



2025 Oregon Envirothon Current Issue

Roots and Resiliency: Fostering Forest Stewardship in a Canopy of Change

Introduction

Forests cover 31% of the world’s land area, making their mark on the landscape and the lives of people all around the globe. In Oregon, nearly half (47%) of the land is covered by forests, and these wooded landscapes are an integral part of the identity and culture of Oregon. Since time immemorial, Indigenous peoples have made environmental stewardship a keystone to their ways of being and doing. All forests—including urban and community forests—continue to provide essential benefits such as economic vitality, societal well-being and ecological richness.

As the world studies climate change, the significance of our forests becomes even more pronounced. Worldwide, forests are experiencing impacts from extreme weather events due to a changing climate, which will result in changes to individual species and the ecosystem as a whole. Climate models suggest that Oregon’s forests may experience a variety of changes over the next 75 years. Creating viable solutions for resilient forests will require examining traditional ways and knowledge of stewardship, as well as scientific innovations and techniques.

Roots and Resiliency: Fostering Forest Stewardship in a Canopy of Change invites students to examine current forest practices, identify where vulnerabilities may lie, and identify necessary adaptations. Students will learn how climate models can help predict the impacts of a changing climate on forests; how a changing climate will influence ecosystem shifts in Oregon; how these altered ecosystems are expected to impact Oregon’s forest health; and how stewards of the land may need to continually adapt and expand their practices for sustainable forest management and resilience.

Key Topics and Objectives

Key Topic #1: Climate Change Projections

Learning Objectives:

1. Describe the causes of climate change, including the greenhouse effect.
2. Explain the impacts of climate change on Oregon’s environment, as well as the social and economic impacts of climate change in Oregon.

3. Differentiate types of climate models and the various components that enable models to project future conditions.

Resources

NCF-Envirothon Resources: See pages 3-30 in the [2025 Envirothon Current Environmental Issue Study Resources guide](#).

Oregon Resources:

- [Sixth Oregon Climate Assessment](#), 2023. Oregon Climate Change Research Institute. A biennial report on the impacts and risks of climate change in Oregon.
- [Oregon Climate Change Research Institute](#). Charged by the Oregon State Legislature to assess the state of climate change science, including biological, physical and social science, as it relates to Oregon and the likely effects of climate change on the state.

Key Topic #2: Forest Health in a Changing Climate

Learning Objectives:

1. Describe how wildfire affects the hydrology, wildlife, and soils of forest communities.
2. Identify how increasing drought severity and frequency impacts forests ecosystems.
3. Describe how a current and changing climate affects the prevalence and severity of invasive insect species (e.g., Mountain pine beetle, Emerald ash borer, Mediterranean oak borer and Asian longhorn beetle) and diseases (e.g., Western gall rust, Armillaria root rot and needle casts) in all of Oregon's forests, including urban and community forests.
4. Explain how sustainable and active forest stewardship addresses the pressures of climate change in the areas of adaptation, mitigation and resiliency.

Resources

NCF-Envirothon Resources: See pages 31-53 in the [2025 Envirothon Current Environmental Issue Study Resources guide](#).

Oregon Resources:

- [Climate Change and Carbon Plan](#), 2021. Oregon Department of Forestry. A plan for promoting climate-smart forestry policies and actions to advance climate change mitigation and adaptation goals.
- [Fire in Oregon's Forests](#). Oregon Forest Resources Institute. An overview of the nature of fire in Oregon forests. See various links on this webpage to explore further.
- [Fire Bright High School Curriculum](#). Southern Oregon Forest Restoration Collaborative. A set of lesson plans designed to help students gain a deep understanding of Oregon forests and wildfires.

- [Forest Health](#). Oregon Department of Forestry. A round-up of updates and resources related to forest health in Oregon.
- [Forest Health Highlights in Oregon, 2022](#). Oregon Department of Forestry. A report of damage and mortality in Oregon forests over the prior year, with updates on chronic issues.
- [Threats to Our Forests](#). Oregon Forest Resources Institute. A webpage providing an overview of threats to the health of Oregon forests, including fire, drought, invasive pests and diseases. See various links on the webpage to explore further.
- [Emerald Ash Borer](#). Oregon Department of Agriculture (ODA). A webpage with resources of the ODA on insect pest prevention and management.
- [Mediterranean Oak Borer](#). ODA pest alert fact sheet on Mediterranean oak borer.

Other Resources:

- [Monitoring Forest Health](#), in *Focus on Forests*. Project Learning Tree. A lesson plan in which students conduct a forest health checkup of a local forest area.
- [Climate Change and Historical Forest Growth Changes in the US and Canada](#). National Council for Air and Stream Improvement. Fact sheet proving a brief overview of the effect of climate change on forest growth and how continuing changes may impact wood product supply.

Key Topic #3: Indigenous Knowledge and Relationship with the Land

Learning Objectives:

1. Identify similarities and differences between Indigenous worldviews and Western worldviews regarding land stewardship.
2. Describe how land-based learning and Indigenous Knowledge can contribute to improved land use, forest management and mitigation strategies.
3. Describe how Indigenous Knowledge and stewardship could be combined with Western science to develop a path toward making all forests more resilient to the threats they face.

Resources

NCF-Envirothon Resources: See pages 54-84 in the [2025 Envirothon Current Environmental Issue Study Resources guide](#).

Oregon Resources:

- [Essential Understandings of Native Americans in Oregon](#). Oregon Department of Education. Information on the tribes in Oregon, including their past and current presence, sovereignty, history, tribal governance, identity, lifeways, and language.

- [Prescribed Burns](#). Grand Ronde Tribal History Curriculum. High school lesson plan in which students about prescribed burns and the Grand Ronde Tribes’ relationship with these types of burns.
- [Siletz Today: Caring for Our Lands](#). Confederated Tribes of Siletz Indians Tribal History/Shared History Curriculum. Sixth grade lesson plan in which students explore the values of environmental stewardship in the collective experience and contemporary work of the Confederated Tribes of Siletz Indians.
- [Tribal History/Shared History Curriculum](#). Oregon Department of Education. Lesson plans and resource regarding 2017 Oregon Senate Bill 13 (SB-13), which directed the Oregon Department of Education to create K-12 Native American curriculum for inclusion in Oregon public schools.

Other Resources:

- [Braiding Indigenous and Western Knowledge for Climate-Adapted Forests: An Ecocultural State of Science Report](#). 2024. Report that brings together Indigenous Knowledge and Western Science to make recommendations for addressing the current challenges facing our nation’s forests.

Key Topic #4: Vulnerability Assessments and Adaptation Strategies

Learning Objectives

1. Assess forest conditions and vulnerability to changes in climate.
2. Describe how different ecoregions in Oregon are affected by different levels of risk and what environmental factors cause those risks.
3. Describe how forest plants and animals respond to climate-related environmental changes.
4. Analyze the benefits and drawbacks of various climate change adaptation strategies to support sustainable forest management, including assisted species migration, selective breeding, and afforestation.

Resources

NCF-Envirothon Resources: See pages 85-114 in the [2025 Envirothon Current Environmental Issue Study Resources guide](#).

Oregon Resources:

- [Climate Adaptation Strategies for Western Washington and Northwest Oregon Forests](#). Northwest Natural Resource Group. Describes different forest management strategies.

- [Forest Health Highlights in Oregon](#), 2022. Oregon Department of Forestry. A report of damage and mortality in Oregon forests over the prior year, with updates on chronic issues.
- [Sixth Oregon Climate Assessment](#), 2023. Oregon Climate Change Research Institute. A biennial report on the impacts and risks of climate change in Oregon.
- [Oregon’s Climate Change Adaptation Framework, Oregon Department of Land Conservation and Development](#). Explores the impacts of climate change in Oregon and identifies how state agencies can effectively respond to them
- [Ecoregions of Oregon](#). Oregon Department of Fish and Wildlife. Map of the ecoregions found in Oregon.

Other Resources:

- [How Do Managed Forests Contribute to Reducing Climate Change?](#) National Council for Air and Stream Improvement. Fact sheet explains how managing forests to produce carbon-storing products and replacing fossil fuels increases long-term carbon benefits.

Key Topic #5: Legislation and Regulations

Learning Objectives

1. Describe federal and state regulations that help to ensure the sustainability of all forests in Oregon.
2. Explain how Oregon forest practice rules are similar to or different from those in other states.
3. Describe how Oregon’s 20-Year Landscape Resiliency Strategy is striving to reduce wildfire risk and promote healthy and resilient landscapes.

Resources

NCF-Envirothon Resources: See pages 115-163 in the [2025 Envirothon Current Environmental Issue Study Resources guide](#).

Oregon Resources:

- [Oregon Forest Facts & Figures](#). Oregon Forest Resources Institute. Provides accurate data, charts and graphs about Oregon’s forests in an easy-to-access format.
- [Oregon Forest Laws](#). Oregon Forest Resources Institute. Up-to-date information about the many laws that protect Oregon’s public and private forests.
- [Oregon's Forest Protection Laws: An Illustrated Manual 2024](#). Oregon Forest Resources Institute. Explains the Oregon Forest Practices Act and Rules, and the other best management practices, laws and rules that apply to Oregon’s forest landowners.

- [Laws and Regulations](#). U.S. Forest Service. Summary of federal laws related to forests in Oregon.
- [Oregon's 20-Year Landscape Resiliency Strategy](#). Oregon Department of Forestry. Plan for improving Oregon's forests and rangelands to reduce fire risk.

Key Topic #6: Oregon Forests

Learning Objectives

1. Describe Oregon forest types and how the types are anticipated to shift based on climate change projections.
2. Identify ecosystem services provided by forest ecosystems in Oregon, including environmental, economic, social, and cultural values.
3. Identify fire-dependent species in Oregon (e.g., lodgepole pines, deerbrush, and Lewis's woodpeckers) and explain how climate change may enhance or threaten their populations.
4. Analyze the wildfire regime in Oregon's western and eastern forests, and describe how they are changing in response to climatic shifts.
5. Explain how forest certification can be used as a tool to manage Oregon's forests sustainably.
6. Describe how sustainably sourced wood from Oregon's forests is being used in innovative ways to meet society's housing and construction needs, while also storing carbon.

Resources

NCF-Envirothon Resources: None relevant, although you might be interested to see the resources for Canada's boreal forest on pages 164-198 in the [2025 Envirothon Current Environmental Issue Study Resources guide](#).

Oregon Resources:

- [Inside Oregon's Forests: A High School Forestry Curriculum](#). Lesson plans about Oregon's forests, which include the environmental, social and economic importance of forests; forest types in Oregon; forest management; wildfire; climate change; and more.
- [Oregon's Diverse Forests](#). Oregon Forest Resources Institute. Links to resources for exploring Oregon's forest types, including a *Forest Fact Break: Forest Types* video and an *Oregon's Forests* poster, available for order.
- [Sourcing from Sustainable Forests](#). Oregon Forest Resources Institute. A report on sourcing forest products from Oregon's forests, including forest certification and other management tools, and how Oregon's forest practice laws are unique.
- [Oregon Mass Timber Coalition](#). Information about mass timber construction.