

## ATTAINMENT

Wolftree served over **19,000** students and **98** teachers from over **70** schools/organizations. In addition, several hundred adults participated. *Student-day experiences exceeded 25,000.* The Program's five year revenue of **\$1.6 million** was based on contributions from over **50** public and private organizations combined with hundreds of individual donors.

### Schools We Served:

#### WESTERN OREGON

- Barlow HS
- Binnesmead MS
- Biz Tech HS
- Bridger ES
- Clark MS
- **Dufur HS, MS**
- Earl Boyles ES
- **Estacada HS**
- Faubion ES
- Firwood MS
- **French American International School ES**
- Gilbert Park ES
- Grant Community School
- Holy Family School
- **Humbolt ES**
- **Jane Goodall Environ. MS**
- **Jefferson HS**
- Kelly ES
- Lent ES
- Ockley Green MS
- **Oregon City HS**
- **Pauling Academy HS**
- Pleasant Valley ES
- **Portland State University**
- Portland YouthBuilders
- **Reynolds HS**

- Sabin Vocational HS
- **Sandy HS**
- Sitton ES
- **South Salem HS**
- **St. Francis Academy**
- Witman ES

#### CENTRAL OREGON

- Bear Creek ES
- Buckingham ES
- Buff ES
- Central Christian School
- **Crook County HS, MS, & ES**
- Elk Meadow ES
- Gilchrist SD
- High Desert MS
- Jefferson County GEST
- Jefferson County MS
- Jewell ES
- John Tuck ES
- Juniper ES
- **LaPine HS**
- Lava Ridge ES
- Linch ES
- Madras ES
- **Madras HS**

- **Mitchell HS**
- Mountain View HS
- **Oregon Instit. of Technology**
- Pine Ridge ES
- **Redmond HS**
- **Sisters HS, MS**
- Summit HS
- Sun River Schools
- **Terrebonne CS**
- Three Rivers ES
- Tom McCall MS
- Tumalo ES
- Westside ES

#### SW WASHINGTON

- Alki MS
- Columbia HS
- Discovery MS
- Gaiser MS
- Jason Lee MS
- Jefferson MS
- McLoughlin MS
- **Stevenson HS**
- **White Salmon HS**
- Wind River MS
- VSAA MS

Schools involved in Project-based learning in red



### Sponsors

- Central Oregon Flyfishers
- Oregon Forest Resources Institute
- Oregon Watershed Enhancement Board
- USDA Forest Service
- USDI U.S. Fish & Wildlife Service
- USDI Bureau of Land Management
- Friends of Wolftree Stewardship Fund

### Major Contributors

- Clackamas County
- Collins Foundation
- Environmental Protection Agency
- Friends of the Paul Bunyan Foundation
- **Laird Norton Family Foundation**
- Meyer Memorial Trust
- National Fish and Wildlife Foundation
- **National Forest Foundation**
- Oregon Community Foundation
- Oregon Department of Fish & Wildlife
- Portland General Electric
- **Portland State University**
- Portland Water Bureau
- Portland YouthBuilders
- REI
- Spirit Mountain Community Fund
- **Stimson Lumber Company**
- Sunriver Anglers
- US Bank

# Watershed Science Education Program

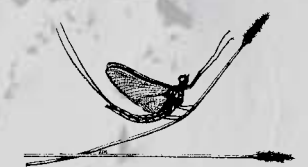


Cascade Streamwatch

Science in the Forest

Project-Based Learning  
Science Education

S.T.E.M.



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## SUMMARY

The purpose of Wolfree's **Watershed Science Education Program (WSEP)** is to increase science and geographic literacy with an emphasis on reaching populations living in under-served communities. The Program is a comprehensive approach to science and geography education covering disciplines in both terrestrial and aquatic ecology. WSEP provides experiential, science-inquiry based classroom and field activities led by Wolfree staff, local scientists, natural resource managers, naturalists, and educators. WSEP is designed to cater to the specific needs of science teachers and students. Several award-winning Projects are included in WSEP's portfolio including: Cascade Streamwatch, Science in the Forest, Project-based Science Education, and Community Stewardship Activities.

Improving public understanding of river and forest ecosystems and the complex issues regarding the management of our natural resources is a common goal held by the WSEP partners. We also agree that the best method for accomplishing this goal is through multiple opportunities for experiential learning in rivers and forests complemented by hands on classroom activities. These experiences enable and encourage students to become active participants in their local communities and help interested young people pursue academic and professional careers in science and natural resources. WSEP immerses students in rigorous inquiry-driven studies of aquatic and forest systems and provides opportunities for advanced students to pursue authentic research and management projects in local watersheds. Over 40 public and private partners are directly involved in the development and delivery of this Program.

## PROGRAM GOALS

Goal 1. WSEP increases the science literacy of students, by providing hands-on, science-inquiry based classroom and field activities led by Wolfree staff, local scientists, naturalists, and educators.

Goal 2. Students demonstrate a basic understanding of watershed (ecosystem) composition, structure, and processes.

Goal 3. WSEP is a well-known model for educators in the field of informal science and natural resource education.

## CORE ELEMENTS

**Field based.** Students explore the natural world at several diverse field sites located throughout the Pacific Northwest.

**Experiential.** Teams use contemporary scientific research tools, technology and techniques to collect and analyze scientific data.

**Small teams.** Research teams of usually seven, five students and two mentors, immerse themselves in the study of ecology.

**Science Inquiry:** Students do the following: (1) Use technology and mathematics to improve investigations and communications; (2) Formulate and revise scientific explanations and models using logic and evidence; (3) Recognize and analyze alternative explanations and models; and (4) Communicate and defend a scientific argument.

**Applied Science:** Students do the following: (1) Use problem-solving techniques, research skills, and decision-making strategies (individually and collaboratively) to identify issues and problems; and (2) Conduct research, and evaluate information to formulate and defend a position or decision.

**Geography:** Students do the following: (1) Use maps and other geographic representations, tools, and technologies to acquire, process, and report information from a spatial perspective; and (2) Explore the characteristics and spatial distribution of ecosystems on earth's surface.

**Guided by scientists, resource specialists, and educators (mentors).** Over 250 professional scientists from dozens of public and private organizations support Wolfree students. Mentors are trained to engage students with challenging questions, encourage critical and creative thinking, and guide students towards meaningful conclusions.

**Classroom activities and materials complement field studies.** Wolfree staff and mentors facilitate pre and post classroom activities to provide a seamless link between the classroom and the field. Teachers are provided with a host of supplemental instructional materials including our Ecology Field Guide, a comprehensive guide to our field studies.

**Accommodates a full range of learning abilities and cultures.** Females and minorities are especially encouraged to succeed through special projects.

**Tied to national and state standards and benchmarks.** All our programs provide students the opportunity to fulfill school benchmark requirements, especially regarding science inquiry.

## ASSESSMENT

Wolfree's comprehensive evaluation plan is a collaborative effort of the participating school districts, Portland State University, independent contractors, and the Wolfree Board of Directors' Education Committee. Our Project-based studies utilize authentic assessment tools to measure student progress **in three focus areas: advanced science inquiry, applied science, and geography.** The focus areas are derived from national standards published in the *National Science Education Standards* with input from the American Association for the Advancement of Science, and the National Geographic Society.

