

# NGSS and Outdoor Education

*Grade Level Guide - 5th Grade*

CHILDREN'S  
FOREST



CENTRAL  
OREGON



## Background



Central Oregon and its amazing array of beautiful rivers, bountiful snowpack, diverse vegetation, and fascinating geology gives teachers and students unlimited opportunities for using the natural world as an outdoor classroom. Studies have shown that learning in the outdoors can increase enthusiasm for learning, promote teamwork, build social and emotional skills, and even increase standardized test scores.

The new [Next Generation Science Standards](#) (NGSS) advocate for three-dimensional learning, which is good news for outdoor and environmental education. First, all grade levels have an emphasis on understanding the impacts humans have on Earth's systems as well as the connections among living things and the environment. Second, a number of the scientific practices, disciplinary core ideas, and crosscutting concepts in NGSS can be more effectively addressed through exploration and investigation of the natural world than in the classroom. With the implementation of NGSS happening in school districts across Oregon, now is a great time to build outdoor education into your curriculum.

In 2011, CFCO was created to introduce and engage all students in Central Oregon to the wonder, science, and adventure of nature. One of our primary objectives is to provide all youth first-hand connections with nature by providing meaningful, inspirational, and interdisciplinary education programs. Together our network of partners offer over 30 different outdoor education programs that connect students to nature, engage students in science practices, and deliver content knowledge about local natural resources issues.

## Guiding Principles and Beliefs

- **Teacher's Choice.** Teachers should have a breadth of outdoor education programs to choose from, but choices should be informed by thoughtful alignment to NGSS.
- **Scaffolding Learning.** With so many opportunities, the series of outdoor education programs that students experience should build upon each other, not replicate each other. Teachers should work together to provide a thoughtful progression of experiences for students across grade levels.
- **Providing Equitable Experiences.** Outdoor education programs should be offered equitably within grade levels at schools and also across schools and communities. Students at different schools might not be participating in the exact same programs, but their experiences should be comparable and age-appropriate.
- **Depth over Breadth.** Modeled after the [Oregon Environmental Literacy Program](#) (OELP), you will not find an exhaustive list of every opportunity to learn outdoors while addressing NGSS. Instead, we promote the best practice of utilizing essential questions to encourage a depth learning about each concept. We have identified what we feel are the most tangible ways to address NGSS and promote outdoor learning and environmental literacy in students.



# How to Use the Document



## Grade Level Guides

Each grade level has a two-page guide for incorporating outdoor learning into NGSS. We believe that outdoor education programs should be just part of a unit of study, and that deeper learning of topics and questions should occur in the classroom as well as in the schoolyard or nearby natural areas. As such, for each grade we've focused on two to three NGSS Performance Expectations where classroom learning can be greatly enhanced by outdoor exploration and investigation. For each Performance Expectation, the guide proposes an "essential question" that helps provide focus and coherence for units of study.

In addition to essential questions, page 1 of each grade level guide provides a handful of schoolyard activities that align with NGSS and the suggested essential questions as well as ideas for incorporating math, english-language arts, social studies, and art. Page 2 of the Grade Level Guides lists the Outdoor Education Programs available in Central Oregon that align with NGSS for that grade level. Programs may be listed under more than one grade level when there is strong alignment to NGSS for those grade levels. It is essential that schools work together to create a thoughtful sequence of programs that don't replicate each other (see *NGSS and Outdoor Education: Creating an Outdoor Learning Map* at [childrensforestco.org/programs](http://childrensforestco.org/programs)).

**IMPORTANT NOTE:** Organizations may offer programs to more grade levels than are listed in this guide. In an effort to reduce duplication across grade levels, we've listed programs where we feel there is the strongest alignment to NGSS Performance Expectations.



# 5th Grade

## Essential Questions

- How does matter cycle through the environment? ([5-LS2-1](#), [5-PS3-1](#))
- Where do plants get what they need for growth? ([5-LS1-1](#))
- How do Earth’s systems interact and affect one another? ([5-ESS2-1](#))
- How can humans use science to protect the Earth’s resources and environment? ([5-ESS3-1](#))

## Schoolyard/Classroom Activity Ideas

- Create a food web of organisms in their schoolyard and identify them as producers, primary consumers, secondary consumers, or decomposers
- Research plants in the schoolyard to learn about their needs for sun, water, and nutrients
- Find examples of the geosphere, biosphere, hydrosphere, and atmosphere in the schoolyard
- Investigate different soils throughout the schoolyard and how they impact the types of plants that can be found
- Design a plan for improving your schoolyard or nearby natural area so that it protects Earth’s resources

## Lessons and Resources

- CFCO 4th-5th grade Curriculum Kit - [childrensforestco.org/curriculum](http://childrensforestco.org/curriculum)
- Sharing Water Video and Curriculum - [childrensforestco.org/curriculum](http://childrensforestco.org/curriculum)
- [Oregon Forests Resources Institute](#) – Lessons Plans (Web of Life, Forests and Water, The Nature of Trees, etc.)
- [Oregon Forests Resources Institute](#) – learnforests.org – Forest Fact Breaks (Photosynthesis, Ecosystems, Sustainability, etc.)
- [Project Learning Tree](#) – We Can Work It Out, Nature’s Recyclers, Soil Stories, Web of Life
- Children’s Forest Resource Co-op – Plant Studies, Wildlife Tracking, Birding, Soil Studies Kits
- Children’s Forest [NatureHoods Project](#) funding

## Interdisciplinary Connections

MATH	ELA	SOCIAL STUDIES	ART
Measure and record soil percolation (time for water to drain/be absorbed)	Create a presentation that incorporates multimedia components to display the schoolyard food web  Write a mock newspaper article documenting an action the community has taken to protect local resources or the environment	Identify characteristics of a local environmental problem, suggesting possible causes and results  Propose a response or solution to a local environmental problem and support why it makes sense, using support from research	Draw a food web using detailed drawings of organisms and abiotic factors  Draw an example of how humans have made a positive impact on the local environment



## 5th Grade - Outdoor Education Programs

PROGRAM	ORGANIZATION	NGSS PE					SCIENCE & ENGINEERING PRACTICE	DISCIPLINARY CORE IDEA	CROSSCUTTING CONCEPT	DESCRIPTION
		5-PS3-1	5-LS1-1	5-LS2-1	5-ESS2-1	5-ESS3-1				
Outdoor School	Camp Tamarack	**	*	**		*	Investigation, Models	LS2.A, LS2.B, ESS3.C	Systems, Energy and Matter	Design a model of the web of life, learn about plants needs for life, investigate the impacts of fire on forests, study water quality, and design solutions to restore a nearby lake
Fired Up!	High Desert Museum				**	**	Models, Investigation	ESS2.A, ESS3.C	Systems	Build a forest model to investigate the effects density and slope on fire behavior, fire triangle activities, forest survey in burned and un-burned areas, tree ring study, observation of plant adaptations to fire
Upstream Project/ Stewardship Project	Upper Deschutes Watershed Council				*	**	Investigation, Designing Solutions	ESS3.C	Systems	Water quality data collection, riparian area transects, restoration project analysis, discussion of influence of geography, climate, and biosphere on local watersheds, optional student stewardship project
Stream-fed Rivers Stewardship	Trout Unlimited				*	**	Designing Solutions	LS2.A, ESS3.C	Systems	Service-learning program with observation/ investigation of riparian areas and human impacts to streams, journaling, discussion about potential solutions to human impacts, and hands-on restoration project
Birds of Prey	Sunriver Nature Center	**		**			Arguing from Evidence	LS2.A	Systems	Presentation about raptors' roles as apex predators and their role in the food web, observation of live raptors and their habitat
Life in a Pond	Sunriver Nature Center	**		**			Models	LS2.A	Energy and Matter, Systems	Presentation about the food chains and food webs in freshwater ecosystems, observation of live amphibians and aquatic invertebrates
Moving through the Chain	The Environmental Center	**	*	**			Models	LS2.A, LS2.B	Energy and Matter, Systems	Develop models of food chains and food webs of local ecosystems, observation of decomposition process
Project SNOW	Discover Your Forest				**	**	Investigation, Models	ESS2.A, ESS2.C	Systems	Snow pit analysis, snow/water equivalency experiment, watershed mapping

\* addresses the performance expectation, but is not the primary focus of the program

\*\* the performance expectation is the primary focus of the program

# Outdoor Education Programs - Quick Reference Guide

Program	Organization	Length (Days)	Location	Cost	Grades					
					K	1	2	3	4	5
Outdoor School	Camp Tamarack	3	Camp Tamarack							X
NatureHoods – “Bear” Necessities	Children’s Forest of Central Oregon	4	Schoolyard, nearby park	Free	X					
NatureHoods – Roots and Tails	Children’s Forest of Central Oregon	4	Schoolyard, nearby park	Free	X					
NatureHoods – Plants and Pollinators	Children’s Forest of Central Oregon	4	Schoolyard, nearby park	Free		X				
Plants and Pollinators	Discover Your Forest	2	Public land sites (varies)	Free			X			
Newberry National Volcanic Monument	Discover Your Forest	1	Lava Lands	Free					X	
Project SNOW	Discover Your Forest	1	Mt. Bachelor	Free				X	X	X
H2O Aquatic Insects	High Desert Museum	1	HDM or school	\$165-\$200	X	X	X			
Reptiles and Amphibians	High Desert Museum	1	HDM or school	\$165-\$200	X	X				
Batty About Bats	High Desert Museum	1	HDM or school	\$165-\$200	X					
Wild Weather	High Desert Museum	1	HDM or school	\$165-\$200	X					
Nature’s Innovations	High Desert Museum	1	HDM or school	\$165-\$200	X					
Erosion!	High Desert Museum	1	HDM or school	\$165-\$200		X				
Desert Dwellers	High Desert Museum	1	HDM or school	\$165-\$200		X	X			
Birds of Prey	High Desert Museum	1	HDM or school	\$165-\$200				X		
Rockin Geology	High Desert Museum	1	HDM or school	\$165-\$200					X	
Desert Waters	High Desert Museum	1	High Desert Museum	Free					X	
Traveling the Oregon Trail	High Desert Museum	1	HDM or school	\$165-\$200					X	
Fired Up!	High Desert Museum	1	High Desert Museum	Free						X
Kokanee Karnival	Kokanee Karnival Program	4-7	Multiple locations	Free						X
Life in Cold Blood	Sunriver Nature Center	1	Nature Center or classroom	\$100-\$180	X			X	X	
Birds of Prey	Sunriver Nature Center	1	Nature Center or classroom	\$100-\$180	X				X	X
Life in a Pond	Sunriver Nature Center	1	Nature Center or classroom	\$100-\$180	X			X	X	X
Plant Detectives Outdoor Day	The Environmental Center	1	Skyliner Lodge, Shevlin Park	Free			X			
Habitat Explorers Outdoor Day	The Environmental Center	1	Skyliner Lodge, Shevlin Park	Free				X		
Changing Cycles Outdoor Day	The Environmental Center	1	Skyliner Lodge, Shevlin Park	Free					X	
Rock and Roll Outdoor Day	The Environmental Center	1	Skyliner Lodge, Shevlin Park	Free						X
Moving through the Chain Outdoor Day	The Environmental Center	1	Skyliner Lodge, Shevlin Park	Free						X
Spring-fed Rivers Stewardship Program	Trout Unlimited	4	Fall River, Metolius River	Free					X	X
The Upstream Project	Upper Deschutes Watershed Council	1-4	Deschutes, Tumalo, Whychus	Free	X	X	X	X	X	X
Student Stewardship Projects	Upper Deschutes Watershed Council	1-4	Deschutes, Tumalo, Whychus	Free	X		X	X	X	X

## Outdoor Education Programs - Contact Information

Organization	Contact Information
Camp Tamarack	<a href="http://camptamarack.com">camptamarack.com</a> Charlie Anderson, Director charlie@camptamarack.com (541) 633-9847
Children's Forest of Central Oregon	<a href="http://childrensforestco.org">childrensforestco.org</a> Katie Chipko, Executive Director katie@childrensforestco.org (541) 383-5592
Discover Your Forest	<a href="http://discoveryourforest.org">discoveryourforest.org</a> Karen Gentry, Education and Volunteer Programs Director karen.gentry@discovernw.org (541) 383-4771
High Desert Museum	<a href="http://highdesertmuseum.org">highdesertmuseum.org</a> Erica Pelley, Associate Curator of Education epelley@highdesertmuseum.org (541) 382-4754 ext. 320
Kokanee Karnival Youth Education Program	<a href="http://kokaneekarnival.org">kokaneekarnival.org</a> director@kokaneekarnival.org
Sunriver Nature Center	<a href="http://sunrivenaturecenter.org">sunrivenaturecenter.org</a> office@sunrivenaturecenter.org (541) 593-4442
The Environmental Center	<a href="http://envirocenter.org">envirocenter.org</a> Jackie Wilson, Sustainability Educator jackie@envirocenter.org (541) 385-6908 ext. 15
Trout Unlimited	<a href="http://deschutes.tu.org">deschutes.tu.org</a> Darek Staab, Program Manager dstaab@tu.org (541) 480-6976
Upper Deschutes Watershed Council	<a href="http://restorethedeschutes.org">restorethedeschutes.org</a> Kolleen Miller, Education Director kmiller@restorethedeschutes.org (541) 382-6103 ext. 33

## Resources for Field Trips and Outdoor Learning

Resource	Organization	Details
Funding for Transportation or Substitutes	Children's Forest of Central Oregon	School Engagement Fund <a href="http://childrensforestco.org/school-engagement-fund">childrensforestco.org/school-engagement-fund</a>
	Oregon Forest Resources Institute	Bus Transportation <a href="http://learnforests.org/resource_article/online-reimbursement-form">http://learnforests.org/resource_article/online-reimbursement-form</a>  **Forests/Forestry must be the primary focus of the field trip
Kits and Field Equipment	Children's Forest of Central Oregon	Resource Co-op <a href="http://childrensforestco.org/resource-coop">childrensforestco.org/resource-coop</a>  Birding, Plants, Wildlife, Soil Studies, Aquatic Investigations, Forest Ecology, Insects, Stream tables <i>Free</i>
	High Desert Museum	Travelling Trunks <a href="https://www.highdesertmuseum.org/traveling-trunks/">https://www.highdesertmuseum.org/traveling-trunks/</a>  Water Cycle, Skulls and Pelts, Oregon Trail, Biomimicry, Water Quality with Vernier Probes <i>\$25 for 2 weeks</i>
	Sunriver Nature Center	Travelling Trunks <a href="http://www.sunrivernaturecenter.org/index.php/visit-the-nature-center/our-programs/school-programs">http://www.sunrivernaturecenter.org/index.php/visit-the-nature-center/our-programs/school-programs</a>  Birds of Prey, Herpatology, Native Plants, Life in a Pond <i>\$100-\$120 (includes 30 minute presentation)</i>
Field Trip Locations	High Desert ESD	Skyliner Lodge <a href="http://www.hdesd.org/about/skyliner-lodge/">http://www.hdesd.org/about/skyliner-lodge/</a>  <i>Free for educational programs</i>
	Children's Forest of Central Oregon	Map of sites in Central Oregon <a href="http://www.childrensforestco.org/places/">http://www.childrensforestco.org/places/</a>
Inclusion Assistance	Bend Park and Recreation District	BPRD can provide Therapeutic Recreation staff to assist with students with special needs. Please provide at least 1 month notice. Email <a href="mailto:katie@childrensforestco.org">katie@childrensforestco.org</a> .
Curriculum	Children's Forest of Central Oregon	<a href="http://childrensforestco.org/curriculum">childrensforestco.org/curriculum</a>
	Oregon Forest Resources Institute	Lesson plans, videos, and publications <a href="http://learnforests.org/">http://learnforests.org/</a>
Grant/Project Funding	Children's Forest of Central Oregon	NatureHoods projects <a href="http://www.childrensforestco.org/naturehoods">http://www.childrensforestco.org/naturehoods</a>  Up to \$1,000 grants for schools and community groups for habitat improvements, outdoor classroom spaces, or accessibility improvements for schoolyards and parks



# Field Trip Planning Timeline and Tips

## 4-6 months in advance

- Contact program provider (organization offering the field trip) to schedule dates for your field trips. Some providers may be able to accommodate your trip with less notice, but popular trips often fill-up well in advance
- Contact your transportation department to reserve a bus for your field trip dates and get a cost estimate

## 2-4 months in advance

- Apply to the [School Engagement Fund](#) if you need funding for transportation or substitutes
- Reserve kits from the [Resource Co-op](#) if you need field equipment

## 1 month in advance

- Send permission slips home
- Recruit parent chaperone volunteers
- If you are teaching on the field trip, review curriculum with grade level team and determine responsibilities
- Connect with program provider to discuss program adaptations and accommodations for students with special needs

## 2 weeks in advance

- Confirm reservation with transportation department
- Meet with school nurse to compile a list of medical issues, allergies, and necessary medications for all students attending. If students have severe allergies and epi-pens, find out if the student can self-administer or if you need to do it.
- Make list of student groups (if you are splitting the group) and divide emergency contact/medical information into groups

## 1 week in advance

- Discuss field trip behavior rules with your students
- Give students a list of required items of the field trip
- Confirm itinerary with parent chaperones
- Make nametags for students

## Day before

- Review field trip behavior rules with your students
- Pack items on the teacher packing list (below)

## Tips:

- Work collaboratively with other grade levels at your school to provide a sequence of field trips that build upon each other (and don't duplicate each other)
- Communicate with the program provider in advance with any information about goals for the field trip, background knowledge the students have, and information about students with special needs.
- Choose parent chaperones wisely. Field trips require extra eyes and ears. Depending on the site, recruit one chaperone for every 5-10 students. The ideal chaperone is one who is engaged, responsible, and caring. Be sure that chaperones understand that they are there to manage their entire group, not just to spend time with their son or daughter.