

#### **Making Forest Connections:**

#### A Correlation of the Washington Forest Education K-12 Learning Framework with Other Educational Resources

#### Grades 6-8

The Washington Forest Education K-12 Learning Framework 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 Washington's forests. This correlation document helps them further by identifying connections between each of the Washington Forest Education K-12 Learning Framework's 62 concepts and:

- Next Generation Science Standards (NGSS) performance expectations
- Project Learning Tree (PLT) activities
- Pacific Education Institute Resources
- Project WILD activities
- Other resources

#### **Forest Education Grades 6-8**

Middle school students are gaining a deeper sense of themselves as members of communities – both human communities and natural communities. They are becoming aware of how people's actions impact others, and friends and relationships consume a lot of their thought and energy.

Students this age understand that problems have multiple solutions and are able to see different perspectives on an issue. They should also be able to back up personal opinions with evidence and to distinguish between opinion and fact.

Forest education activities at the middle school level may focus on:

- What social, economic, and environmental benefits do forests provide?
- How do human activities affect forests?
- What can we do to protect Washington's forests?

Forests can become a meaningful context for middle schoolers to design and conduct investigations, use evidence to analyze results, and examine issues from various perspectives. Activities such as these will help students gain a deeper appreciation of the interconnected relationships between people and the environment.

For more information about the forest learning framework by grade level, see <u>the Washington Forest</u> Education K-12 Learning Framework.

#### **About the Resources**

This document identifies connections between the Washington Forest Education K-12 Learning Framework and the following resources for Grades 6-8.

**NGSS Performance Expectations** – NGSS standards identify expectations for what students should be able to do by the end of the year or grade band. These performance expectations also incorporate three dimensions of science: disciplinary core ideas, science and engineering practices, and cross-cutting concepts. For more information, see <a href="https://www.nextgenscience.org">www.nextgenscience.org</a>.

**Project Learning Tree (PLT) Activities** – Relevant activities are identified from PLT's *PreK-8 Environmental Education Activity Guide*. **Bolded** activities are the most relevant. Activities in **red** represent updates found in PLT's *Explore Your Environment K-8 Activity Guide*, published in 2021. Educators can receive these curriculum guides by attending a PLT professional development. For more details, contact the Pacific Education Institute.

**Pacific Education Institute (PEI) Resources** – A variety of guides, lessons, and videos from PEI help to strengthen the Washington Forest Education K-12 Learning Framework. They provide information and learning activities to support K-12 teachers and their students in learning about forests. These include:

- PEI Guides
- ELA and Math Performance Tasks
- Forests of Washington Lessons
- Healthy Forests, Healthy Waters Curriculum

- Drain Rangers Secondary Curriculum
- PLT extension activities
- Career Profile Cards
- Solution Oriented Learning Storylines (SOLS)

Resources available for download at <a href="https://pacificeducationinstitute.org/">https://pacificeducationinstitute.org/</a>.

**Project WILD Activities** – Relevant activities are identified from the *Project WILD K-12 Curriculum and Activity Guide*. Educators can receive this guide by attending a Project WILD workshop. For more details, contact the Pacific Education Institute.

**Oregon Forest Resources Institute (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.

For more information on receiving these free resources go to: oregonforests.org.

#### Acknowledgements

This correlation was supported by a Project Learning Tree Model Program Initiative grant from the Sustainable Forestry Initiative. We appreciate the hard work of the Oregon Forest Resources Institute (OFRI) to create such valuable forest education resources and their generosity in sharing them with others to adapt and use. Thank you to Pat Otto, former PLT WA State Coordinator and PEI Education Manager for adapting these correlations for use by Washington educators. Her forest education expertise and work to create locally relevant materials is an invaluable resource and we are grateful.

Theme 1: What is a Forest?								
Washington Forest Education Framework  Definition of a Forest	NGSS Performance Expectations  MS-LS2-4: Construct an	Project Learning Tree Activities (Title and Location in Explore Your Environment K-8 are in red) 4: Sounds Around	PEI Resources Forests of Washington	Project WILD Activities  What's That	Additional Resources  OFRI			
<ol> <li>Forests are ecosystems characterized by a dominance of tree cover and the presence of a wide variety of other organisms (e.g., other plants and animals).</li> <li>Forests are comprised of trees that may differ in species, age and size, and are affected by biotic factors (e.g., plants, animals and humans) and abiotic factors (e.g., soils, nutrients, moisture, sunlight and climate).</li> <li>Urban forests include all the publicly and privately owned trees within a city, town, or suburb working together as an ecosystem.</li> </ol>	argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.	10: Charting Diversity (Charting Biodiversity, p. 90) 12: Invasive Species (p. 299) 20: Environmental Exchange Box 22: Trees as Habitat (p. 76) 23: The Fallen Log (p. 116) 29: Rain Reasons 41: How Plants Grow (Here We Grow Again, p. 57) 48: Field, Forest, and Stream (p. 257) 49: Tropical Treehouse 56: We Can Work It Out 67: How Big Is Your Tree? (Nature's Skyscrapers, p. 325) 68: Name That Tree (Tree ID, p. 186) 70: Soil Stories (Soil Builders, p. 161) 77: Trees in Trouble (p. 197) 78: Signs of Fall (p. 155) E-Unit for Grades 6-8 Carbon & Climate	1. There's no Place Like Home 2. Getting to know the Trees of Washington 3. Here's Looking at Yew 4. Forest Homes  ELA Performance Tasks Invasive Plants (Grade 6-7)  Guides Field Investigations Schoolyard Biodiversity FieldDesign: Engineering Design for Field-Based Applications 6-12  Curriculum Healthy Forests, Healthy Waters  PLT Extensions www.pltwa.com Fallen Log Student Page Tree Abundance Field Investigation Trees as Habitats journal  Solutions Oriented Learning Storylines Urban Forestry: Ecosystem Benefits of an Urban Forest	Habitat?  Map that Habitat  Forest in a Jar  Time Lapse  Raindrops and Ranges	Explore the Forest Into the Forest Sounds of the Forest  Forest Fact Breaks: Ecosystems Tree Biology			

	Theme 1: What is a Forest?							
Washington Forest Education Framework	NGSS Performance Expectations	Project Learning Tree Activities (Title and Location in Explore Your Environment K-8 are in red)	PEI Resources	Project WILD Activities	Additional Resources			
1. A tree is a woody perennial plant usually 12 feet or more (4 meters or more) tall, with a single main stem and a more or less distinct crown of leaves or needles.  2. Trees have life stages that include germination, growth, maturity, reproduction, decline and death.  3. As part of the forest ecosystem, trees have various roles (e.g., supplying oxygen, providing habitat, holding soil, moderating temperature, capturing, and storing carbon, and cycling water and nutrients).  4. Trees compete with each other and with other plants growing near them for nutrients, sunlight, space and water.  5. The health and wellness of trees in a forest ecosystem depend on and are affected by many factors.	MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.	4: Sounds Around 21: Adopt a Tree (p. 21) 23: The Fallen Log (p. 116) 26: Dynamic Duos 27: Every Tree for Itself (p. 110) 28: Air Plants 29: Rain Reasons 31: Plant a Tree (p. 350) 36: Pollution Search 40: Then and Now 41: How Plants Grow (Here We Grow Again, p. 57) 44: Water Wonders (p. 206) 45: Web of Life (p. 216) 50: 400- Acre Wood (If I Were the Boss, p. 280) 63: Tree Factory (p. 180) 64: Looking at Leaves (Tree ID, p. 186) 65: Bursting Buds (p. 40) 66: Germinating Giants (Nature's Skyscrapers, p. 325) 67: How Big Is Your Tree? (Nature's Skyscrapers, p. 325) 70: Soil Stories (Soil Builders, p. 161) 76: Tree Cookies (p. 171) 77: Trees in Trouble (p. 197) 79: Tree Lifecycle (A Tree's Life, p. 14) 88: Life on the Edge (p. 308)	Forests of Washington  1. There's no Place Like Home  2. Getting to know the Trees of Washington  4. Forest Homes  ELA Performance Tasks Climate Change, Carbon, and Trees (Grade 8)  Guides Field Investigations FieldDesign: Engineering Design for Field-Based Applications 6-12 Fostering Outdoor Observation Skills  Curriculum Healthy Forests, Healthy Waters  Solutions Oriented Learning Storylines Forests: Carbon Sequestration (also available in Spanish)  PLT Extensions www.pltwa.com Every Tree for Itself Cards Tree Cookies Tree Bingo Fallen Log student page Forest Benefits Trees as Habitat and Tree Benefits Leaf as a System Tree Abundance Field Investigation	What's That Habitat? Which Niche? Environmental Barometer	OFRI Into the Forest Forest Essays, Grade 6 Forest Essays, Grades 7-12 Forest Fact Breaks: Tree Biology Carbon Capture Ecosystems Sustainability Water Woody Biomass Carbon & Climate Drinking Water Inquiry at Hinkle Creek  Other I-Tree: Tree Benefits www.treebenefits.com			

Theme 1: What is a Forest?								
Washington Forest Education Framework	NGSS Performance Expectations	Project Learning Tree Activities (Title and Location in Explore Your Environment K-8 are in red)		Project WILD Activities	Additional Resources			
Forests as Ecosystems	MS-LS1-6. Construct a	10: Charting Diversity	Forests of Washington	Limiting Factors	<u>OFRI</u>			
1. Forest ecosystems consist of	scientific explanation based	(Charting Biodiversity,	1. There's no Place Like		Forest Essays, Grade 6			
different types of organisms (e.g.	on evidence for the role of	p. 90)	Home	How Many	Forest Essays, Grades 7-12			
producers, consumers, and	photosynthesis in the cycling	11: Can It Be Real?	2. Getting to know the	Bears?	Into the Forest			
decomposers) and nonliving	of matter and flow of energy	12: Invasive Species (p.	Trees of Washington		Inquiry at Hinkle Creek (video)			
components (e.g. sunlight, soil,	into and out of organisms.	299)	3. Here's Looking at Yew	Tracks!	Forest Fact Breaks:			
minerals, and water) interacting	MC ICO 3 Develop a model to	16: Pass the Plants,	4. Forest Homes		Tree Biology			
within a given environment, space,	MS-LS2-3. Develop a model to describe the cycle of matter	Please	5. Come Grow with Us	Oh Deer!	Carbon & Climate			
and time.	and flow of energy among	18: Tale of the Sun	6. Washington Forest		Carbon Capture			
2. Humans depend on and influence	living and non-living parts of an	20: Environmental	Eco-Connections	Graphananimal	Photosynthesis			
forest ecosystems and are	ecosystem.	Exchange Box	7. Fire: Friend or Foe		Water			
themselves influenced by forest	MS-LS2-4. Construct an	21: Adopt a Tree (p.	8: The Forest Flu	What's that	Fire Forest Types			
ecosystems.	argument supported by	21)	9: Weather Waltzes with	Habitat?	Drinking Water			
3. Forest ecosystems include	empirical evidence that	22: Trees as Habitats (p.	the Forest	NAVISTAL AUTOLOGO	Forest Fact Sheet:			
processes such as photosynthesis,	changes to physical and biological components of an	76)	El A Doufoussous Tools	Which Niche?	Photosynthesis			
energy flow and the cycling of	ecosystem affect populations.	23: The Fallen Log (p. 116)	ELA Performance Tasks	Urban Nature	Where's All the Carbon?			
nutrients, water, carbon, and other		24: Nature's Recyclers	Forest Management (Grade 6)	Search	(carbon cycle poster)			
matter.		(Soil Builders, p. 161)	Climate Change, Carbon,	Search	Oregon's Forests (poster)			
4 Forest esecustems are complex		26: Dynamic Duos	and Trees (Grade 8)	Raindrops and				
4. Forest ecosystems are complex and dynamic, and continuously		27: Every Tree for Itself (p.	and frees (Grade 8)	Ranges	Other			
undergo change or adaptation,		110)	Guides	Kunges	The Truth about Science: A			
ranging from gradual change (e.g.,		28: Air Plants	Fostering Outdoor	Busy Bees, Busy	<u>Curriculum for Developing Young</u>			
succession and climate) to abrupt		29: Rain Reasons	Observation Skills	Blooms	Scientists, by Kathryn Kelsey and			
change (e.g., fire and disease).		31: Plant a Tree (p. 350)	FieldDesign: Engineering	2.00	Ashley Steel. NSTA Press			
change (e.g., fire and disease).		39: Energy Sleuths	Design for Field-Based	Surprise	Citizan Caianas, 15 Lassan that			
5. Natural and human-caused		(Exploration Energy, p. 247)	Applications 6-12	Terrarium	Citizen Science: 15 Lesson that Bring Biology to Life, 6-12 -NSTA			
disturbance events are a part of		42: Sunlight and Shades of	Field Investigations		Press			
forest ecosystems. Examples of		Green (Here We Grow	Schoolyard Biodiversity	What Bear Goes	Piess			
natural events are wind and		Again, p. 57)	Photo Point Monitoring	Where?	Rainforest Alliance Carbon			
volcanic activity, and examples of		44: Water Wonders (p.			<u>Curriculum</u>			
human- caused events are logging,		206)	Solutions Oriented	Seed Need	https://www.rainforest-			
road construction and development.		45: Web of Life (p. 216)	Learning Storylines		alliance.org/curricula/climate			
Wildfire is a disturbance that can be		48: Field, Forest, and	Forests: Carbon	Good Buddies				
both natural and human-		Stream (p. 257)	Sequestration (also					
caused.		47: Are Vacant Lots	available in <u>Spanish</u> )	Trophic Transfer				
6. Forests are interconnected with		Vacant? (Discover	Fire: Forest Management					
other terrestrial (e.g., rangeland)		Diversity, p. 97)	(also available in Spanish)	Environmental				
and aquatic (e.g., estuary)		48: Field, Forest, and		Barometer				
ecosystems, forming a larger		Stream (p. 257)						
system.		63: Tree Factory (p. 180)		Eco-enrichers				

	Theme 1: What is a Forest?						
Washington Forest Education Framework	NGSS Performance Expectations	Project Learning Tree Activities (Title and Location in Explore Your Environment K-8 are in red)	PEI Resources	Project WILD Activities	Additional Resources		
7. Washington's regions vary in soil types, elevation, temperature, wind, and rainfall patterns. These variations create the different forest types and residents (plants and animals) that, together with disturbance histories, contribute to that region's biodiversity.		65: Bursting Buds (p. 40) 68: Name that Tree (Tree ID, p. 186) 69: Forest for the Trees 70: Soil Stories (Soil Builders, p. 161) 71: Watch on Wetlands 76: Tree Cookies (p. 171) 77: Trees in Trouble (p. 197) 78: Signs of Fall (p. 155) 79: Tree Lifecycle (A Tree's Life, p. 14) 80: Nothing Succeeds Like Succession (p. 334) 81: Living with Fire (p. 315) 84: The Global Climate (p. 375) 86: Our Changing World 88: Life on the Edge (p. 308)	Curriculum Healthy Forests, Healthy Waters  PLT Extensions www.pltwa.com Forest Benefits student page Trees as Habitat and Tree Benefits Leaf as a System Tree Abundance Field Investigation Temperature investigation journal Rainfall investigation Habitat diversity field investigation				
Forest Classification  1. Trees can be identified by their leaves, seeds, cones, flowers, fruits, and other characteristics Trees can be classified into family, genus and species groups based on their reproductive parts and/or genetics.  2. Different forest biomes exist around the world. Examples include tropical forests, temperate forests, and boreal forests. Washington is in the temperate forest biome.  3. Many different forest types exist within a biome, typically named by their dominant tree species.  Common forest types in Washington include spruce-hemlock, Douglas-fir, ponderosa pine, mixed conifer, and hardwood.	MS-LS1-5. Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.	11: Can It Be Real? 12: Invasive Species (p. 299) 16: Pass the Plants, Please 20: Environmental Exchange Box 29: Rain Reasons 43: Have Seeds, Will Travel (p. 50) 61: The Closer You Look (p. 72) 63: Tree Factory (p. 180) 64: Looking at Leaves (Tree ID, p. 186) 65: Bursting Buds (p. 40) 66: Germinating Giants (Nature's Skyscrapers, p. 325) 67: How Big Is Your Tree? (Nature's Skyscrapers, p. 325) 68: Name That Tree (Tree ID, p. 186)	Forests of Washington  1. There's no Place Like Home  2. Getting to know the Trees of Washington  4. Forest Homes  5. Come Grow with Us  6. Washington Forest Eco-Connections  PLT Extensions  www.pltwa.com  Habitat diversity field investigation  Tree abundance field investigation	Raindrops and Ranges Time Lapse	OFRI Into the Forest Forest Fact Break: Forest Types Oregon's Forests (poster)		

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Washington Forest Education Framework	NGSS Performance Expectations	Project Learning Tree Activities (Title and Location in Explore Your Environment K-8 are in red)	PEI Resources	Project WILD Activities	Additional Resources					
		49: Tropical Treehouse 70: Soil Stories (Soil Builders, p. 161)								

	Theme 2: Why are Forests Important?							
Washington Forest Education	NGSS Performance	Project Learning	PEI Resources	Project WILD	Additional Resources			
Framework	Expectations	Tree Activities		Activities				
Historical Importance  1. Today, as in the past, forest continue to play a significant cultural, spiritual, and economic role in Native American Societies.  2. In Washington 's development toward becoming a state, forests provided basic resources for Native Americans and settlers, jobs for a growing workforce, resources for building the nation and dollars for a new state economy.  3. As multiple demands on forests increased, the practice of forest	Expectations	40: Then and Now 75: Tipi Talk 80: Nothing Succeeds Like Succession (p. 334) 90: Native Ways 91: In the Good Old Days 92: A Look at Lifestyles 93: Paper Civilizations 94: By the Rivers of Babylon 95: Did You Notice? (p. 293)	Forests of Washington  13. Who Manages    Washington's Forests?  14. Where There's a Will    There's a Way  21. A Forest Full of Views	Activities	OFRI Forest Essays, Grade 6 Forest Essays, Grades 7-12			
management evolved to conserve and preserve natural resources and to improve society's use of forestlands. It incorporated scientific principles and an understanding of competing interests.  4. Historical perspectives, which may include aesthetic, cultural, spiritual, economic, and								
educational factors, form our understanding of forests and our personal connections to forests, and guide decisions to ensure forests for future generations.								
Environmental Importance  1. Forests affect air, water, and soil quality.  2. Forests provide habitat for fish and wildlife.  3. Forests provide the opportunity to study ecosystems, conservation, and natural resource management.  4. Forests sequester carbon from	MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.  (Somewhat relevant) MS-LS2-4. Construct an argument supported by	4: Sounds Around 13: We All Need Trees (p. 82) 28: Air Plants 29: Rain Reasons 44: Water Wonders (p. 206) 22: Trees as Habitats (p. 76) 24: Nature's Recyclers (Soil Builders, p. 161) 26: Dynamic Duos 29: Rain Reasons 45: Web of Life (p.	Forests of Washington 3. Here's Looking at Yew 4. Forest Homes 5. Come Grow with Us 6. Washington Forest Eco- Connections 19. Town Trees  ELA Performance Tasks Forest Management (Grade 6) Summer in the City (Grade 6-	Habitat Circles  My Kingdom for a Shelter  Map that Habitat	OFRI Into the Forest Forest Essays, Grades 6 Forest Essays, Grades 7-12 Forest Fact Breaks: Water Wildlife Carbon Capture Inquiry at Hinkle Creek (video) Forest Fact Sheets: Drinking Water			
the atmosphere and are an	empirical evidence that	216)	7)	Tracks!	Woody Biomass			

	Theme 2: Why are Forests Important?								
Washington Forest Education Framework	NGSS Performance Expectations	Project Learning Tree Activities	PEI Resources	Project WILD Activities	Additional Resources				
essential component of the global carbon cycle. Forest products made from wood also store carbon.  5. Washington 's forests are important ecological systems, interconnected with other systems not only environmentally, but socially and economically. Changes in the conditions and uses of Washington 's forests may affect the conditions and uses of forests worldwide.	changes to physical and biological components of an ecosystem affect populations  MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.  MS-LS2-3. Develop a model to describe the cycle of matter and flow of energy among living and non-living parts of an ecosystem.	47: Are Vacant Lots Vacant? (Discover Diversity, p. 97) 48: Field, Forest, and Stream (p. 257) 49: Tropical Treehouse 67: How Big Is Your Tree? (Nature's Skyscrapers, p. 325) 84: The Global Climate (p. 375) 86: Our Changing World 89: Trees for Many Reasons (p. 193) 95: Did You Notice? (p. 44) NEW: Environmental Justice for All, p. 233 NEW: What's in a Label, p. 382 E-Unit for Grades 6-8 Carbon & Climate	Invasive Plants (Grade 6-7) Renewable Energy: Biomass (Grade 6-8) Climate Change, Carbon, and Trees (Grade 8) Urban Heat Island Effect (Gr. 8)  Guides Field Investigations FieldDesign: Engineering Design for Field-Based Applications 6-12 Fostering Outdoor Observation Skills Landscape Investigations  Career Profile Cards  Solutions Oriented Learning Storylines Forests: Carbon Sequestration (also available in Spanish) Urban Forestry: Ecosystem Benefits of an Urban Forest  Curriculum Heathy Forests, Healthy Waters Drain Rangers Secondary	Graphananimal Habicache Seed Need Eco-Enrichers Environmental Barometer Nature in Art	Carbon & Climate Where's All the Carbon? (carbon cycle poster) Oregon Forest Facts & Figures  Other The Truth about Science: A Curriculum for Developing Young Scientists, by Kathryn Kelsey and Ashley Steel. NSTA Press  Citizen Science: 15 Lesson that Bring Biology to Life, 6-12 -NSTA Press  Rainforest Alliance Carbon Curriculum https://www.rainforest- alliance.org/curricula/climate  I-Tree: Tree Benefits www.treebenefits.com				
Social Importance		13: We All Need Trees (p.	Forests of Washington 11. Watershed Benefits	Habicache	<u>OFRI</u>				
Washington's forests provide basic resources that people use every day.      Individuals hold different values concerning forests and their use, based on their experience and connection with the forest.      Forests influence the economic, social and cultural composition of both urban and rural communities		82) 16: Pass the Plants, Please 17: People of the Forest 18: Tale of the Sun 19: Viewpoints on the Line 21: Adopt a Tree (p. 21) 55: Planning the Ideal Community	19. Town Trees  ELA Performance Tasks Forest Management (Grade 6) Climate Change, Carbon, and Trees (Grade 8)	Natural Dilemmas	Into the Forest Forest Essays, Grade 6 Forest Essays, Grades 7-12 Oregon Forest Facts & Figures				
0		56: We Can Work It Out							

	Theme 2: Why are Forests Important?								
Washington Forest Education Framework	NGSS Performance Expectations	Project Learning Tree Activities	PEI Resources	Project WILD Activities	Additional Resources				
Economic Importance	MS-LS2-5. Evaluate	(Decisions, Decisions, p. 224) 59: Power of Print 90: Native Ways 82: Resource-Go-Round 91: In the Good Old Days 92: A Look at Lifestyles 93: Paper Civilizations 95: Did You Notice? (p. 293) 13: We All Need Trees (p.	Solutions Oriented Learning Storylines Forests: Carbon Sequestration (also available in Spanish) Urban Forestry: Ecosystem Benefits of an Urban Forest	Natural	OFRI				
1. Forests provide multiple economic benefits, including jobs and forest products; renewable energy and minerals; financial returns to owners and investors; and ecosystem service benefits such as carbon storage, clean water, recreation, and tourism.  2. Forests provide income for local, state, national, and international economies. Washington 's forest sector is one of the state's largest economic sectors and provides critical resources and products to the global marketplace, including softwood lumber, plywood, and engineered wood products.  3. Forest products are an important component of Washington 's "green" economy. They come from a renewable resource and store carbon, and most are also reusable and recyclable.  4. Economic returns to forest landowners are important in preventing the loss of forests to	competing design solutions for maintaining biodiversity and ecosystem services.	82) 14: Renewable or Not? (p. 364) 15: A Few of My Favorite Things (Global Goods, p. 272) 20: Environmental Exchange Box 32: A Forest of Many Uses (Our Federal Forests, p. 342) 34: Who Works in this Forest? (My Green Future, p. 132) 39: Energy Sleuths (Exploration Energy, p. 247) 50: 400-Acre Wood (If You Were the Boss, p. 280) 51: Make Your Own Paper (p. 63) 71: Watch on Wetlands 75: Tipi Talk 82: Resource-Go-Round 83: A Peek at Packaging (p. 136) NEW: Forest In the City, p. 265	11. Watershed Benefits 13. Who Manages    Washington's Forests? 14. Where There's a Will    There's a Way 16. Tree Uses 17. Wood You Make a    Difference? 21. A Forest Full of Views  ELA Performance Tasks Forest Management (Grade 6) Stormwater Pollution (Grade 6) Renewable and Non- Renewable Energy (Grade 6-8) Renewable Energy: Biomass (Grade 6-8) Climate Change, Carbon, and Trees (Grade 8)  Career Profile Cards  Solutions Oriented Learning Storylines Forests: Carbon Sequestration (also available in Spanish)	Dilemmas	Into the Forest Find Your Path videos Forest Essays, Grade 6 Forest Essays, Grades 7-12 Forest Fact Breaks: Carbon Capture Green Building Wood Products Inquiry at Hinkle Creek (video) Oregon Forest Facts & Figures Forest Fact Sheets: Forests Carbon & Climate Drinking Water Where's All the Carbon? (carbon cycle poster)  Other Rainforest Alliance Carbon Curriculum https://www.rainforest- alliance.org/curricula/climate  I-Tree: Tree Benefits www.treebenefits.com				
other non-forest land uses.		E-Unit for Grades 6-8 Carbon & Climate	Curriculum  Healthy Forests, Healthy Waters						

Theme 3: How Do We Sustain Our Forests?							
Washington Forest Education	NGSS Performance	Project Learning Tree	PEI Resources	Project WILD	Additional Resources		
Framework	Expectations	Activities		Activities			
Forest Ownership		35: Loving It Too Much (Our	Forests of Washington	Smokey Bear	<u>OFRI</u>		
1. The size and scale of forest		Federal Forests, p. 342)	7. Fire: Friend or Foe?	Said What?	Forest Fact Sheet: Ownership		
1. The size and scale of forest		69: Forest for the Trees	13. Who Manages		Oregon Forest Facts & Figures		
ownership can vary from hundreds		71: Watch on Wetlands	Washington's Forests?		Forest Fact Breaks:		
of thousands of acres in a national		81: Living with Fire (p. 315)	14. Where There's a Will		Fire Safety		
forest to an individual patch of			There's a Way		Inquiry at Hinkle Creek (video)		
trees in an urban forest.		E-Unit for Grades 6-8	18. Let's Make a Deal				
2. Washington's forests are managed		Carbon & Climate	19. Town Trees				
under private (e.g., family and			21. A Forest Full of Views				
industrial) and public (e.g., state and							
federal) ownership. Each type of			Career Profile Cards				
ownership may have different							
management objectives and may be			Solutions Oriented Learning				
subject to different laws and			Storylines				
policies.			Fire: Forest Management				
			(also available in <u>Spanish</u> )				
3. Forestlands— as well as fire and other disturbances that affect them			(also available iii <u>spanisii</u> )				
– cross natural boundaries, such as							
watersheds, and administrative							
boundaries, such as city limits and							
private property lines.							
4. Many forest landscapes are made							
up of a variety of ownerships, a mix							
of management objectives, and a							
blend of forest ecosystems.							
Forest Management		14: Renewable or Not? (p.	Forests of Washington	Bat Blitz	OFRI		
· ·	MS-LS2-4. Construct an	364)	7. Fire: Friend or Foe?	But Biltz	Into the Forest		
1. Forest management is a long-	argument supported by	15: A Few of My Favorite	8. The Forest Flu	Time Lapse	Forest Essays, Grade 6 Forest		
term process that can lead to	empirical evidence that	Things (Global Goods, p.	Weather Waltzes with the	Time Lapse	Essays, Grades 7-12		
changes in tree species	changes to physical and	272)	Forest	Ecosystem	Forest Fact Breaks:		
composition, size, and age, as well	biological components of an	31: Plant a Tree (p. 350)	13. Who Manages	Architects	Forest Management		
as in forest health and resilience.	ecosystem affect populations.	32: A Forest of Many	Washington's Forests?	Altilitetts	Clearcutting		
2. Forest management ranges from	ccosystem affect populations.	Uses (Our Federal	14. Where There's a Will	Natural	Reforestation		
active management (e.g., planting,	MS-ESS3-4. Construct an	Forests, p. 342)	There's a Way	Natural	Sustainability		
thinning, and harvesting) to passive	argument supported by	33: Forest Consequences	18. Let's Make a New Deal	Dilemmas	Water		
management (e.g., set- asides and	evidence for how increases in	(Decisions, Decisions, p. 224)	19. Town Trees	Constant of the	Inquiry at Hinkle Creek		
wilderness areas) to grow, restore,	human population and per-	35: Loving It Too Much (Our		Sustainability:	(video)		
maintain, conserve, or alter forests.	capita consumption of natural	Federal Forests, p. 342)	21. A Forest Full of Views	Then. Now.	Forest Fact Sheets:		
maintain, conserve, or after forests.	resources impact Earth's	50: 400-Acre Wood (If I		Later.	Clearcutting Forests		
3. Forest management includes the	'	Were the Boss, p. 280)	ELA Performance Tasks		Reforestation		
use of natural processes and goal-	systems.	69: Forest for the Trees	Forest Management (Grade 6)		Drinking Water		
oriented decisions and actions to		80: Nothing Succeeds	Stormwater Pollution (Grade		Protection Laws		
		221130	6)		1 TOLCCLIOIT Laws		

	Theme 3: How Do We Sustain Our Forests?							
Washington Forest Education	NGSS Performance	Project Learning Tree	PEI Resources	Project WILD	Additional Resources			
Framework	Expectations	Activities		Activities				
achieve a variety of desired outcomes, including ecological (e.g., improving wildlife habitat), 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.  4. In Washington, forest management in private and state forests is regulated by the Washington Forest Practices Act, which aims to sustain forest land for timber production and the other benefits forests provide, including clean water, wildlife habitat, and recreation.  5. 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	Expectations	Like Succession (p. 334) 93: Paper Civilizations 94: By the Rivers of Babylon  PLT Carbon & Climate (E-Unit for Grades 6-8)	Summer in the City (Grade 6-7) Invasive Plants (Grade 6-7) Climate Change, Carbon, and Trees (Grade 8) Urban Heat Island Effect (Gr. 8)  Guides Field Investigations Schoolyard Biodiversity  Curriculum Healthy Forests, Healthy Waters  Career Profile Cards  Solutions Oriented Learning Storylines Fire: Forest Management (also available in Spanish)	Activities	Oregon Forest Facts & Figures			
the desired values and products.	MC 162 F F 1	12. Investive Species (p. 200)	Face of Markington		0.501			
1. A variety of individuals, companies, organizations, and government agencies manage forests. Forest management decisions may involve some or all of these working collaboratively to ensure mutually beneficial outcomes.  2. Forest resource professionals aim to meet individual, societal and environmental needs.  3. The type and intensity of forest management is dependent on the purposes for which the forest is	MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services	12: Invasive Species (p. 299) 17: People of the Forest 31: Plant a Tree (p. 350) 32: A Forest of Many Uses (Our Federal Forests, p. 342) 33: Forest Consequences (Decisions, Decisions, p. 224) 34: Who Works in this Forest? (My Green Future, p. 132) 35: Loving It Too Much (Our Federal Forests, p. 342) 50: 400-Acre Wood (If I Were the Boss, p. 280) 54: I'd Like to Visit a Place Where	Forests of Washington 7. Fire: Friend or Foe? 8. The Forest Flu 9. Weather Waltzes with the Forest 13. Who Manages Washington's Forests? 14. Where There's a Will There's a Way 18. Let's Make a New Deal 19. Town Trees 21. A Forest Full of Views  ELA Performance Tasks Forest Management (Grade 6)	Ecosystem Architects  Natural Dilemmas  Sustainability: Then. Now. Later.	OFRI Into the Forest Find Your Path Find Your Path videos Forest Fact Breaks: Clearcutting Fire Forest Fact Sheets: Clearcutting Fire Protection Laws Sustainability Inquiry at Hinkle Creek (video)			

	Theme 3: How Do We Sustain Our Forests?								
Washington Forest Education Framework	NGSS Performance Expectations	Project Learning Tree Activities	PEI Resources	Project WILD Activities	Additional Resources				
managed, as well as forest type, ownership, size, and location.  4. Washington foresters and forest managers prepare forest management plans based on landowner goals and objectives, capabilities of the forest site, laws, and available tools (e.g., planting, harvesting, and using prescribed fire).  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.  6.Government has a role in actively engaging organizations, businesses, communities and individuals in forest management and policy decisions, especially for publicly owned forests.		57: Democracy in Action 58: There Ought to Be a Law NEW: Forest In the City, p. 265	Stormwater Pollution (Grade 6) Summer in the City (Grade 6-7) Invasive Plants (Grade 6-7) Climate Change, Carbon, and Trees (Grade 8) Urban Heat Island Effect (Gr. 8)  Career Profile Cards  Solutions-Oriented Learning Storylines Forests: Carbon Sequestration (also available in Spanish) Fire: Forest Management (also available in Spanish) Curriculum Heathy Forests, Healthy Waters		Other Rainforest Alliance Carbon Curriculum https://www.rainforest- alliance.org/curricula/climate				
7. Sustainable management of forests takes into account social, economic and ecological dimensions of sustainability. It includes maintaining forest health, productivity and diversity, and conserving a forested land base for the needs of present and future generations.  8. Changing public demands and expectations for the forest, as well as unanticipated events, affect decisions about forest resource use. Sound management based on scientific research, economic analysis and public involvement is required.									

	Theme 3: How Do We Sustain Our Forests?								
Washington Forest Education Framework	NGSS Performance Expectations	Project Learning Tree Activities	PEI Resources	Project WILD Activities	Additional Resources				
			Forests of Washington 7. Fire: Friend or Foe? 8. The Forest Flu 9. Weather Waltzes with the Forest 13. Who Manages Washington's Forests? 14. Where There's a Will There's a Way 18. Let's Make a New Deal 19. Town Trees 21. A Forest Full of Views  ELA Performance Tasks Forest Management (Grade 6) Stormwater Pollution (Grade 6) Summer in the City (Grade 6-7) Invasive Plants (Grade 6-7) Climate Change, Carbon, and Trees (Grade 8) Urban Heat Island Effect (Gr. 8)  Career Profile Cards  Guides: FieldDesign: Engineering Design for Field-Based Applications 6-12  Solutions Oriented Learning Storylines Fire: Forest Management (also available in Spanish)	_	OFRI Forest Fact Breaks: Clearcutting Forest Fact Sheets: Carbon & Climate Clearcutting Inside Oregon's Forests: A High School Forestry Curriculum  Other Rainforest Alliance Carbon Curriculum https://www.rainforest- alliance.org/curricula/climate				
			Urban Forestry: Ecosystem Benefits of an Urban Forest						

2. Resources we use and consume every day are connected to  Things (Global Goods, p. 272)  5. Come Grow with Us every day are connected to  Scientists, by Kathryn Kelsey and Ashley Steel. NSTA Press		Theme 4: Wha	t is Our Responsibili	ty to Washington For	ests?	
Forests  Trees 1. There's no Place Like Home 2. Getting to know the their personal connection with forests.  2. Resources we use and consume every day are connected to  Trees 1. There's no Place Like Home 2. Getting to know the Trees of Washington 3. Here's Looking at Yew 4. Forest Homes Tracks!  Forest Essays, Grade 6 Forest Essays, Grades 7-12  Other The Truth about Science: A Curriculum for Developing You Scientists, by Kathryn Kelsey a Ashley Steel. NSTA Press	<u> </u>			PEI Resources	·	Additional Resources
3. There are many ways that individuals can connect with forests in Washington, including hiking and picnicking in forests, volunteering for projects in and around forests, becoming informed and active voters, attending public meetings, and making wise consumer choices.  21)  31: Plant a Tree (p.  350)  32: A Forest of Many Uses (Our Federal Forests, p. 342) 37: Reduce, Reuse, Recycle (p. 356) 38: Every Drop Counts (p.  104)  15. Less is More 16. Tree Uses 17. Wood You Make a Difference?  Seed Need  ELA Performance Tasks Summer in the City (Grade 6-7) Urban Heat Island Effect  (Gr. 8)	Forests  1. Everyone should have the opportunity to identify and explore their personal connection with forests.  2. Resources we use and consume every day are connected to Washington's forests.  3. There are many ways that individuals can connect with forests in Washington, including hiking and picnicking in forests, volunteering for projects in and around forests, becoming informed and active voters, attending public meetings, and making wise consumer		Trees 4: Sounds Around 5: Poet-Tree (p. 143) 13: We All Need Trees (p. 82) 15: A Few of My Favorite Things (Global Goods, p. 272) 18: Tale of the Sun 21: Adopt a Tree (p. 21) 31: Plant a Tree (p. 350) 32: A Forest of Many Uses (Our Federal Forests, p. 342) 37: Reduce, Reuse, Recycle (p. 356) 38: Every Drop Counts (p. 104) 54: I'd Like to Visit a Place Where 61: The Closer You Look (p. 72) 83: A Peek at Packaging (p. 136) 89: Trees for Many Reasons (p. 193) 92: A Look at Lifestyles 96: Improve Your Place (p.	1. There's no Place Like Home 2. Getting to know the Trees of Washington 3. Here's Looking at Yew 4. Forest Homes 5. Come Grow with Us 6. Washington Forest Eco-Connections 11. Watershed Benefits 15. Less is More 16. Tree Uses 17. Wood You Make a Difference?  ELA Performance Tasks Summer in the City (Grade 6-7) Urban Heat Island Effect (Gr. 8)  Guides Field Investigations Project Based Learning Model Fostering Outdoor Observation Skills Photo Point Monitoring FieldDesign: Engineering Design for Field-Based Applications 6-12  PLT Extensions www.pltwa.com Trees as Habitat and Tree Benefits  Curriculum Healthy Forests, Healthy	Learning to Look, Looking to See  Nature in Art  Tracks!  Graphananimal  Urban Nature Search (adapt to forests)  Seed Need	Forest Essays, Grade 6 Forest Essays, Grades 7-12  Other  The Truth about Science: A Curriculum for Developing Young Scientists, by Kathryn Kelsey and Ashley Steel. NSTA Press  Citizen Science: 15 Lesson that Bring Biology to Life, 6-12 -NSTA Press  Ellie's Log and Teacher's Guide http://ellieslog.osupress.oregonstate.edu/ellies-log  Rainforest Alliance Carbon Curriculum

Theme 4: What is Our Responsibility to Washington Forests?						
Washington Forest Education Framework	NGSS Performance Expectations	Project Learning Tree Activities	PEI Resources	Project WILD Activities	Additional Resources	
	·		Solutions Oriented Learning Storylines Forests: Carbon Sequestration (also available in Spanish) Urban Forestry: Ecosystem Benefits of an Urban Forest			
Working for the Future of Washington's Forests  1. Everyone has a responsibility to treat forests with respect and to become a conscientious steward of Washington's forests and forest resources.  2. Personal behaviors directly impact the health and resiliency of our forests. For example, the products we buy, how we treat trails and campgrounds, and how we hunt or use fire can either harm or help forests.  3. Choices we make regarding the use of forest resources affect our ability to sustain forest ecosystems into the future.  4. A variety of professionals and skilled trade workers are needed to sustain our forests, including foresters, biologists, soil scientists, engineers, lawyers, information technology professionals, land managers, investors, environmental educators, communications specialists, logging operators,	MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.  MS-ESS3-4. Construct an argument supported by evidence for how increases in human population and percapita consumption of natural resources impact Earth's systems.	14: Renewable or Not? (p. 364) 15: A Few of My Favorite Things (Global Goods, p. 272) 31: Plant a Tree (p. 350) 32: A Forest of Many Uses (Our Federal Forests, p. 342) 34: Who Works in this Forest? (My Green Future, p. 132) 35: Loving It Too Much (Our Federal Forests, p. 342) 36: Pollution Search 37: Reduce, Reuse, Recycle (p. 356) 38: Every Drop Counts (p. 104) 51: Make Your Own Paper (p. 63) 54: I'd Like to Visit a Place Where 57: Democracy in Action 58: There Ought to Be a Law 81: Living with Fire (p. 315) 82: Resource-Go-Round 83: A Peek at Packaging (p. 136)	Forests of Washington  15. Less is More  17. Wood You Make a    Difference?  19. Town Trees  20. Earthkeepers: From    Schoolyard to Planet  22: A Washington Forest    Fair.  ELA Performance Tasks Forest Management (Grade 6) Stormwater Engineers (Grade 6-7) Summer in the City (Grade 6-7) Invasive Plants (Grade 6-7) Urban Heat Island Effect (Grade 8) Climate Change, Carbon, and Trees (Grade 8)  Guides Project Based Learning Model FieldDesign: Engineering Design for Field-Based Applications 6-12  Curriculum	Deer Dilemma Habitat Heroes Ecosystem Architects	OFRI Forest Essays, Grade 6 Forest Essays, Grades 7-12 Into the Forest Find Your Path Find Your Path videos	
mechanics, and wood products manufacturers.  5. As individuals or as members of groups, we can influence laws and policies about Washington's forests.		89: Trees for Many Reasons (p. 183) 96: Improve Your Place (p. 293) NEW: Environmental Justice For All, p. 233	Healthy Forests, Healthy Waters  Drain Rangers Secondary  Career Profile Cards			

Theme 4: What is Our Responsibility to Washington Forests?						
Washington Forest Education Framework	NGSS Performance Expectations	Project Learning Tree Activities	PEI Resources	Project WILD Activities	Additional Resources	
		NEW: What's in a Label, p.	Solutions Oriented			
		382	Learning Storylines			
		E-Unit for Grades 6-8	<u>Fire: Forest Management</u> (also available in Spanish)			
		<u>Carbon &amp; Climate</u>	Forests: Carbon			
			Sequestration (also			
			available in <u>Spanish</u> )			
			Urban Forestry: Ecosystem			
			Benefits of an Urban Forest			