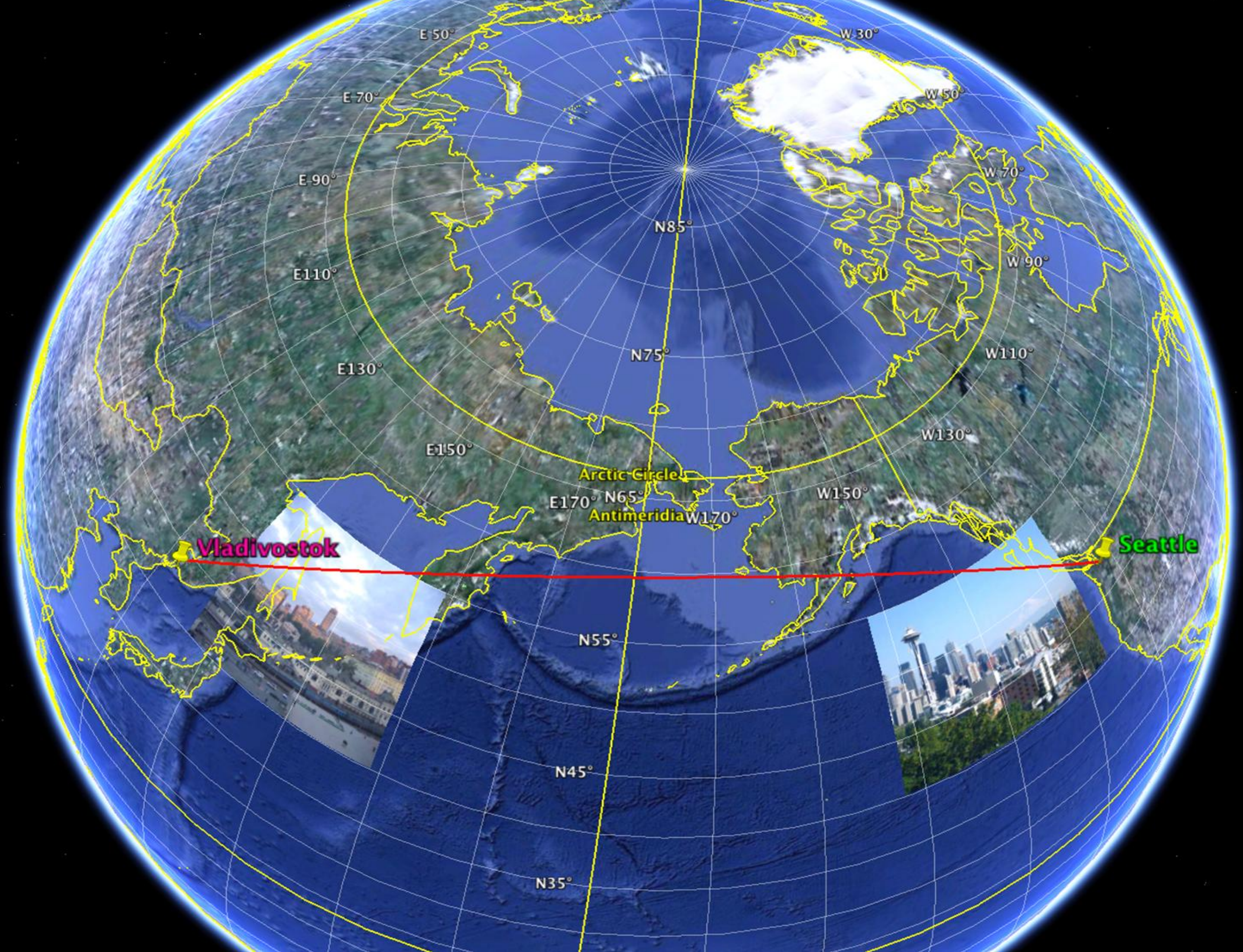
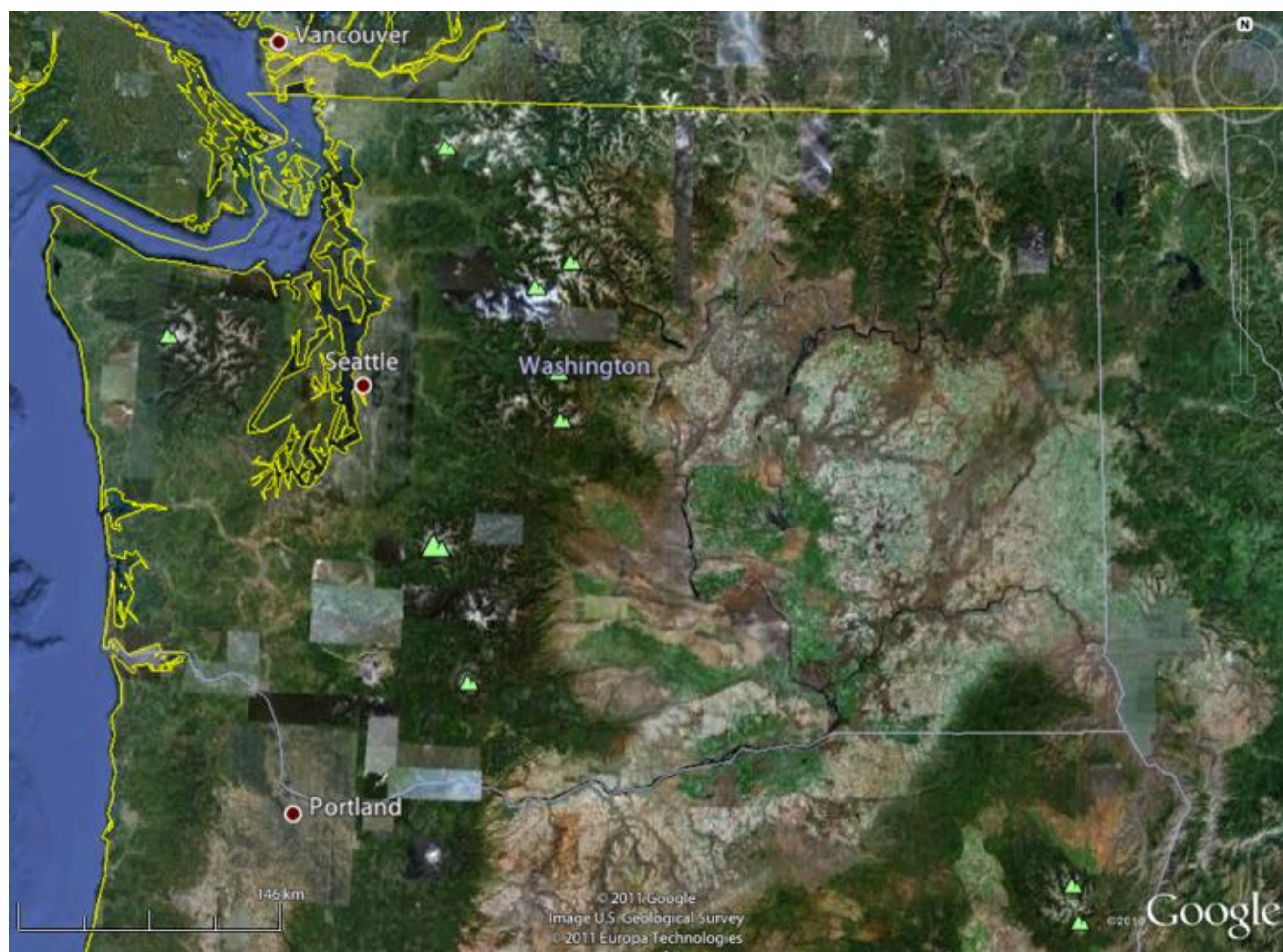


ENVIRONMENTAL EDUCATION IN THE USA:

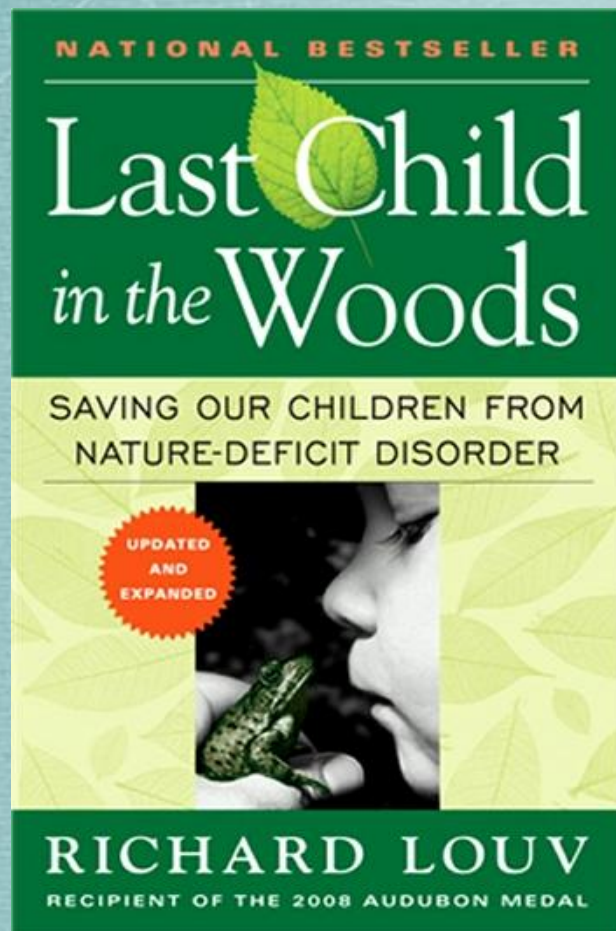
The examples of Mountains to Sound Greenway Trust
And the University of Washington Botanic Gardens/Arboretum

Anthony Allison
Seattle, Washington, USA





Environmental Education: **Why?**



In the space of a century, the experience of nature has gone from direct utilitarianism to romantic attachment to **electronic detachment.**

Nature-deficit disorder describes the human costs of alienation from nature, among them: diminished use of the senses, attention difficulties, and higher rates of physical and emotional illnesses.

-Richard Louv

Experts at Stanford University systematically searched the academic literature and analyzed 119 peer-reviewed studies published over a 20-year period that measured the impacts of environmental education for K-12 students.

Studies ... demonstrated that environmental education has led to a number of positive impacts, from improving academic performance, to enhancing critical thinking skills, to developing personal growth and life-building skills including confidence, autonomy, and leadership.

<https://naaee.org/eepro/research/eeworks/benefits-environmental-education-k-12>).



Washington State Environment & Sustainability Education Standards

standard 1: Ecological, social and economic systems

standard 2: The natural & built environment

standard 3: Sustainability & civic responsibility



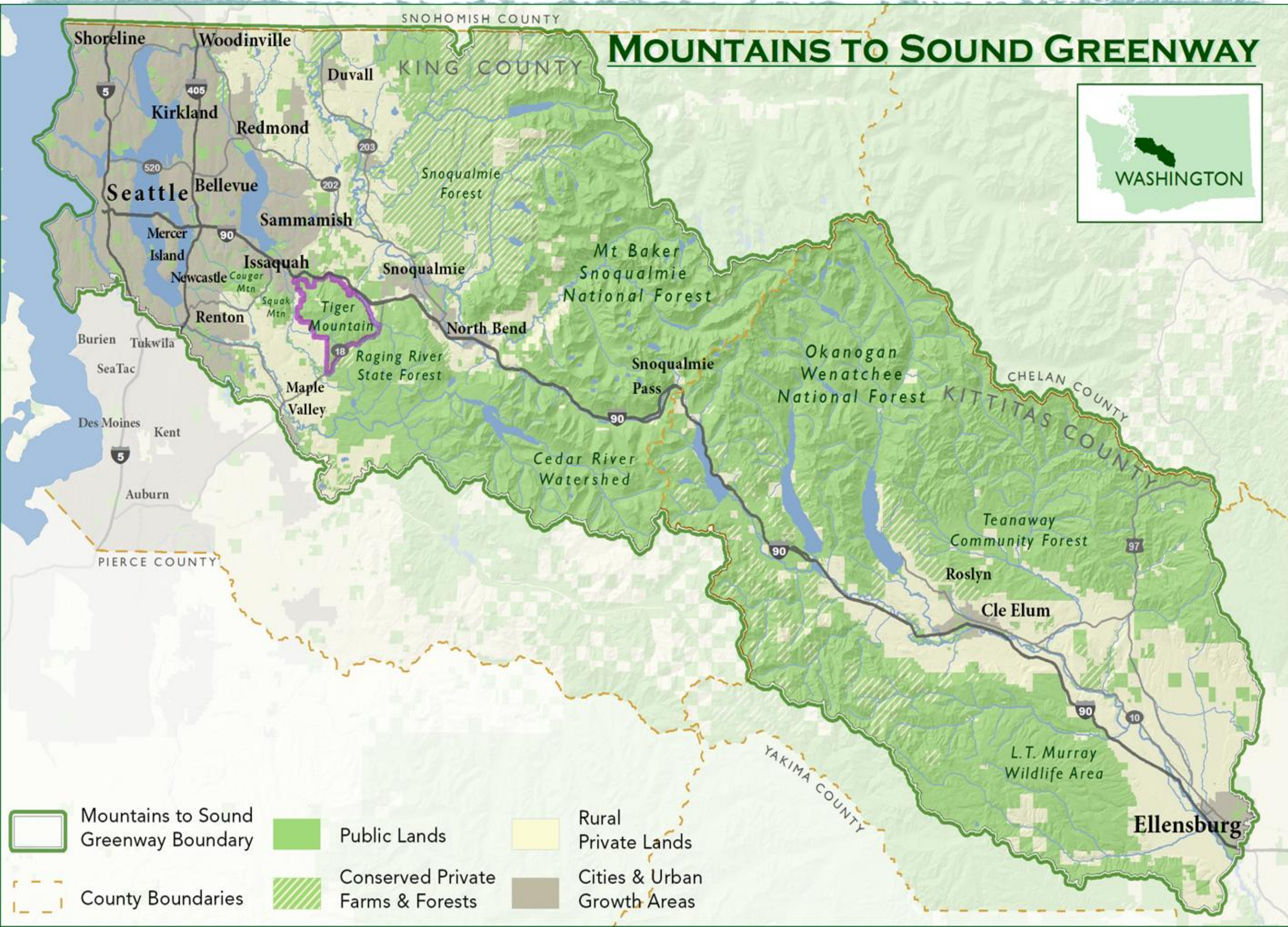
Grades 4-5: ESE Alignment		
ESE Standard	Science Standard Crosscutting Concept & Ability (CCA), Domain (D), Big Idea (BI), Core Content (CC), Content Standard	Social Studies Standard EALR, Component, Grade Level Expectation
Standard 1: Ecological, Social, and Economic Systems Students develop knowledge of the interconnections and interdependency of ecological, social, and economic systems. They demonstrate understanding of how the health of these systems determines the sustainability of natural and human communities at local, regional, national, and global levels.	EALR 1: Systems (CCA) Complex Systems (CC) Analyze a system in terms of subsystems functions as well as input and outputs. SYSA, SYSB, SYSC, SYSD EALR 4: Life Science (D) Ecosystems (BI) Food Webs (CC) Changes in ecosystems affect the populations that can be supported in a food web. LS2A, LS2B, LS2C, LS2D, LS2E	EALR 2: Economics 2.1 Understands that people have to make choices between wants and needs and evaluate the outcomes of those choices. 2.1.1 Understands and analyzes the costs and benefits of people's decisions to move and relocate to meet their needs and wants. (Gr. 4) EALR 2: Economics 2.2 Understands how economic systems function. 2.2.1 Understands the basic elements of Washington State's economic system, including agriculture, businesses, industry, natural resources, and labor. (Gr. 4) EALR 2: Economics 2.4 Understands the economic issues and problems that all societies face. 2.4.1 Understands how geography, natural resources, climate, and available labor contribute to the sustainability of the economy of regions in Washington State. (Gr. 4) EALR 4: History 4.2 Understands and analyzes the causal factors that have shaped major events in history. 4.2.3 Understands how technology and ideas have affected the way people lived and changed their values, beliefs, and attitudes. (Gr. 5)
Standard 2: The Natural and Built Environment Students engage in inquiry and systems thinking and use information gained through learning experiences in,	EALR 2: Inquiry (CCA) Planning Investigations (CC) Plan different kinds of investigations, including field studies, systematic observations, models, and controlled experiments. INQA, INQB, INQC, INQD, INQE, INQF, INQG	EALR 3: Geography 3.2 Understands human interaction with the environment. 3.2.3 Understands that the geographic features of the Pacific Northwest have influenced the movement of people. (Gr. 4) 3.2.3 Understands and analyzes the impact of the European colonists'

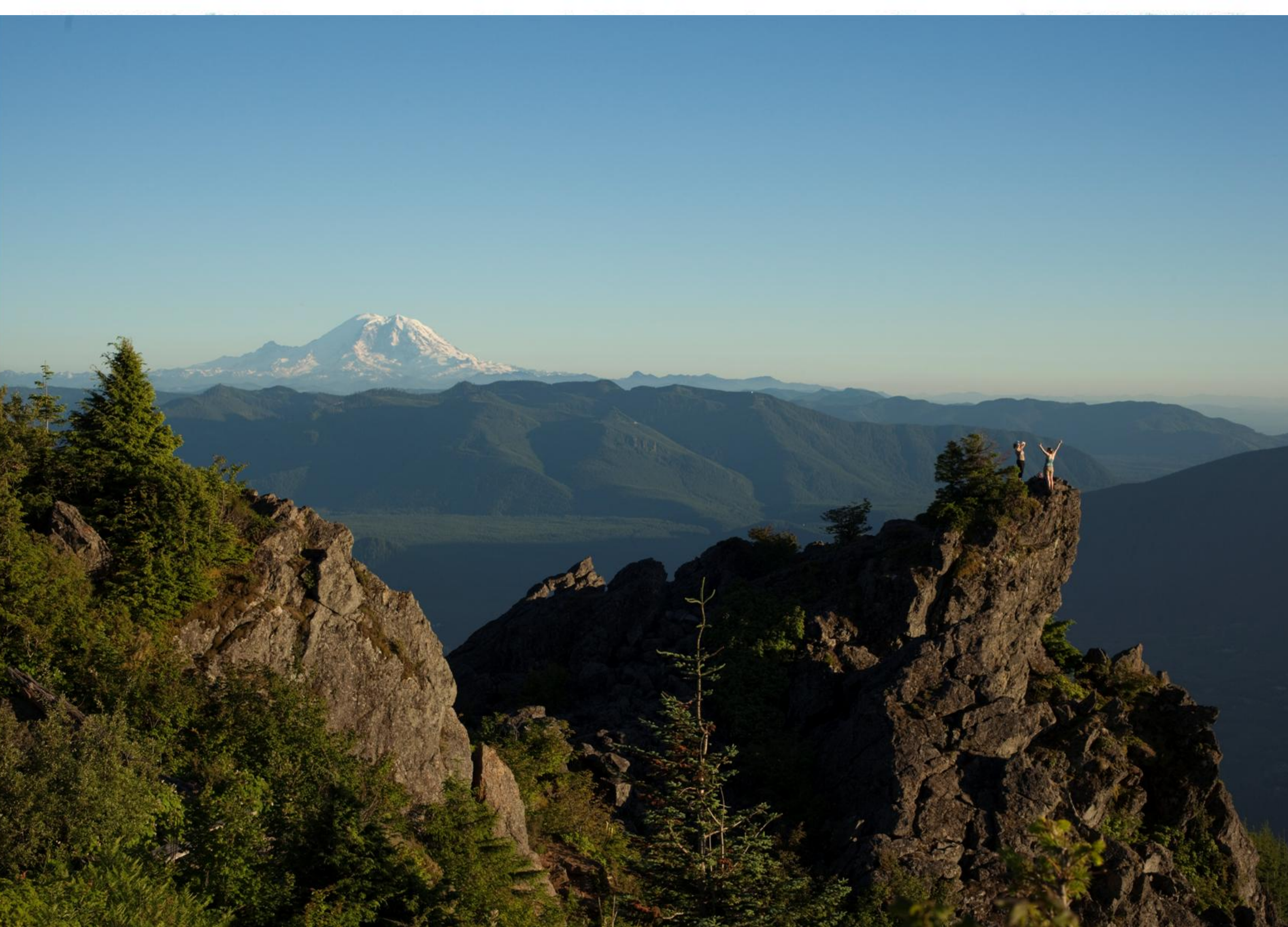
MOUNTAINS TO SOUND GREENWAY TRUST

ENVIRONMENTAL EDUCATION PROGRAM



MOUNTAINS TO SOUND GREENWAY









Sally Kentch

Statistics: Mountains to Sound Greenway Trust

Over 3,000 4th – 10th grade students each year participate in Mountains to Sound Greenway Trust educational programs

Over 30 schools from the Seattle area take part each year; about half are made up mostly of low-income families

Over 500 adults a year participate in volunteer events such as planting trees and removing invasive species of plants

Program Income

King County
biosolids funding
47%
\$35,000

Grants from
business,
philanthropic
groups, and
individuals
48 %
\$36,000

Schools
5%
\$3,000

CURRICULA

- ECOSYSTEMS/NEXT GENERATION STEWARDS

What is a healthy forest ecosystem?

- FORESTS AND FINS/BIODIVERSITY

What makes a healthy stream habitat for salmon?

- FORESTS ON THE EDGE

Why are forest lands near cities important, and how should they be used?

Curriculum components

Introductory Lesson – taught by classroom teacher

In-class Lesson – taught by Greenway staff

Field Study Trip – taught by Greenway staff

Service Learning Event – led by Greenway staff















Program Assessment

Measuring results:

Develop
evaluation
tool



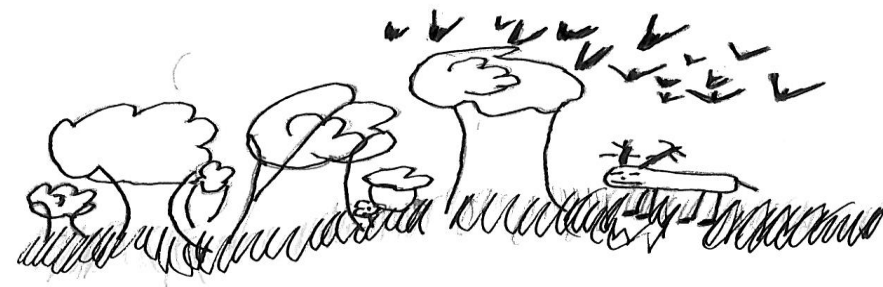
Administer
evaluation to
students



Study results,
report to funders,
adjust programs

Pre test

Draw a healthy forest – stream environment.

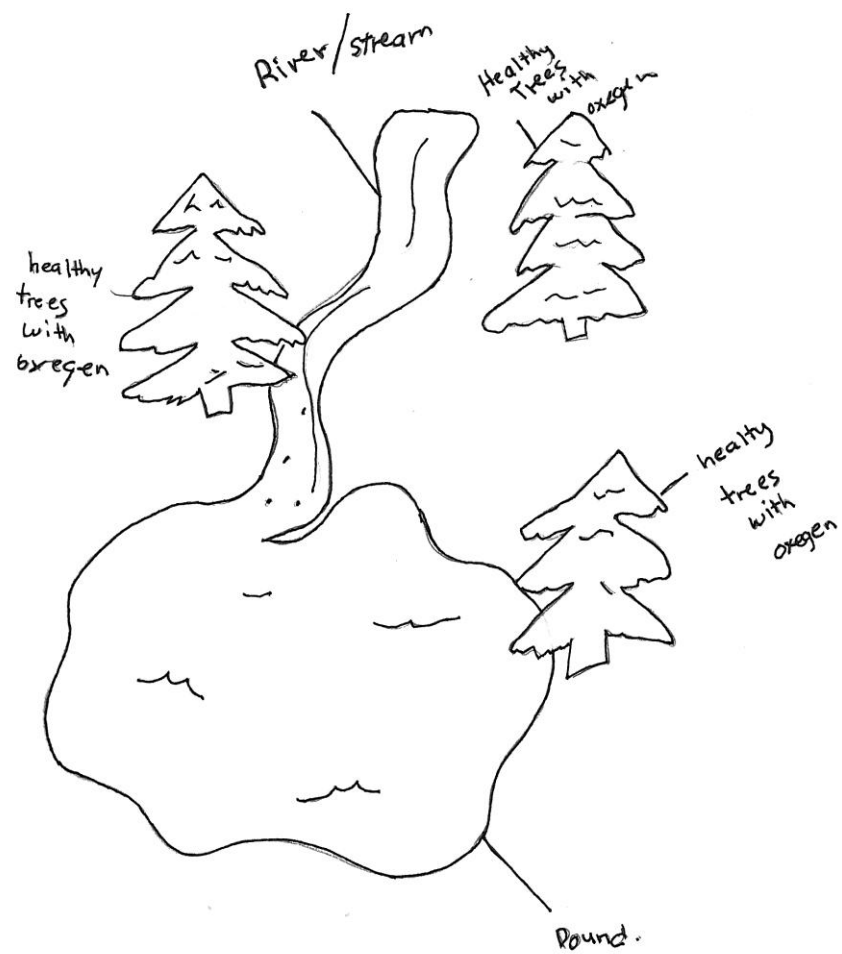


Post test

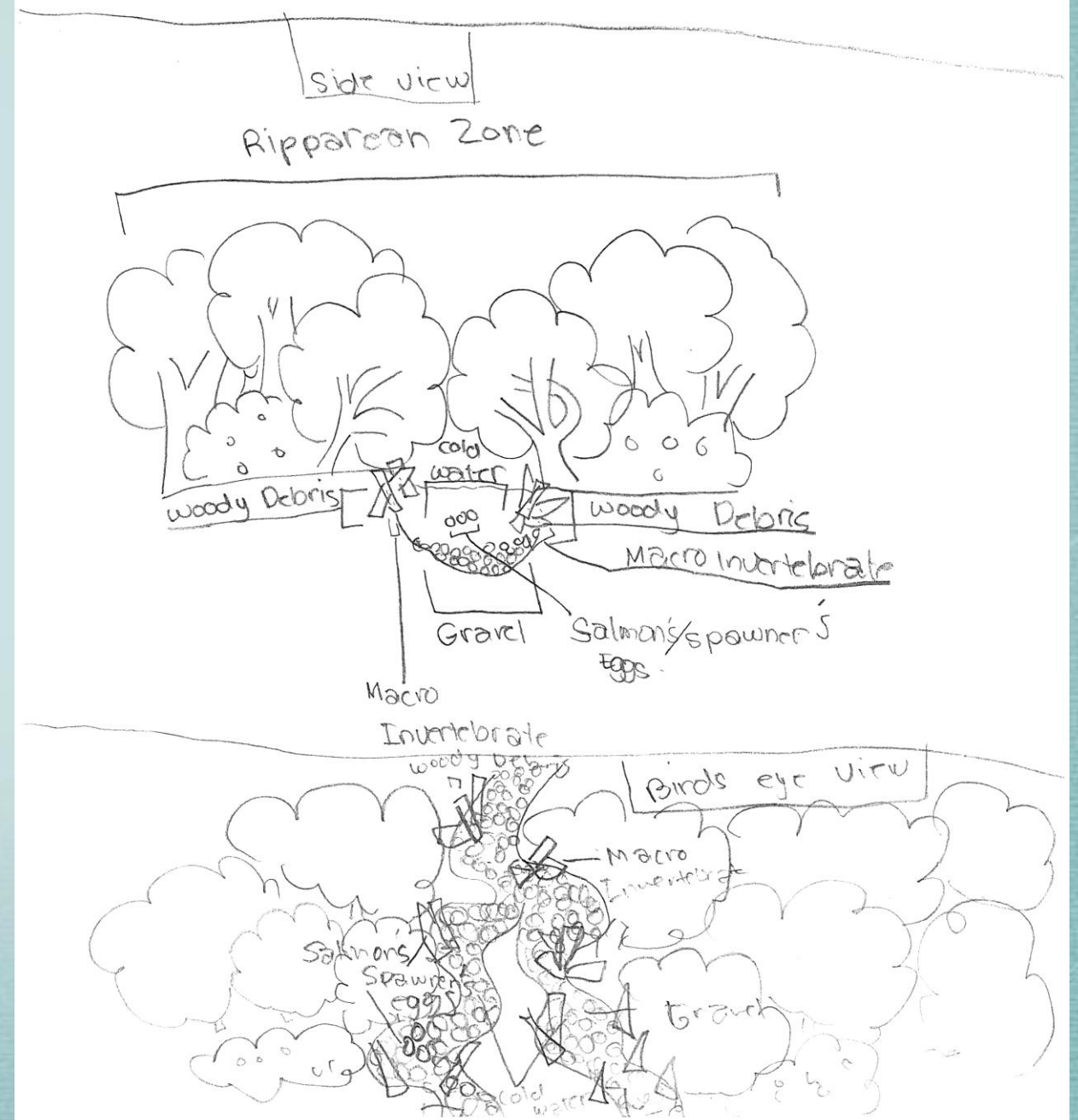
Draw a healthy forest – stream environment.



Pre test



Post test



SIGNIFICANT PRE/POST CHANGES

NOW TRACKED THROUGH INDIVIDUAL JOURNALS

The number of students increased who believed their actions could help the environment.

Students showed through their drawings a understanding of complexity of the environment.

Students generated more ideas to help forests and streams.



Piliated
Woodpecker



By corey

Piliated Woodpecker

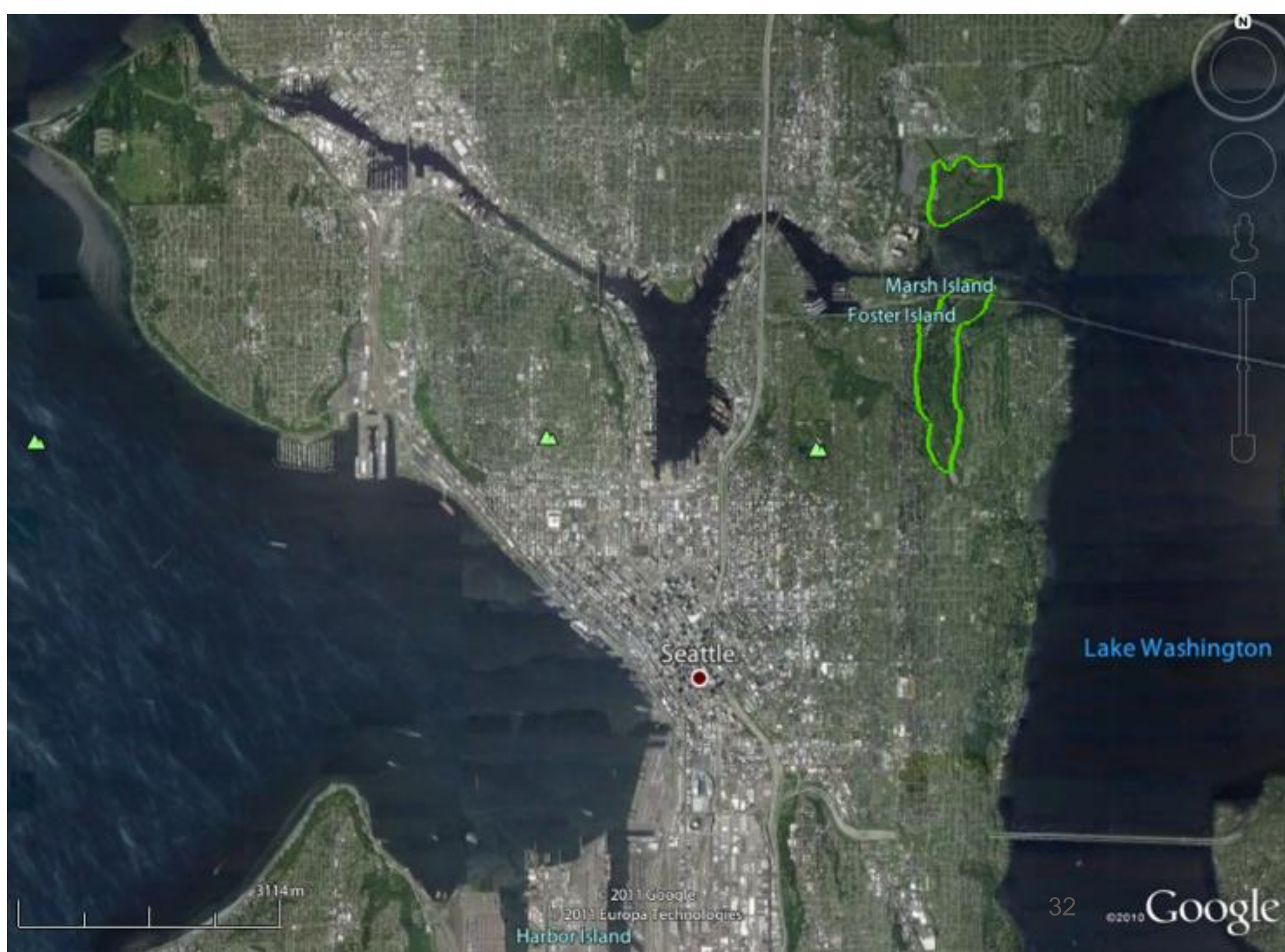
9-25-09



Danley K

University of Washington Botanic Gardens and Arboretum





Lake Washington

Seattle

Marsh Island
Foster Island

© 2011 Google
© 2011 Europa Technologies
Harbor Island

32

©2010 Google



University of Washington
Botanic Gardens

UNIVERSITY OF WASHINGTON

BOTANIC GARDENS

Plants for Life

Sites:

- Center for Urban Horticulture (CUH)
- Union Bay Natural Area (UBNA)
- Washington Park Arboretum (WPA)

Programs:

■ Center for Urban Horticulture (CUH)

- Rare Plant Care & Conservation
- Hyde Herbarium
- Miller Library
- Adult classes

■ Union Bay Natural Area (UBNA)

- Restoration Ecology Network

■ Washington Park Arboretum (WPA)

- School Programs
- Pre-school Programs
- Community Programs
- Weekend Walks



Washington Park Arboretum

Mission Statement Excerpt: *The WPA is a living plant museum....The Arboretum serves the public, students at all levels, naturalists, gardeners, nursery & landscape professionals with its collections, educational programs, interpretations, and recreational opportunities.*

Territory of the Arboretum: 230 acres (100 hectares), including wetlands, trails, exotic & native species

Cost of admission: free of charge.



▪ An adventure in joint ventures

UWBG: plant collections; City of Seattle:

turf/trails/buildings; Arboretum Foundation: fundraising

And long-term planning, some funding of education.

▪ Washington's official State Arboretum

3800 *kinds* of plants; 10,300 individual specimens.

7 core collections: Maples, Magnolias, Conifers, Hollies, Sorbus, Viburnums & Oaks.

▪ Outstanding outdoor classroom showcasing one of the most important tree collections in North America



Washington Park Arboretum

Environmental Education Programs

Overarching Goal:

To promote environmental conservation through education and recreation.

Program Areas:

- School Programs
- Pre-school Programs
- Adult Programs
- Community Programs



Washington Park Arboretum

School Programs



- School programs are registered for through a web site
- Teachers and some parents accompany classes on programs
- A written evaluation is done by the teacher at the end of each program
- Program leaders receive training twice a year

School Fieldtrips at the Washington Park Arboretum

Monday - Friday * 10am & 12pm * \$6 per student

WPA fieldtrips are aligned with WA State learning standards and endorsed by Seattle Public Schools



Pre-k & Kindergarten

SCIENCE-BASED

Trees & Seasons or
Wetland Wildlife

1st Grade – 3rd Grade

SCIENCE-BASED

Plants 101 or
Wetlands 101 or
Forests 101

3rd Grade - 6th Grade

SCIENCE-BASED

Plants 201 or
Wetlands 201 or
Forests 201

SOCIAL STUDIES-BASED

Native Plants & People or
Race Around the Rim

Register now for School Fieldtrips at the Washington Park Arboretum * visit: www.uwbotanicgardens.org or call: 206-543-8801

Special thanks to our Photographers: Samantha Kimble (top left), Doug Parrott (top right), Patrick Mulligan (bottom left), Leslie Seaton (bottom right)

UW Botanic Gardens
Box 354115
Seattle, WA 98195-4115

Almost 6,000 K – 12 students participated in school programs last year!

University of Washington Botanic Gardens

Youth & Family Education Programs Statistics

Participants by Age



- Families (mixed ages)
- Preschool
- School-Age (K-12)
- School Fieldtrips

Revenue by Program



- School Fieldtrips
- Family Programs
- Summer Camp
- Fiddleheads Forest School

Participants by Program



- School Fieldtrips
- Family Programs
- Summer Camp
- Fiddleheads Forest School



Washington Park Arboretum

Adult Programs:

Adult Garden Guides lead
 regularly scheduled free
 Weekend Walks every 1st & 3rd
 Sunday of the month, as well as
 by special appointment.



WEEKEND WALKS

————— at the —————
 Washington Park Arboretum

Join us for **FREE GUIDED TOURS** every
FIRST & THIRD SUNDAY of the month to learn more about our
 230 acre outdoor classroom, and to help us advance our mission:
*to promote environmental conservation through education &
 recreation.*

Sunday, 2nd
 11am: Winter Scenes & Evergreens
 1pm: WPA Winter Seasonal Tour

J
A
N
U
A
R
Y

Sunday, 16th
 11am: Winter Scenes & Evergreens
 1pm: WPA Winter Seasonal Tour

Sunday, 6th
 11am: Love Is in the Air
 1pm: WPA Winter Seasonal Tour

F
E
B
R
U
A
R
Y

Sunday, 20th
 11am: Love Is in the Air
 1pm: WPA Winter Seasonal Tour

Sunday, 6th
 11am: Harbingers of Spring
 1pm: WPA Winter Seasonal Tour

M
A
R
C
H

Sunday, 20th
 11am: Harbingers of Spring
 1pm: WPA Winter Seasonal Tour



www.uwbotanicgardens.org

Washington Park Arboretum

Community Education Programs:

- Summer Camps
- Pre-school programs
- Rental of packs with tours, games, botanical guides
- Family Ecology Tours

Park in the Dark series

Summer Kayak Tours

- Special Events

Bioblitz; Mother's Day; Earth Day

Sales; Workshops; Garden Parties









THANK YOU VERY MUCH FOR YOUR ATTENTION!!

Environmental Education: What?

In English, if you ask 10 different people to define “environment” you will likely get 10 different answers.

- farmer vs. business man
- child vs. adult vs. elder
- politician (liberal vs. conservative)
- scientist vs. artist
- American vs. Russian

What does “ekologia” mean to you?

This makes it difficult to clearly define Environmental Education, but that is what the 1977 Intergovernmental Conference on Environmental Education tried to do.

Environmental Education : What?



Andy Goldsworthy

“Environmental education is a process aimed at developing a world population that is aware of, and concerned about, the total environment and its associated problems, and which has the knowledge, attitudes, skills, motivations, and commitment to work individually and collectively toward solutions of current problems and the prevention of future ones.”

-Intergovernmental Conference on Environmental Education

Tbilisi, USSR, 1977

Environmental Education : What?

Subsequent conferences identified Environmental Education as a process. The ultimate aim of which is the solving of problems.



AWARENESS: In order to solve a problem, we must be aware it exists.

KNOWLEDGE: The more we know about the environment and its associated problems, the more power we have to solve them.

ATTITUDES: Knowledge of the environment leads to love for the environment. This love for the environment motivates us to improve and protect it.

SKILLS: When our heads and hearts are ready, we must give our hands the skills to identify and solve environmental problems.

ACTION: In the end, it is our actions that define who we are and what we stand for.

Environmental Education: Who?

Awareness



Yosemite National Park, California
3.7 million visitors annually

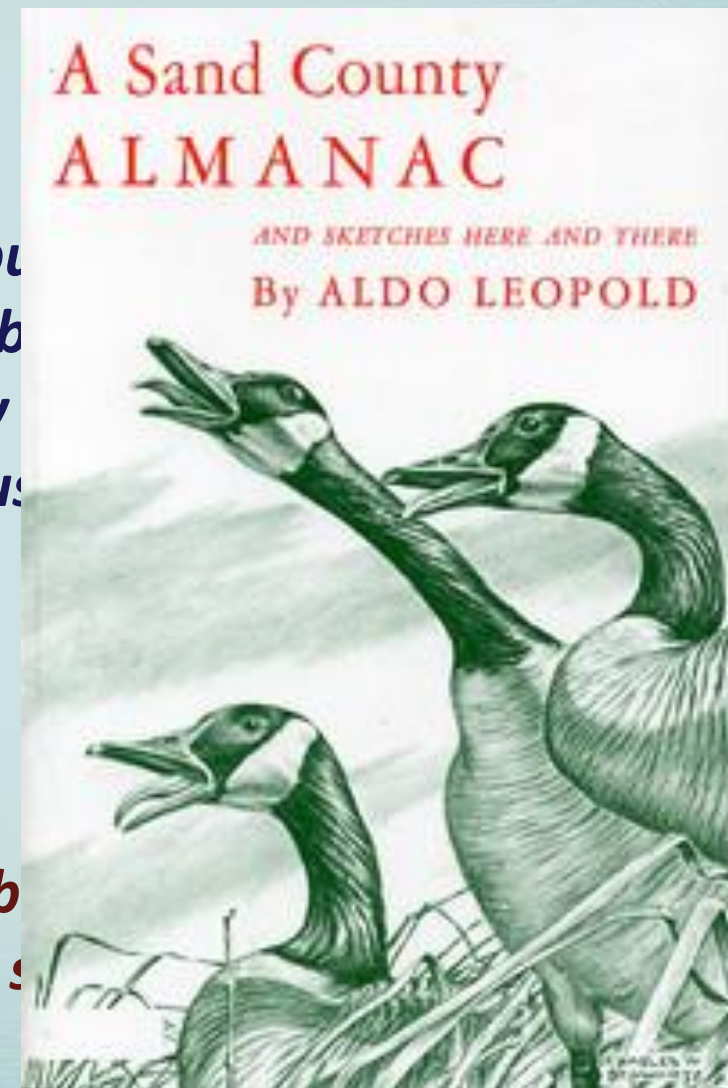
Environmental Education : Who?

Knowledge



Aldo Leopold
1887 – 1948

*“We abuse
commodity by
community
us*



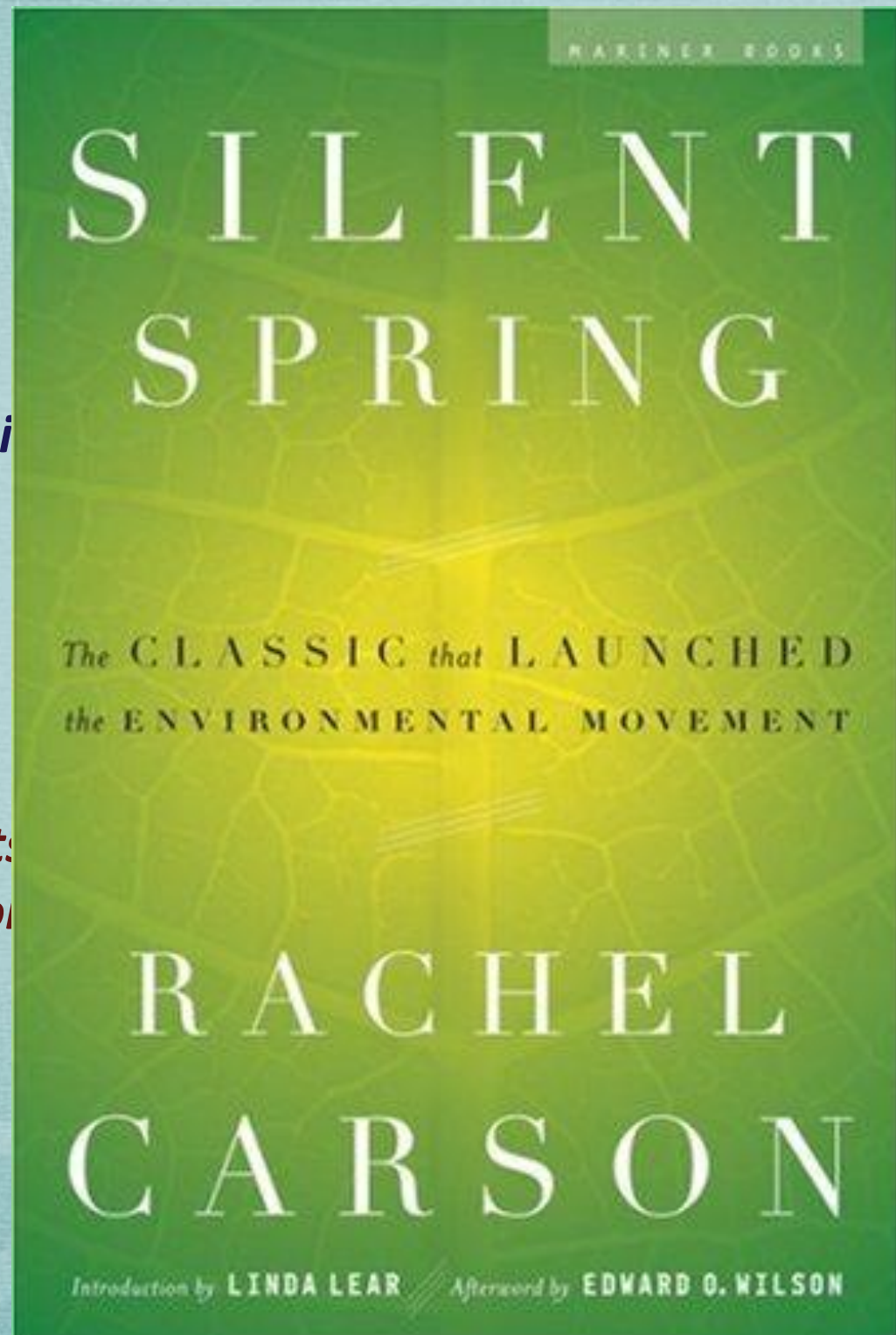
*“There can be
soil is more s*

*it as a
the land as a
y begin to*

*noted in the
vements.”*

Environmental Education: Who?

Attitude



"It is

feel."

*"If facts
wisdom
senses*

*nowledge and
ons of the
ust grow."*



Rachel Carson
1907 – 1964

Environmental Education : Who?

Skills



John Dewey
1859 – 1952

*“Education
Education is*

*“If we teach
yesterday*

JOHN DEWEY EXPERIENCE & EDUCATION

The great educational theorist's most concise statement of his ideas about the needs, the problems, and the possibilities of education—written after his experience with the progressive schools and in the light of the criticisms his theories received.

*tion is growth.
; education is life*

*e taught
rrow.”*

Environmental Education: Who?

Action



Jane Goodall
1934 –

“Only if we understand can we care. Only if we

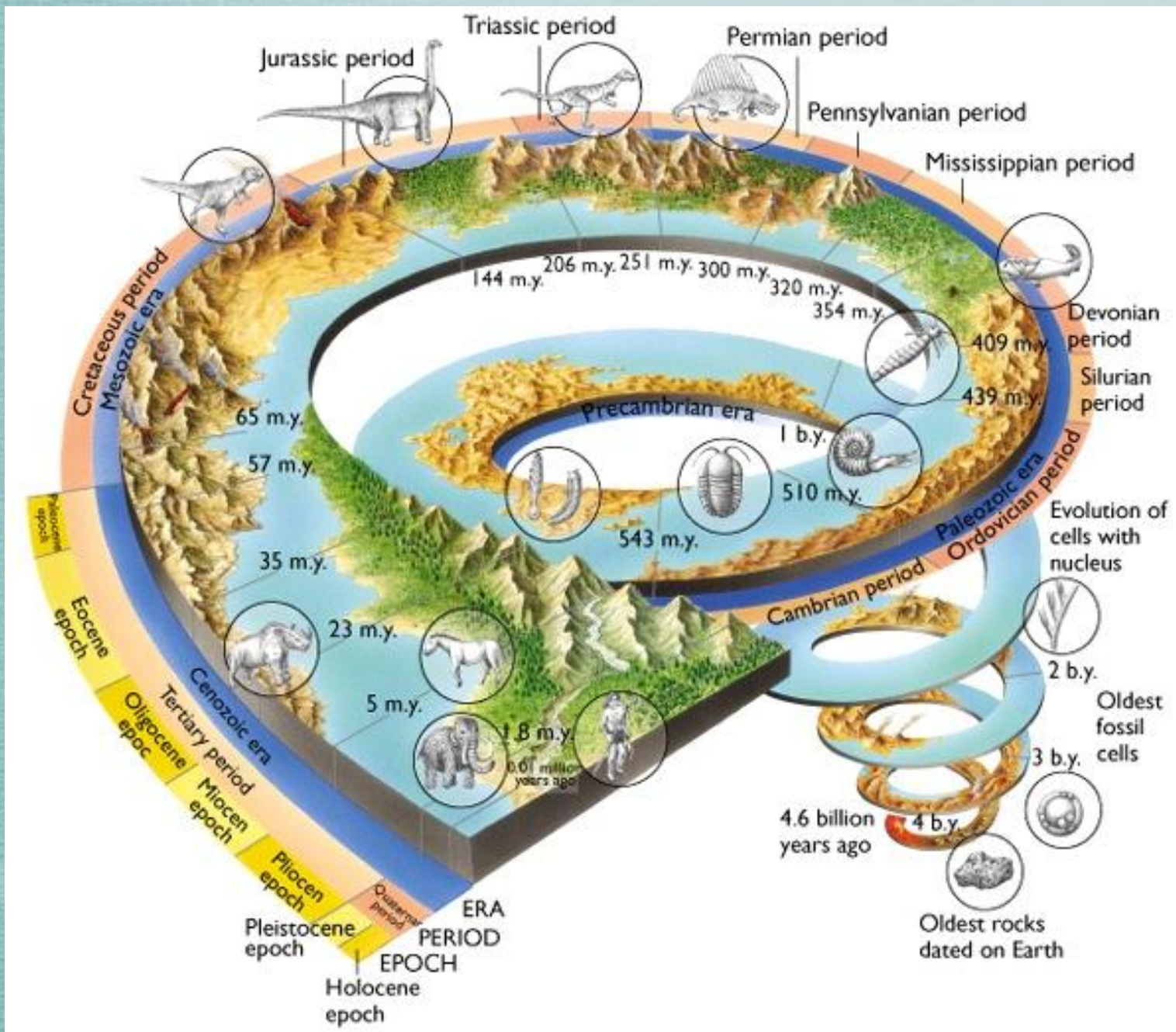


the Jane Goodall Institute

the mess we have made for ourselves.”

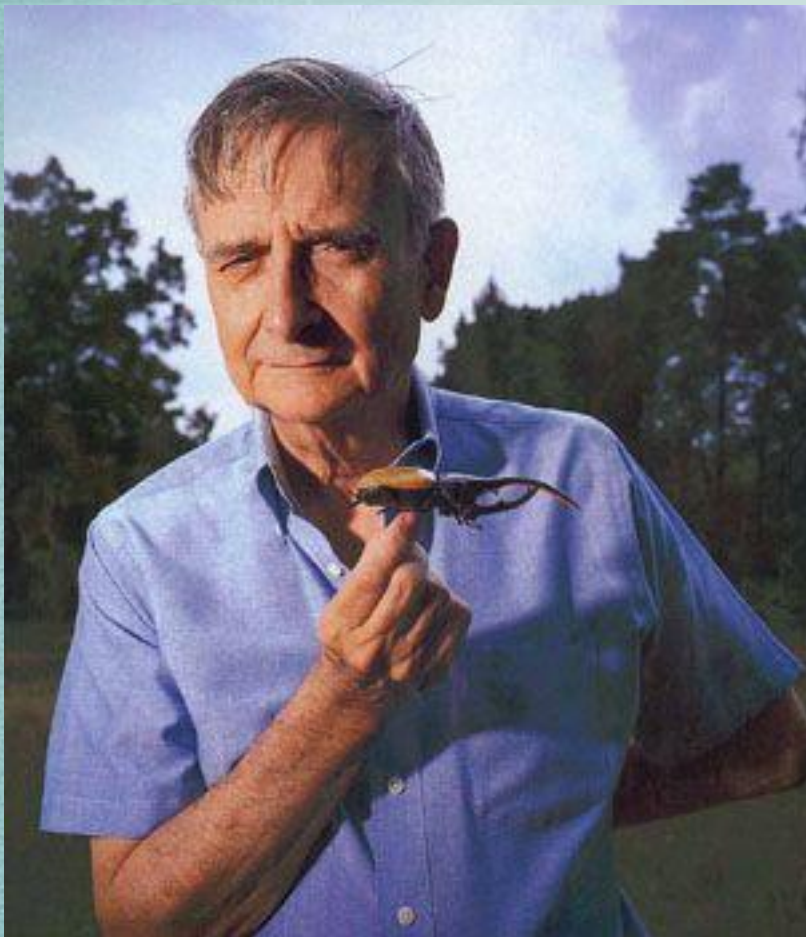
Environmental Education: Why?

Evolution of life on Earth



Life has existed on Earth for 3 billion years, and will continue to exist for an additional 3 billion, with or without us. The true goal of environmental education is not to save the world, but to save ourselves and our children.

Environmental Education: How?



E.O. Wilson

bio-phil-ia, n.

(GK. *bio* = life + *philia* = to love)

The connections that human beings subconsciously seek with the rest of life.

Environmental Education: How?

In the private sector,
“Green” is in fashion

- ✦ green energy
- ✦ green vehicles
- ✦ green building
- ✦ green washing
- ✦ green economy
- “natural capital”

(e.g. insect pollination = \$200 billion worldwide)



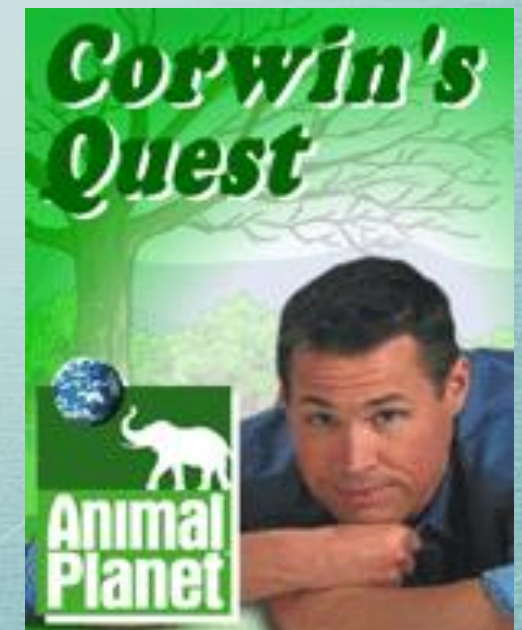
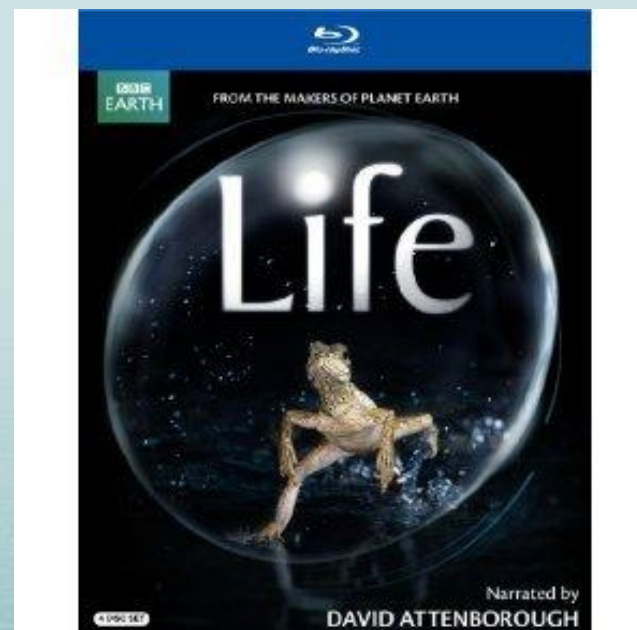
Environmental Education: How?

Outside the traditional classroom:

- ✿ community/school gardens
- ✿ educational media
- ✿ zoos, botanical gardens, hiking, hunting, farming



- ✿ develops science knowledge
- ✿ captivates interest
- ✿ encourages life-long learning



Environmental Education: How?

Inside the traditional classroom: Timeline of Education Reform in America:



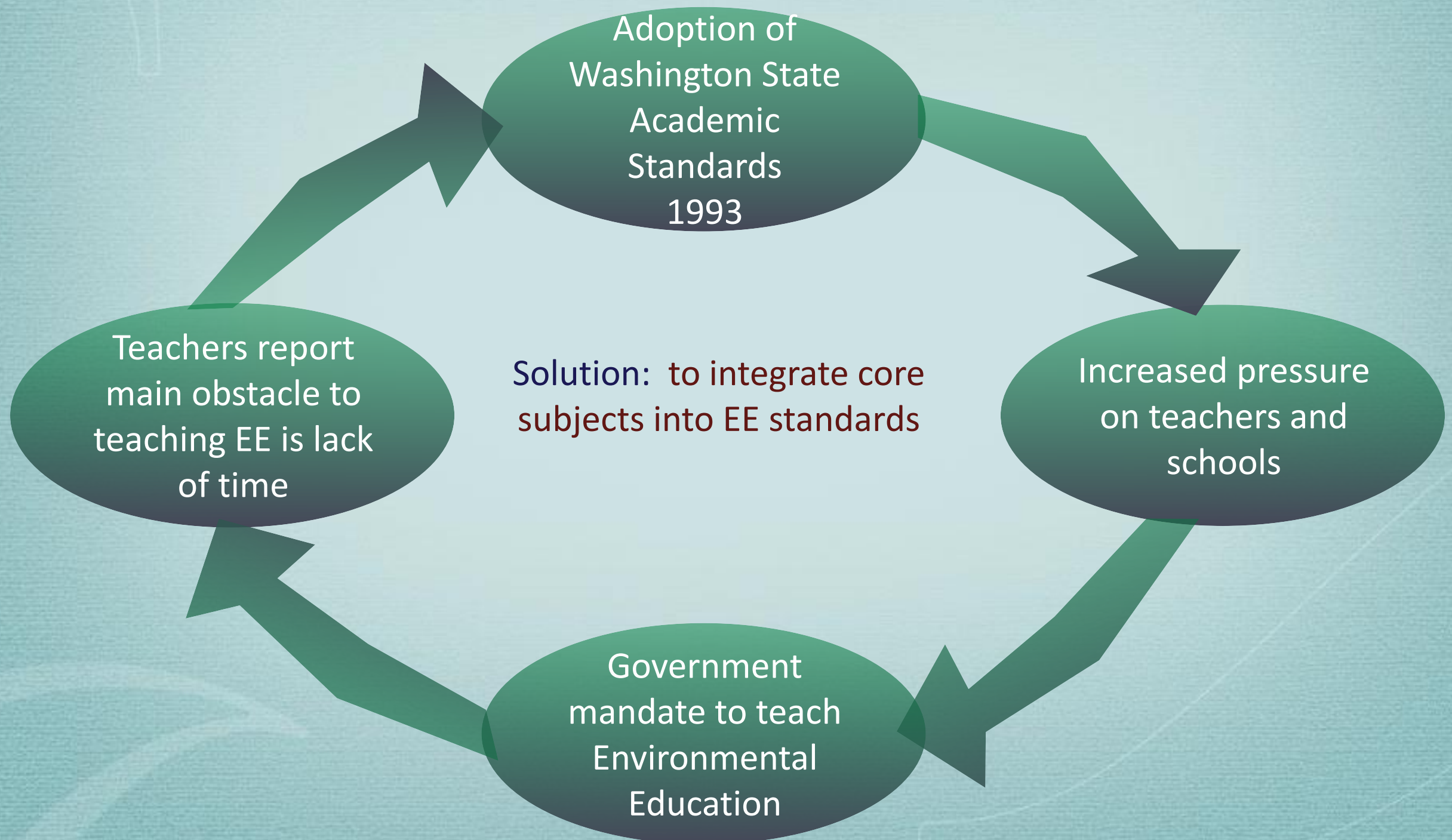
***Elementary & Secondary Education Act:** Initiated by JFK, enacted by LBJ as part of his “War on Poverty”, called for equal access to education for all students.

****No Child Left Behind Act:** Standards-based education reform requiring states to develop assessments in core content areas (Math, Reading & Science) to be given to all students in certain grades if those states are to receive federal funding.

*****No Child Left Inside Act:** Reform aimed at increasing environmental literacy among students and preparing them for 21st century careers in the emerging “green” economy.

Environmental Education: How?

Inside the traditional classroom:



Environmental Education : how?

Science & Math + Social Studies + Art & Writing

Environmental Education



Andy Goldsworthy

When thoughtfully practiced in school, EE becomes the common denominator uniting all other subjects.

Environmental problems are often complex. To solve them we must attack on multiple fronts using insights from multiple disciplines.