

PROGRAM OFFERINGS

Natural Discovery



Environmental Science



**Hands-On Environmental Science, History, & Team-Building
Offered in the Classroom, Schoolyard, or at Puh'tok**



Team-Building Adventures



Hands-on History Exploration






PROGRAM OFFERINGS

Project Wet 		
MacroInvertebrate Mayhem	Grades 3 – 8	Students will: 1) illustrate how tolerance to water quality conditions varies among macroinvertebrate organisms; 2) explain how population diversity provides insight into the health of an ecosystem; and 3) identify environmental factors that can influence macroinvertebrate organisms.
Invaders!	Grades 3 – 12	Students will: 1) define the terms aquatic invasive species; 2) describe how an aquatic invasive species could be transported between water bodies; and 3) identify how an aquatic invasive species can impact native species and their natural habitat.
Just Passing Through	Grades 3 – 8	Students will: 1) compare the rates at which water flows down slopes with and without plant cover and 2) identify best management practices that can be used to reduce erosion.
Reaching Your Limits	Grades 6 – 12	Students will: 1) describe the relationship between water quality and water treatment, and 2) recognize the ratio of one to a million and one to a billion.
Project Wild 		
Bat Blitz	Grades 3 – 8	Students will: 1) simulate bats feeding on insects and perform calculations to learn about one of the roles bats play in an ecosystem 2) explain the role of little brown bats in an ecosystem; 3) interpret data from simulations to formulate hypotheses and predict future outcomes; and 4) predict impacts to an ecosystem if bats were no longer present.
Carrying Capacity	Grades 6 – 11	Students will: 1) define carrying capacity, 2) describe and analyze the impacts of carrying capacity on wildlife, and 3) give examples of how carrying capacity can change.
How Many Bears / Oh Deer	Grades 3 – 11	Students will: 1) identify and describe the essential factors of habitat; 2) define a limiting factor; 3) describe how limiting factors affect animal populations; 4) analyze data using models; 5) identify and describe food, water, and shelter as 3 or 4 essential components of habitat; and 6) recognize that some fluctuations in wildlife populations are natural as ecological systems undergo constant change.
Monarch Marathon	Grades 3 – 8	Students will: 1) describe the life cycle and migration of the monarch butterfly; 2) model the life stages of the monarch butterfly; 3) show on a map the migration routes of monarch butterflies; 4) define limiting factors; 5) explain how limiting factors affect monarch butterflies; and 6) discuss conservation actions to help the monarch butterflies.
Quick-Frozen Critters	Grades 3 – 8	Students will: 1) describe adaptations related to predator and prey relationships; 2) explain the importance of adaptations in predator and prey relationships; and 3) describe how predator and prey relationships limit wildlife populations.
Thicket Game	Grades 1 – 5	Students will: 1) identify examples of adaptations in animals and 2) describe the importance of adaptations to animals.

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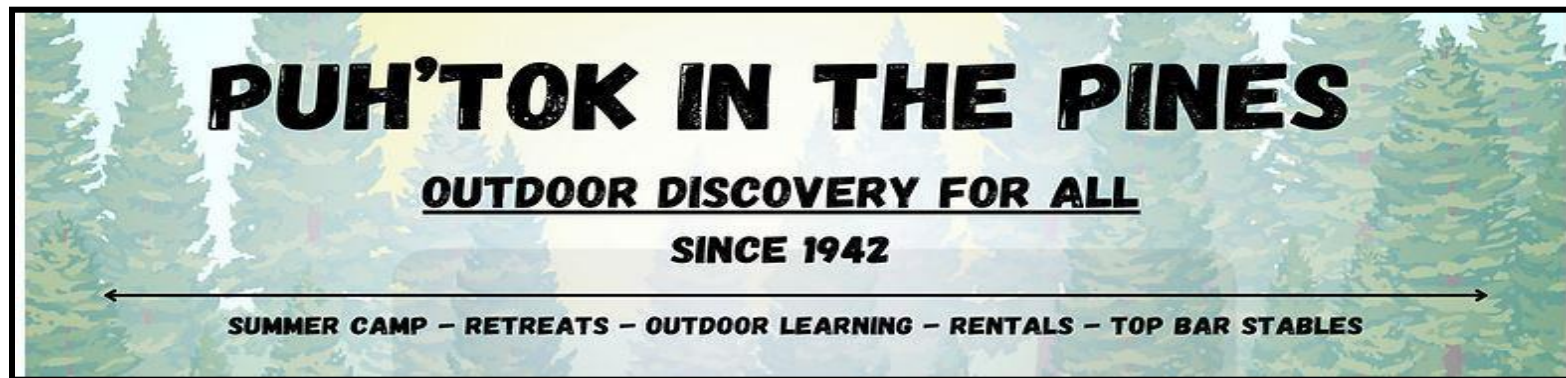
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Project Learning Tree 		
Birds and Worms	Grades K – 6	Students will demonstrate how camouflage is used for protection and survival. Concepts: 1) organisms are interdependent; 2) altering the environment affects all life forms and the interrelationships that link them; and 3) organisms adapt to changes in the environment according to the genetic and behavioral capacity of their species.
Every Tree for Itself	Grades K – 8	Students will: 1) simulate how trees compete for their essential needs and 2) describe how varying amounts of light, water, and nutrients affect a tree's growth.
Living with Fire	Grades 2 – 8	Students will: 1) describe the three elements of the fire triangle and explain how eliminating one or more elements can help prevent or control fire, and 2) describe ways to reduce the risk of wildland fires.
Our Changing World	Grades 5 – 8	Students will: 1) understand the connections among the world's natural resources, energy use, and human activities; and 2) analyze a global environmental issue.
Flying Wild 		
Eye See You	Adaptable for ALL GRADES	Participants get a bird's eye view of the world and understand the importance of stereovision in hunting for prey.
Food for the Brood	Adaptable for ALL GRADES	This relay race gets participants up and running as they gain an appreciation for the parents' seemingly impossible task of satisfying the appetites of their impatient nestlings.
The Great Migration Challenge	Adaptable for ALL GRADES	It is time to fly south for the winter, but watch out for the power lines, jets, and bad weather. Will you make it safely to your wintering grounds? While playing the part of birds, participants discover challenges faced by migrating birds.
Aquatic Wild 		
Hooks and Ladders	Grades 6 – 8	A role-playing game where students experience life as a salmon and the challenges they face. Students will 1) describe how some fish migrate as part of their life cycles; 2) identify the stages of the life cycle of a trout or salmon; 3) describe limiting factors that affect Atlantic salmon as they complete their life cycles; and 4) generalize the limiting factors that affect all populations of animals.

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Turtle Hurdles	Grades 3 – 8	Students will be able to: 1) describe the life cycle of sea turtles; 2) identify specific mortality factors related to sea turtles; 3) make inferences about the effects of limiting factors on sea turtle populations; and 4) make recommendations for ways to minimize the factors which contribute to the possible extinction of sea turtles.
Puh'tok Environmental Lessons 🦩♻️🐸		
Critter Talk	Adaptable for ALL GRADES	Students will: 1) learn about local woodland and river species, their importance to our ecosystems, and their adaptations; and 2) go on a hike to observe, catch and release, and learn more about the animal habitats.
Forest Resources / Reduce, Reuse, Recycle	Adaptable for ALL GRADES	Students will learn about the three R's (reduce, reuse, and recycle) to better understand the importance of recycling and learn what everyday products can be made from recycled materials. Students will: 1) focus on the importance of trees as a natural resource, what they provide us as humans, and the effects of losing our forests; 2) review renewable and non-renewable resources; 3) make paper from recycled materials.
Birds of Prey	Adaptable for ALL GRADES	Includes animal presentation and interactive games where students will act out various bird adaptations. Students will: 1) interact with bird biofacts and 2) experience a live bird presentation to learn about local birds of prey.
Local Ecology Game	Adaptable for ALL GRADES	Students will focus on forests and conservation as they explore different components of an ecosystem. Students will: 1) create their model ecosystems and 2) learn how each part is integral to the creation of a healthy ecosystem.



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Pond, Stream, Woodland & Wetlands Investigation Adaptable for Grades 4-9



STUDENTS WILL PARTICIPATE IN INQUIRY-BASED LEARNING THROUGH FIELD STUDY

Essential Question: In what ways do the natural resources at Puh'tok support a native wildlife population?

Driving Question: How can we improve biodiversity in our schoolyard system?

Investigative Questions:

- In what ways do organisms interact with the environment in this ecosystem?
- What makes this ecosystem unique?
- What resources within this ecosystem support biodiversity?

REAL-WORLD APPLICATION

Students will participate in the real-world application of science, technology, math, art, and language arts activities, including water quality analysis, macroinvertebrate study of ponds and streams, soil analysis, tree growth, and species analysis, comprehensive habitat analysis, maker sessions, journaling, sketching, creative writing, and oral presentation.

Students will develop 21st-century skills through cooperative work, team-building, and character development initiatives.



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Nature Matters

Students participate in real-world science investigations in streams and ponds, meadows and forest. Puh'tok is brimming with all the wonder nature has to offer. We promise an experience that is all too rare these days – *a sense of awe produced without screens, consoles, or speakers, just pure nature.*

Anchor Standards

MS-LS2-1 Students will analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.

MS-LS-2 Students will construct an explanation that predicts patterns of interactions among and across multiple ecosystems.

MS-LS-4 Students will construct an argument, supported by empirical evidence, that changes to physical or biological components of an ecosystem affect populations.

WHST. 6-8.1 Write arguments to support claims with clear reasons and relevant evidence.

MP.4 Model with mathematics.

6.SP.B.5 Summarize numerical data sets in relation to their context.

CURRICULUM
EDUCATIONAL EXCELLENCE

ACTIVITIES
FUN WITH A PURPOSE

Learning by Doing

- analyzing woodland, wetland, pond, stream, forest and meadow habitats to determine resource availability and overall health.
- discovering possible inhabitants (organisms) in various ecosystems and what is required within the habitat to sustain a healthy population.
- determining which habitats might support an identified organism
- Utilizing comparative analysis

Real World Application

Science, Technology, Math, Art and ELA activities including:

- Macroinvertebrate study of ponds & streams
- Soil analysis
- Biological and chemical water quality testing
- Comprehensive habitat analysis
- Estimate tree height and girth
- Journals, sketches, models, and presentations

Students will present data analysis to key stakeholders including Department of Natural Resources and Gunpowder Valley Conservancy

21st Century Skill Building

- Daily Team-Building Activities
- Low-Ropes Challenge Course Adventure
- Maker Session- Seed balls, Pollinator Hotels, Butterfly Feeders, Birdseed Cookies
- Journaling and Reflection

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Early Native Americans and Natural Resources (4 Hours)

Students will 1) understand that early Native Americans' way of life and survival strategies were determined by the natural resources that could be found and utilized in the areas they lived, and 2) learn how local Woodlands tribes might have lived as students participate in five hands-on stations that demonstrate using natural resources.

Early Games:

Students will play games from different Native American nations and learn how they helped prepare young people for adult roles later in life.

Early Dwellings:

Taking place in our Woodlands village, students will discover early forms of housing used by tribal nations. Students will learn how their differences can tell us about the resources available in the area.

Early Tools:

Students will explore early tools such as stone axes, stone hammers, bow drills, sewing machines, and types of leather and fur.

Storytelling and Firekeeping: Students will learn the cultural and logistical value of fire to a tribe or nation. Students will learn about the importance of fire as a meeting point for storytelling, sharing knowledge, and preserving their history.

Pigments and Communications:

Students will be introduced to different forms of communication within and between indigenous peoples. Students will learn the importance of the pigments used by people in art, culture, and practical uses and how the colors available to a nation can inform us of the region or environment they are located.

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Adventure and Team Building Programs

Low-ropes challenge course adventures, team-building, and ground initiatives can be customized to meet your group's social and emotional learning goals.

**Available for student and staff development*



For more information on field trip offerings, contact:

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