale of forest ownership can vary from hundreds of thousands of acres in a national forest to an individual patch of trees in an urban forest.	2) Physical, living and human systems		Forest Fact Sheet: Ownership Oregon Forest Facts & Figures	FoF: 3: Who Owns America's Forests?	
3.A.4. Oregon's forests are managed under private (e.g., family and industrial), public (e.g., state and federal) and tribal ownership. Each type of ownership may have different management objectives and is subject to different laws and policies. Management objectives may even differ within classes of ownership.	3) Interconnectedness of people and the environment		Inside Oregon's Forests: A High School Forestry Curriculum Forest Fact Sheet: Ownership Oregon Forest Facts & Figures	FoF: 3: Who Owns America's Forests?	Wild Bill's Fate
3.A.5. Many forest landscapes are made up of a variety of ownerships, a mix of management objectives, and a blend of forest ecosystems.	3) Interconnectedness of people and the environment	HS-ESS3-3. Create a computational simulation to illustrate the relationships among the management of natural resources, the sustainability of human populations, and biodiversity.	Inside Oregon's Forests: A High School Forestry Curriculum Forest Fact Sheet: Ownership	FoF: 3: Who Owns America's Forests? 6: Forest to Faucet  FOTW: 3: Mapping the World's Forests	
3.A.6. Oregon's forestlands cross natural boundaries (e.g., watersheds) and human-designed boundaries (e.g., property lines), as do disturbances that affect the forest, such as fire.	3) Interconnectedness of people and the environment		Forest Fact Break: Fire Safety (v) Inquiry at Hinkle Creek (v) Inside Oregon's Forests: A High School Forestry Curriculum	FoF: 5: The Nature of Fire 6: Forest to Faucet	
3.B.1. Forest management is a long-term process that can lead to changes in tree species composition, size and age, as well as in forest health and resilience.	3) Interconnectedness of people and the environment	HS-LS2-2. Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.	Inside Oregon's Forests: A High School Forestry Curriculum Forest Fact Break: Forest Management (v) Forest Essays, Grades 7-12	2: Story of Succession  FOTW: 4: Analyzing Patterns of Forest Change 6: Seeking Sustainability: A Global Response	Deer Dilemma
3.B.2. From time immemorial, Indigenous people of Oregon have used fire and other practices such as girdling trees and land clearing to manage the forest. Their traditional ecological knowledge of Oregon's forests informs forest	3) Interconnectedness of people and the environment	HS-ESS3-3. Create a computational simulation to illustrate the relationships among the management of natural resources, the sustainability of human populations, and biodiversity.	Inside Oregon's Forests: A High School Forestry Curriculum Forest Fact Break: Forest Management (v) Forest Essays, Grades 7-12	4: Analyzing Patterns of Forest Change 5: Understanding the Effects of Forest Uses	

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## Grades 9–12 Forest Connections

Oregon Forest Literacy Plan Concepts	Oregon Environmental Literacy Strands	Oregon Science Standards (PEs)	OFRI Materials*	PLT Activities**	Project WILD Activities***
management practices that sustain forests.					
3.B.3. Forest management ranges from active management (e.g., planting, thinning, and harvesting) to passive management (e.g., reserves and wilderness areas) to grow, restore, maintain, conserve or alter forests.	3) Interconnectedness of people and the environment	HS-ESS3-3. Create a computational simulation to illustrate the relationships among the management of natural resources, the sustainability of human populations, and biodiversity.	Forest Essays, Grades 7-12 Forest Fact Break: Clearcutting(v) Forest Fact Break: Forest Management (v) Forest Fact Break: Reforestation(v) Forest Fact Sheet: Clearcutting Forest Fact Sheet: Reforestation Inquiry at Hinkle Creek (v) Inside Oregon's Forests: A High School Forestry Curriculum	FoF: 2: Story of Succession	Deer Dilemma
3.B.4. Forest management includes using natural processes and goal-oriented decisions and actions to achieve a variety of desired outcomes, including environmental (e.g., improving wildlife habitat and carbon sequestration), economic (e.g., timber production), and social (e.g., recreation) outcomes. Many of these outcomes are interrelated and can be managed for simultaneously, while others may be incompatible.	3) Interconnectedness of people and the environment	HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.  HS-ESS3-3. Create a computational simulation to illustrate the relationships among the management of natural resources, the sustainability of human populations, and biodiversity.	Forest Fact Break: Forest Management (v) Inside Oregon's Forests: A High School Forestry Curriculum	FOTW: 6: Seeking Sustainability: A Global Response  GJ: 2: If You Were the Boss 4: Seeking Sustainability	Deer Dilemma Migration Barriers
3.B.5. In Oregon, forest management is regulated by both state and federal laws. Private and state forests must comply with the Oregon Forest Practices Act, which aims to sustain forest land for timber production and the other benefits forests provide, including clean water, stable soil and wildlife habitat.	3) Interconnectedness of people and the environment		Forest Fact Break: Sustainability (v) Forest Fact Break: Water (v) Forest Fact Sheet: Drinking Water Forest Fact Sheet: Protection Laws Inside Oregon's Forests: A High School Forestry Curriculum Oregon Forest Facts & Figures		

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## Grades 9–12 Forest Connections

Oregon Forest Literacy Plan Concepts	Oregon Environmental Literacy Strands	Oregon Science Standards (PEs)	OFRI Materials*	PLT Activities**	Project WILD Activities***
3.B.6. Many private landowners participate in third-party forest certification to demonstrate that their forests are managed sustainably and meet criteria for environmental, economic and social outcomes.	3) Interconnectedness of people and the environment	HS-ESS3-3. Create a computational simulation to illustrate the relationships among the management of natural resources, the sustainability of human populations, and biodiversity.			
3.B.7. As human populations and global demand for forest resources increase, forest management and advances in research and technological systems can help to ensure forest resources are maintained or improved to produce the desired values and products.	3) Interconnectedness of people and the environment	HS-ESS3-3. Create a computational simulation to illustrate the relationships among the management of natural resources, the sustainability of human populations, and biodiversity.  HS-ETS1-1. Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.		FOTW: 1: Making the Global Connection 4: Analyzing Patterns of Forest Change 7: Exploring the World Marketplace 9: Researching Forests of the World  Teaching with i-Tree	A Picture Is Worth a Thousand Words
3.C.1. A variety of individuals, companies, organizations, governments and agencies manage forests. Forest management decisions may involve some or all these working collaboratively to ensure mutually beneficial outcomes.	3) Interconnectedness of people and the environment		Find Your Path Find Your Path videos (v)	FOTW: 6: Seeking Sustainability: A Global Response  GJ: 4: Seeking Sustainability	Deer Dilemma
3.C.2. Forest resource professionals aim to meet environmental, economic and social needs. They use scientific data and traditional ecological knowledge to inform their management decisions.	3) Interconnectedness of people and the environment		Find Your Path Find Your Path videos (v)	FOTW: 6: Seeking Sustainability: A Global Response  GJ: 1: Who Works in This Forest? 2: If You Were the Boss 3: Monitoring Forest Health 4: Seeking Sustainability	Deer Dilemma

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## Grades 9–12 Forest Connections

Oregon Forest Literacy Plan Concepts	Oregon Environmental Literacy Strands	Oregon Science Standards (PEs)	OFRI Materials*	PLT Activities**	Project WILD Activities***
3.C.3. The type and intensity of forest management is dependent on the purposes for which the forest is managed, as well as forest type, ownership, size and location.	3) Interconnectedness of people and the environment	HS-ESS3-3. Create a computational simulation to illustrate the relationships among the management of natural resources, the sustainability of human populations, and biodiversity.	Inside Oregon's Forests: A High School Forestry Curriculum	FoF: 3: Who Owns America's Forests?  GJ: 2: If You Were the Boss	
3.C.4. Oregon foresters and forest managers prepare forest management plans based on landowner goals and objectives, capacities of the forest site, laws and available management tools (e.g., planting, harvesting and using prescribed fire). The plans guide management decisions, and are often required for funding applications or documentation for forest certification.	3) Interconnectedness of people and the environment		Forest Fact Break: Clearcutting (v) Forest Fact Break: Fire (v) Forest Fact Sheet: Clearcutting Forest Fact Sheet: Fire Forest Fact Sheet: Protection Laws Inside Oregon's Forests: A High School Forestry Curriculum	FoF: 3: Who Owns America's Forests? 5: The Nature of Fire	
3.C.5. The public empowers governments to conserve, maintain and sustain forest resources by enacting laws, creating policies, establishing agencies, creating public lands, and providing management guidelines and continuing education for forest landowners.	3) Interconnectedness of people and the environment		Forest Fact Sheet: Protection Laws Inside Oregon's Forests: A High School Forestry Curriculum	FOTW: 6: Seeking Sustainability: A Global Response  FoF: 3: Who Owns America's Forests? 4: Tough Choices  GJ: 4: Seeking Sustainability	Wild Bill's Fate
3.C.6. Government has a role in actively engaging organizations, businesses, communities and individuals in forest management and policy decisions for publicly owned forests. Collaboratives (partnerships among forest stakeholders) are increasingly used in making public land management decisions.	3) Interconnectedness of people and the environment		Forest Fact Sheet: Protection Laws	FOTW: 7: Exploring the World Marketplace  GJ: 4: Seeking Sustainability	

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## Grades 9–12 Forest Connections

Oregon Forest Literacy Plan Concepts	Oregon Environmental Literacy Strands	Oregon Science Standards (PEs)	OFRI Materials*	PLT Activities**	Project WILD Activities***
3.C.7. Sustainable forest management takes into account environmental, economic and social dimensions of sustainability. It includes maintaining forest health, productivity and diversity, and maintaining a forested land base for the needs of present and future generations.	3) Interconnectedness of people and the environment	HS-LS4-6. Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.  HS-ESS3-3. Create a computational simulation to illustrate the relationships among the management of natural resources, the sustainability of human populations, and biodiversity.	Forest Fact Break: Sustainability(v) Inquiry at Hinkle Creek (v) Inside Oregon's Forests: A High School Forestry Curriculum	FOTW: 6: Seeking Sustainability: A Global Response 7: Exploring the World Marketplace  FoF: 1: Monitoring Forest Health 4: Tough Choices 7: Forest Invaders  GJ: 3: Monitoring Forest Health 4: Seeking Sustainability	Bird Song Survey A Picture Is Worth a Thousand Words
3.C.8. Forest management decisions that both respect Indigenous peoples' rights and incorporate their traditional ecological knowledge can help ensure a sustainable future for forests.	3) Interconnectedness of people and the environment			GJ: 2: If You Were the Boss 4: Seeking Sustainability	
3.C.9. Changing public demands and expectations for the forest, as well as unanticipated events, affect decisions about forest resource use. This requires sound management based on scientific research, economic analysis and public involvement.	3) Interconnectedness of people and the environment			FOTW: 6: Seeking Sustainability: A Global Response 7: Exploring the World Marketplace  GJ: 4: Seeking Sustainability	Deer Dilemma Migration Barriers
3.C.10. Climate change is an increasing factor in forest management decisions. Some forest types and tree species are particularly vulnerable to changes in climate, and considerations include species to grow, harvest method to use, and spacing of trees and competing vegetation. Managing forests for increased carbon sequestration is also becoming more prevalent.	3) Interconnectedness of people and the environment	HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.	Forest Fact Sheet: Carbon & Climate	FOTW: 8: Climate Change and Forests	
3.D.1. People have differing perspectives on forests and forest management, which can be	3) Interconnectedness of people and the environment		Inside Oregon's Forests: A High School Forestry Curriculum	FoF: 4: Tough Choices 9: Words to Live By	Back from the Brink Natural Dilemmas

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## Grades 9–12 Forest Connections

Oregon Forest Literacy Plan Concepts	Oregon Environmental Literacy Strands	Oregon Science Standards (PEs)	OFRI Materials*	PLT Activities**	Project WILD Activities***
affected by cultural background and personal experiences, as well as by values, politics, science and economics. Their perspectives can change over time.				FOTW: 1: Making the Global Connection 2: What Is a Forest? 5: Understanding the Effects of Forest Uses	Wildlife and the Environment: Community Survey
3.D.2. Forestry practices can be controversial because of diverse perspectives as well as the complex nature of forest ecosystems.	3) Interconnectedness of people and the environment		Inside Oregon’s Forests: A High School Forestry Curriculum	FoF: 4: Tough Choices 9: Words to Live By	Deer Dilemma
3.D.3. Oregon has had a history of conflict over forest management issues. For example, conflicts have arisen over the preservation of ancient or old-growth forests, the protection of endangered species, and whether logging is appropriate on public lands.	3) Interconnectedness of people and the environment		Inside Oregon's Forests: A High School Forestry Curriculum	FoF: 4: Tough Choices	
3.D.3. Current issues related to forest management include the effects of timber harvest, wildfire, climate change and land uses, as well as the perception of these effects.	3) Interconnectedness of people and the environment	HS-LS1-5. Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.  HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.  HS-ETS1-1. Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.	Forest Fact Break: Clearcutting (v) Forest Fact Sheet: Carbon & Climate Forest Fact Sheet: Clearcutting Inside Oregon's Forests: A High School Forestry Curriculum	FoF: 4: Tough Choices 5: The Nature of Fire 8: Climate Change and Forests  FOTW: 7: Exploring the World Marketplace	Back from the Brink Fire Ecologies Phenology at Play Wildlife and the Environment: Community Survey
3.D.4. Making sure to involve multiple perspectives in decision-making, especially with regard to Oregon’s public forest lands, can lead to more effective problem-solving and result in more sustainable outcomes.	4) Personal and civic responsibility	HS-ETS1-1. Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.	Inside Oregon's Forests: A High School Forestry Curriculum	FoF: 4: Tough Choices	Back from the Brink Natural Dilemmas Wildlife and the Environment: Community Survey

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## Grades 9–12 Forest Connections

Oregon Forest Literacy Plan Concepts	Oregon Environmental Literacy Strands	Oregon Science Standards (PEs)	OFRI Materials*	PLT Activities**	Project WILD Activities***
4.A.1. People have a reciprocal and complex relationship with forests: We both affect and are affected by forests.	3) Interconnectedness of people and the environment	HS-LS4-6. Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.	Inside Oregon's Forests: A High School Forestry Curriculum	FoF: 4: Tough Choices 5: The Nature of Fire 6: Forest to Faucet 7: Forest Invaders 8: Climate Change and Forests  FOTW: 1: Making the Global Connection 4: Analyzing Patterns of Forest Change 5: Understanding the Effects of Forest Uses	Deer Dilemma Here Today, Gone Tomorrow
4.A.2. Everyone should have the opportunity to identify and explore their personal and cultural relationships with forests, and to spend time in forests. Accommodations such as paved paths, multi-language signage, and proximity public transportation help to ensure access to forests for all.	4) Personal and civic responsibility		Inside Oregon's Forests: A High School Forestry Curriculum		A Picture Is Worth a Thousand Words
4.A.3. There are many ways individuals can deepen our relationship with forests in Oregon, including learning about forests, recreating in forests, volunteering for projects in and around forests, and recognizing the ways forests enhance our lives.	4) Personal and civic responsibility		Inside Oregon's Forests: A High School Forestry Curriculum Forest Essays, Grades 7-12	FOTW: 8: Making Consumer Choices	
4.A.4. We can look to forests to help us address some of the challenges our society faces, including climate change, biodiversity loss, wildfire and human health issues.	3) Interconnectedness of people and the environment	HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.  HS-LS4-6. Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.	Inside Oregon's Forests: A High School Forestry Curriculum	FoF: 2: Story of Succession 5: The Nature of Fire 8: Climate Change and Forests  FOTW: 4: Analyzing Patterns of Forest Change 5: Understanding the Effects of Forest Uses  GJ: 4: Seeking Sustainability	

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## Grades 9–12 Forest Connections

Oregon Forest Literacy Plan Concepts	Oregon Environmental Literacy Strands	Oregon Science Standards (PEs)	OFRI Materials*	PLT Activities**	Project WILD Activities***
4.B.1. Everyone has a responsibility to treat forests with respect, and to be a conscientious steward of forests and forest resources.	4) Personal and civic responsibility	HS-LS4-6. Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.	Inside Oregon's Forests: A High School Forestry Curriculum Forest Essays, Grades 7-12	FOTW: 8: Making Consumer Choices	Habitat Heroes Sustainability: Then, Now, Later
4. B.2. Personal behaviors and actions directly impact the health and resiliency of our forests. Our consumer choices and investments, how we interact with the land (e.g., trails, campgrounds and forest habitat), how we use or conserve water, and how we use fire can either harm or help forests.	4) Personal and civic responsibility	HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.  HS-LS4-6. Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.	Inside Oregon's Forests: A High School Forestry Curriculum Forest Essays, Grades 7-12	FoF: 5: The Nature of Fire  FOTW: 4: Analyzing Patterns of Forest Change 5: Understanding the Effects of Forest Uses 8: Making Consumer Choices	Habitat Heroes
4.B.3. As individuals or as members of groups, we influence laws and policies affecting Oregon's forests. Individuals can have their say by voting, working with community officials, joining organizations that advocate for forests and weighing in when public opinion is sought.	5) Investigate, plan and create a sustainable future	HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.  HS-LS4-6. Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.	Inside Oregon's Forests: A High School Forestry Curriculum Forest Essays, Grades 7-12	FoF: 4: Tough Choices	
4.B.4. By learning about the objectives for and perspectives on forest management at local, national and global levels, individuals can better engage in conversations and actions to sustain forests.	5) Investigate, plan and create a sustainable future	HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.  HS-LS4-6. Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.	Inside Oregon's Forests: A High School Forestry Curriculum Forest Essays, Grades 7-12	FoF: 1: Monitoring Forest Health  FOTW: 1: Making the Global Connection 5. Understanding the Effects of Forest Uses 6: Seeking Sustainability: A Global Response 9: Researching Forests Around the World  GJ: 2: If You Were the Boss 3. Monitoring Forest Health 4: Seeking Sustainability	Sustainability: Then, Now, Later

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## Grades 9–12 Forest Connections

Oregon Forest Literacy Plan Concepts	Oregon Environmental Literacy Strands	Oregon Science Standards (PEs)	OFRI Materials*	PLT Activities**	Project WILD Activities***
4.B.5. We need a variety of professionals and skilled workers to sustain our forests, including foresters, scientists, engineers, lawyers, information technology professionals, land managers, investors, educators, communications specialists, fire fighters, loggers, tree planters, truck drivers, mechanics and wood products manufacturers. Resources are available to learn about these valuable and rewarding careers.	5) Investigate, plan and create a sustainable future	HS-ESS3-4. Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.	Find Your Path Find Your Path videos (v) Inside Oregon's Forests: A High School Forestry Curriculum	GJ: 1: Who Works in this Forest? 2: If You Were the Boss 3. Monitoring Forest Health 4: Seeking Sustainability	

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