

## PNW BOCES CENTER FOR ENVIRONMENTAL EDUCATION PROGRAM OFFERINGS FOR GRADE 4

PROGRAM	SCI 21 CORRELATIONS	SOCIAL STUDIES ENGLISH LANGUAGE ARTS CORRELATIONS
<i>A, Bee, C's of the Honey Bee</i>	GR 4 UNIT 2	
<i>Amazing Journey of Water</i>	GR 4 UNIT 4	
<i>Biography of a Tomato: A Lesson in Systems Thinking</i>		
<i>Biomimicry Introduction: The Science of Today and Jobs of Tomorrow</i>		Unit 4 Lesson 4
<i>Birds &amp; Raptors</i>	GR 4 UNIT 2	
<i>Blubber Glove (see Hibernation)</i>		
<i>Butterflies</i>		
<i>Cemetery Study: Using Historical Data to Bring Colonial History Alive</i>		Unit 2 Lesson 4
<i>Classroom Pond Study</i>	GR 4 UNIT 2	
<i>Colonial Living Skills</i>		Unit 2 Lesson 4
<i>Compass Skill Building Game</i>		
<i>Composting: Nature's Recyclers and Decomposers</i>	GR 4 UNIT 2	
<i>Conservation Biology: Introduction to the Concepts of Conservation and Environmental Stewardship</i>	GR 4 UNIT 2	
<i>Cooperative Kindness: Team Building</i>		
<i>Coral Reefs</i>		
<i>Earth Portable Classroom (FEE)</i>		
<i>Examining Invasive &amp; Native Competition</i>	GR 4 UNIT 2	
<i>The Extraordinary Journey of Ordinary Stuff</i>		
<i>Fearsome Predator: Carrying Capacity of an Ecosystem</i>	GR 4 UNIT 2	
<i>Food Webs: Who Eats Whom?</i>	GR 4 UNIT 2	
<i>Forest Ecology</i>	GR 4 UNIT 2	
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**GRADE 4 PROGRAMS**  
**PNW BOCES CENTER FOR ENVIRONMENTAL EDUCATION**  
**TO BOOK A PROGRAM: <http://portal.pnwboces.org/cee/>**



<b>PROGRAM</b>	<b>SCI 21 CORRELATIONS</b>	<b>SOCIAL STUDIES ENGLISH LANGUAGE ARTS CORRELATIONS</b>
<i>Forest Measurements/Plot Study</i>	GR 4 UNIT 1	
<i>Geology: Rockin' the Valley/Earth Science: Rocks &amp; Minerals</i>	GR 4 UNIT 4	
<i>Hibernation/Winter Adaptations</i>	GR 4 UNIT 2	
<i>How Beavers Built the Hudson Valley</i>	GR 4 UNIT 2	
<i>Hudson River</i>	GR 4 UNIT 4	
<i>If the World Were a Village: Multiple Perspectives</i>		
<i>I'm Only One Person, What Can I Do? (Assembly)</i>		
<i>Insects: Incredible Creatures</i>	GR 4 UNIT 2	
<i>Introduction to Sustainability</i>		
<i>Map Making Adventure</i>	GR 4 UNIT 1	
<i>Mapping Your School's Ecological Resources</i>	GR 4 UNIT 1	
<i>Marine Ecosystems</i>		
<i>Native American</i>		Unit 1 Lessons 2, 5
<i>Nature Activities to Reconnect with Our Natural World</i>	GR 4 UNIT 2	
<i>Nocturnal World of New York</i>	GR 4 UNIT 2	
<i>Orienteering</i>	GR 4 UNIT 1	
<i>Owl Pellet Study (material fee)</i>	GR 4 UNIT 2	
<i>Pollinator Partnerships</i>	GR 4 UNIT 2	
<i>Pond Ecology</i>	GR 4 UNIT 2	
<i>Recycling: What Happens to My Recyclables?</i>		
<i>Secret Life of the American Hamburger (&amp; other Favorite Teenage Foods)</i>		
<i>Seed Study</i>	GR 4 UNIT 2	
<i>Skull Study</i>	GR 4 UNIT 2	
<i>Snowshoeing Adventure</i>		
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PROGRAM	SCI 21 CORRELATIONS	SOCIAL STUDIES ENGLISH LANGUAGE ARTS CORRELATIONS
<i>Soil - The Basis of Life</i>	GR 4 UNIT 2	
<i>Supermarket Botany</i>	GR 4 UNIT 2	
<i>Teambuilding: see Cooperative Kindness</i>		
<i>Tree Lifecycle</i>	GR 4 UNIT 2	
<i>Tropical Rainforests</i>	GR 4 UNIT 1, 2	
<i>Turtles, Frogs, Toads, Snakes, What's the Difference?</i>	GR 4 UNIT 2	
<i>Understanding the Commons</i>		
<i>Understanding the Consequences of Ecosystem Manipulation</i>		
<i>Water: The Most Destructive Force on Earth!</i>		
<i>We All Live in a Watershed</i>	GR 4 UNIT 4	
<i>Weather</i>		
<i>What's Your Footprint?</i>		
<i>Where Does My Garbage Go?</i>		
<i>Where Does Your Food Come From? (Formally Supermarket Botany)</i>		
<i>Wildlife</i>	GR 4 UNIT 2	
<i>Wildlife CSI</i>	GR 4 UNIT 2	

## **A, BEE, C'S OF THE HONEY BEE SCI 21 ALIVE**

**Location:** School      **Presentation Style:** *Assembly followed by individual class visits or individual class visits*

**Instructional Resources:** *short PP Presentation, animal artifacts*

Did you know? Only female honey bee's sting, honey bees visit at least 2 million flowers to make just one pound of honey and honey bees are responsible for over a third of the food we eat. These are just a few amazing facts this program will present that will have students looking at bees in a whole new way. In addition, this program covers pollination, anatomy, the honey bee's role in the ecosystem, and how important the honey bees are to humans. The current honey bee issues will be addressed and students will have a chance to see all of the equipment beekeepers use as they learn how we get honey from the hive to the jar.

## **AMAZING JOURNEY OF WATER SCI 21 ALIVE**

**Location:** School      **Presentation Style:** *Assembly followed by individual class visits*      **Instructional Resources:** *PP Presentation, a highly interactive "water molecule" simulation involving dice rolling and a representation of water moving around the world*

Students will be introduced to watersheds and how water moves through and is stored in its various forms through the water cycle as well as the natural services water provides in an ecosystem. Building on this information, students will participate in an interactive activity where they will be viewing the water cycle from the point of view of a water molecule. They will be given different scenarios within a watershed to create their very own "Amazing Journey" as a water molecule.

## **BIOGRAPHY OF A TOMATO: A LESSON IN SYSTEMS THINKING**

**Location:** School      **Presentation Style:** *Individual Class Visits*      **Instructional Resources:** *PP Presentation*

This program presents two systems fables: the narrative of a typical North American tomato and one of a locally grown New York tomato. Both fables are told using a PowerPoint and follow the tomato from the development of the seed and its parts, planting and growth, needs, extraction from nature and different routes each will take to end up on our tables. Students will then use the information from the fables to compare the energy, resources and ecosystem interactions that went into the development and growth of each tomato. Student will be asked to assess both positive and negative outputs to help them better understand the implications of how and where we get our food. **Assembly Model Not Available - 1-2 classes/1 hour**

## **BIOMIMICRY INTRODUCTION: THE SCIENCE OF TODAY AND JOBS OF TOMORROW**

**Location:** School      **Presentation Style:** *Individual Class Visits*

**Instructional Resources:** *short PP Presentation, biomimicry products, biomimicry matching cards*

What is the connection between a \$100 bill and a beetle or a moth eye and a cell phone screen? These are examples of a rapidly growing discipline called Biomimicry which studies nature's best ideas and then imitates these designs and processes to solve human challenges. This program will use PowerPoint and actual bio-inspired products to help students better understand nature as a source of ideas and the concept of bio-inspired design. Student will participate in an exercise that asks them to match organisms with bio-inspired products. This will be followed by a discussion of why the organism was used. ***This program can be done as a 1-hour assembly for a full grade level or done as in-class program for individual classes throughout the day.***

## **BIRDS & RAPTORS SCI 21 ALIVE**

**Location:** School

**Presentation Style:** Assembly followed by individual class visits or individual class visits

**Instructional Resources:** PP presentation, animal artifacts, animal ambassador

This program introduces students to the sights and sounds of birds, with a focus on their unique characteristics! Through our interactive presentation, students will explore bird adaptations such as feathers, beaks, and talons by examining our artifacts that include a variety of feathers, preserved bird specimens, and bird guides. Students will also have the opportunity to observe these adaptations on a live ambassador bird of prey.

## **BUTTERFLIES**

**Location:** School/Madden

**Presentation Style:** Assembly followed by individual class visits or individual class visits

**Instructional Resources:** PP presentation, butterfly specimens, coloring sheet

Students will learn about the function of camouflage, warning coloration, and other butterflies adaptations. After an introduction to metamorphosis, students will compare and contrast the butterfly and moth, and learn how to distinguish one from the other. Then, using their newfound knowledge they will color a butterfly cut-out before heading outside to play butterfly hide and seek. After playing the game, they will discuss which butterflies were easiest to find and how animals use coloration for protection.

## **CEMETERY STUDY: USING HISTORICAL DATA TO BRING COLONIAL HISTORY ALIVE**

**Location:** Madden

**Presentation Style:** Individual classes

**Instructional Resources:** data sheets, grave rubbing materials

Using the information provided by the cemetery stones in the historical Knapp Family Cemetery on the Madden property, students will collect data to form a picture of what life was like for the early settlers in the area. On the short hike to the cemetery, students will learn of some the intriguing history of Putnam's earliest family and their unique way of life. After gathering and recording their data, students will be engaged in a discussion about the family tree, nutrition, food preservation, lifestyle, human physiology, disease, illnesses and daily responsibilities of this historic family. The program concludes with a demonstration on how to make a headstone rubbing so that each student will be able to make and take home their very own headstone rubbing.

## **CLASSROOM POND STUDY (spring only) SCI 21 ALIVE**

**Location:** School

**Presentation Style:** Individual Class Visits

**Instructional Resources:** short PP Presentation, live animals from a pond, preserved animals and specimens, ID Charts

This program is designed for groups that are unable to travel to Madden. Students will learn what makes a pond different from a lake and the amazing process of complete and incomplete metamorphosis. Through the use of organisms from Madden's pond, students will have a chance to get a close look at the creatures and learn about their role in the ecosystem, how these animals depend on one another and their habitat, their place in the food web and the conditions needed for a healthy pond.

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## **COLONIAL LIVING SKILLS – AT MADDEN OR AT YOUR SCHOOL**

**Location:** School/Madden **Presentation Style:** Individual Class Visits

**Instructional Resources:** all materials provided. At school programs need space that can get messy.

Bring your students to Madden from November to March so they can spend a day in the life of a colonial child! This completely hands-on experience will help children of today learn the skills and tasks required of an 8-10 year-old in Colonial America. Students will be broken up into three groups and rotate through three, one-hour activities: **colonial pretzel making and butter churning, candle making, and toy making or tin smiting.** (Parents/Teachers lead the simple pretzel making/butter churning activity.) In November and December, weather permitting, groups that brings apples can help press apples to make apple cider and enjoy it along with their pretzels and butter! In late February and March, students can participate in a maple sugaring demonstration. All students leave Madden with their own toy and candle. Please indicate which activity, toy making or tin smiting, you would like to do, and if you would like to make cider or participate in the maple sugaring demonstration. This program is also available as an in-school program. In-school activity choices include: Jacob's Ladder, tin smiting, whirly gigs, quill pen and ink, and colonial games. **Please bring 3 parent chaperones per 25 students.**

## **COMPASS SKILL BUILDING GAME**

**Location:** School

**Presentation Style:** Individual Class Visits

**Instructional Resources:** Compasses, Orienteering trail

Learning to use a compass is a valuable and exciting experience for students! Students will learn the parts of a compass and how to use it. They will then go outside to practice their newfound skills by navigating through a compass circle game set up by the instructor. For this game they will need a flat open area.

## **COMPOSTING: NATURE'S RECYCLERS AND DECOMPOSERS SCI 21 ALIVE**

**Location:** School/Madden

**Presentation Style:** Assembly/Individual Class Visits

**Instructional Resources:** PP Presentation, live animal ambassadors, hands-on activities

Recycling of paper, bottles, and cans has become part of our culture. Now it is time to take the next step in recycling: school composting. Food leftovers are the single-largest component of the waste stream by weight, in the United States. Americans throw away more than 25% of the food we prepare, about 96 billion pounds of food waste each year. We spend about 1 billion dollars a year to dispose of food waste. This program will introduce students to the value of composting, the three different types of composting, and get up close and personal with some of the creatures that turn our food scraps into rich nourishing soil. This can be an informational program to teach students about composting or an introduction to creating a compost program for your school. The program can be presented to one class that would like to start a classroom compost program, or for the whole school to set up a school-wide program. For whole schools, our staff can work with your faculty to design a program tailored to your school's needs. This option is available for a special fee.

## **CONSERVATION BIOLOGY: INTRODUCTION TO THE CONCEPTS OF CONSERVATION AND ENVIRONMENTAL STEWARDSHIP**

**Location:** School

**Presentation Style:** Individual Class Visits

**Instructional Resources:** PP Presentation, live animal ambassadors, Animal Artifacts

This program introduces students to the crucial role conservation plays in biodiversity and healthy ecosystems. To help students understand the role of conservation, we will examine the history of conservation biology, the Endangered Species Act and real-life examples of conservation efforts at work. Live animal ambassadors, such as our birds of prey and other animals, will be used to illustrate animal rehabilitation and environmental stewardship.

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### **COOPERATIVE KINDNESS (TEAMBUILDING FOR GRADES 3 & 4)**

**Location:** School/Madden      **Presentation Style:** Individual Class Visits      **Instructional Resources:** best done outdoors in an open indoor space

This program is designed specifically for children who are not yet developmentally ready for our regular team building programs. During the activities, our staff will take a more directive approach with the group in order to develop skills such as: cooperation, planning, inclusiveness, kindness and handling frustration in a positive manner while having fun together. **This program can be used by schools to support their Dignity Act Initiatives.**

### **CORAL REEFS**

**Location:** School      **Presentation Style:** Individual class visits      **Instructional Resources:** PP presentation, specimens and artifacts

Coral Reefs are one of the most diverse ecosystems on the planet and are often compared to the tropical rainforests! This program is taught by Dorna Schroeter, CEE Program Coordinator, who has spent the past 30 years diving, exploring, and studying the coral reefs of the Florida Keys. Through a multimedia presentation, the group will descend to a coral reef to examine its abundance and beauty. Students will explore where reefs are located and why, who lives there, the health of today's reefs, humankind's impact on this incredible ecosystem, the coral polyp and how it functions, its role, adaptations, and interactions among the reef creatures. Incorporated throughout the program will be stories from Dorna's 500 dives that will engage, excite, and motivate students! **Assembly Model Not Available - 1-2 classes/1 hour**

### **EARTH PORTABLE CLASSROOM (SPECIAL FEE)**

**Location:** School      **Presentation Style:** Individual Class Visits to predetermined location at school

**Instructional Resources:** Introduction and 20'x22' Inflatable Scale Model of the Earth

Available in late May to early June, this unique program brings a 20' high x 22' diameter hand-painted representation of our earth into your school. Your class will enter the globe through a zipper along the International Dateline in the Pacific Ocean. Once inside, students can participate in activities covering: continents, oceans, mountains, rivers, cities, geographic terms and places in the news. They may also discuss environmental issues such as rainforests, coral reefs, ozone, pollution, and growing deserts. Program length is 40 minutes for 3rd grade. The globe can accommodate no more than 25 students. **NO MORE THAN six** programs can be done in one day.

**Program Cost:** \$175/member \$190/non-member per program or \$600/member \$650/non-member for a full day (no more than 6 programs) (this program is eligible for state aid through the environmental CO-SER)

## **EXAMINING INVASIVE & NATIVE COMPETITION SCI 21 ALIVE**

**Location:** School/Madden      **Presentation Style:** Individual class presentation

**Instructor Resources:** PowerPoint presentation, animal and natural artifacts

The health of our planet depends on a delicate balance of species. Humans are part of this balance but unfortunately our actions sometimes tip the scale. When we move plants to different regions, either intentionally or unintentionally, we introduce the native plants to a new competition. This program will begin in the classroom with an examination of plant competition. Then we will head out to your school grounds where we will identify native and invasive species and conduct population counts. Finally, we will chart and graph the data we collected and discuss possible future ramifications, trends and remediation techniques.

## **THE EXTRAORDINARY JOURNEY OF ORDINARY STUFF**

**Location:** School/Madden      **Presentation Style:** Individual class visits      **Instructional Resources:** PP presentation, life cycle analysis boards

What do sneakers, a cell phone and a pencil have in common? This program will examine everyday items such as these as well as sneakers and t-shirts using a cradle to grave assessment and an interactive mapping activity to help students better understand the extraordinary amount of natural resources and energy used to manufacture and transport these items around the globe. Students will leave with a new perspective as they discover how these everyday items are far more complex than imagined, along with the realization that "away" is not a reality on our crowded planet.

## **FEARSOME PREDATOR: CARRYING CAPACITY OF AN ECOSYSTEM SCI 21 ALIVE**

**Location:** School      **Presentation Style:** Individual Class Visits      **Instructional Resources:** PP presentation, animal artifacts, animal ambassador

Lions, and tigers, and bears, oh my! Students will delve into the world of predators to learn what it takes to be on top. After examining the adaptations of successful predators, students will explore the unique relationship between predator and prey, learn about the value of keystone species, and how humans can live alongside the most fearsome of predators. Students will be given the opportunity to examine a live animal ambassador and asked to identify its' distinctive adaptations, and determine what part it plays in the ecosystem.

## **FOOD WEBS: WHO EATS WHOM? SCI 21 ALIVE**

**Location:** School/Madden      **Presentation Style:** Assembly/Individual Class Visits

**Instructional Resources:** Animal artifacts, hands-on simulation, live animal ambassador

This interactive program focuses on the daily flow of energy from the sun to producers and consumers, and why the producers are at the base of the food pyramid. Students will then participate in a hands-on simulation designed to help them understand how the balance of trophic levels and populations are crucial to a healthy ecosystem. During the presentation, students will meet a live animal ambassador and learn about its role in the ecosystem.

### **FOREST ECOLOGY SCI 21 ALIVE**

*Location: School/Madden*

*Presentation Style: Individual Class Visits*

*Instructional Resources: Introduction using Live Animal Ambassadors, Animal Artifacts with interpretive hike to follow*

The focus of this program is a guided hike either at Madden property or a local nature trail. Using interpretive stops, games, and 'hands-on' activities, the students will be introduced to the temperate forest and the relationships between the habitat and its inhabitants. This program can be adapted to any grade level and many focus areas including: food webs, human impact, sustainable management, problem solving, living and non-living things, and wildlife. A forest ecology program can also include a plot study, forest measurements, and tree identification.

### **FOREST MEASUREMENTS/PLOT STUDY SCI 21 ALIVE**

*Location: School/Madden*

*Presentation Style: Individual Class Visits*

*Instructional Resources: short PP Presentation, Forestry equipment, Tree/plant specimens*

Trees come in all shapes and sizes and are an excellent tool for a mathematical exercise! Students will measure trees to become familiar with the tree structure as they learn the importance of measuring techniques and standard units of measurement. Activities will vary based on the grade level. Tools and skills include: Biltmore stick, ruler, diameter tape, and pacing.

### **GEOLOGY: ROCKIN' THE VALLEY/EARTH SCIENCE: ROCKS & MINERALS SCI 21 ALIVE**

*Location: School*

*Presentation Style: Assembly/Individual Class Visits*

*Instructional Resources: short PP Presentation, Geological artifacts, hands-on student experiments at stations*

Is a rock really just a rock? During this program we will examine the three types of rocks: sedimentary, igneous and metamorphic to understand the differences between them. Using geological history and close examination we will determine why rocks are like puzzles, how fossils form, whether water is actually stronger than rock, where we get those amazing stones to polish our feet and delve into what truly makes a rock crumble!

### **HIBERNATION/WINTER ADAPTATIONS SCI 21 ALIVE**

*Location: School*

*Presentation Style: Assembly followed by individual class visits or individual class presentations*

*Instructional Resources: PP presentation, animal artifacts, blubber experiment, live animal ambassadors*

This program introduces students to the different adaptations and habits of both large and small organisms in the colder winter months. Students will identify the differences in organisms that go dormant, hibernate, migrate, and stay active to determine the role blubber and other physical adaptations play in the struggle to survive. This program also includes interactive stations where students will explore a variety of animal artifacts including animal pelts, preserved animal specimens, feathers, and skulls. The presentation concludes with a live animal ambassador that goes dormant or hibernates in the wild.

## HOW BEAVERS BUILT THE HUDSON VALLEY SCI 21 ALIVE

**Location:** School    **Program Style:** Assembly followed by individual class visits

**Instructor Resources:** PP Presentation, animal ambassador, animal artifacts, and Native American Artifacts

The ingenious beaver played an important role in the economic, cultural and ecological development of the Hudson Valley that can still be seen today. This program will use furs and skulls to introduce students to the beaver and what made its pelt so valuable. We will examine chew patterns to understand the beaver's unique ability to alter its environment. Then through a detailed and hands-on presentation, we will examine the beaver's place in the Hudson River's ecology; how the beaver trade influenced the relationship between the colonists and the Native Americans; the impact of the beaver trade on local tribes, why the beaver is on the official seal of New York City; the impact of their decline on the 18th century economy as well as the environment of the Valley, and how their return has had both positive and negative impacts for residents of the Hudson Valley.

## HUDSON RIVER SCI 21 ALIVE

**Location:** School    **Program Style:** Assembly followed by Individual Class Visits

**Instructor Resources:** PP Presentation, animal ambassador, animal artifacts, hands-on water activity

The Hudson River has played a dominant role in the history of New York State. Through discussion and an engaging presentation, this program will explore the history and ecology of the Hudson River. Special emphasis is placed on the river's ecological problems, the condition of the river today, current events, and the future of the Hudson. Through a hands-on activity using water and pollution simulations, students will actualize their role as caretakers of the Hudson River Watershed to understand the effects of pollution on the aquatic and terrestrial life in and around the Hudson.

## IF THE WORLD WERE A VILLAGE: MULTIPLE PERSPECTIVES (for groups of 100-150 students)

**Location:** School    **Program Style:** Assembly    **Instructor Resources:** PP Presentation, materials related to sustainability

On a planet of over seven billion people, who lives here, what is life like for residents of our planet and how do our lifestyles affect the health of Planet Earth? Students will be broken down into regions that reflect the world's population. Using illuminating images and revealing data from the books, *If the World Were a Village* and *Material World*, students will be asked to represent their region as we examine food, sanitation, clothing, water, transportation, energy use. Then, through a revealing demonstration we will compare the impact of different life styles and choices on our planetary resources and pollution levels. We will introduce the concept of "Needs versus Wants" to help students examine their assumptions and expectations about their lifestyles, understand how different their lives are from their peers in other countries, and help them see themselves as global citizens. **Instructor needs a large open space with no furniture, a screen and projector set up, as well as a microphone.**

## I'M ONLY ONE PERSON, WHAT CAN I DO? – Large Group Assembly

**Location:** School    **Program Style:** Assembly    **Instructor Resources:** PP Presentation, materials related to sustainability

This assembly program is a fast-paced, interactive look at the pressing issues of consumerism, solid waste and energy use. Students will learn about the attitudes that got us into this mess and the natural laws which guide how our planet operates. Then using the issue of trash we will examine behaviors based on the old attitudes and how to change those behaviors so they align with the natural laws. The second part of the presentation examines how we use energy. Students will participate in an energy quiz and then look at new energy saving behaviors. Examples of new more sustainable products are used throughout the presentation.

## **INSECTS: INCREDIBLE CREATURES SCI 21 ALIVE**

**Location:** School

**Presentation Style:** Assembly/Individual Class Visits

**Instructional Resources:** PP Presentation, Madagascar Hissing Cockroaches, Animal Artifacts and other live specimens

Did you know that there are more than a million different kinds of insects on our planet? Through a presentation and hands-on activities, students will learn the specific characteristics that entomologists use to identify insects and compare them to their relative, the spider. Every student will become an “amateur entomologist” as they learn about simple and complete metamorphosis, the difference between pests and helpful insects and what role these insects play in our ecosystems. This program includes a live animal ambassador.

## **INTRODUCTION TO SUSTAINABILITY**

**Location:** School

**Program Style:** Individual Class Visits

**Instructor Resources:** PP Presentation and materials relating to sustainability

Sustainability is a word that has become a part of our daily lexicon. This program is designed to help students better understand what it means and how it applies to our daily lives. We will begin by learning about the mental models we as a society have been operating under for the past one hundred years and how these attitudes have formed our behaviors. Using a systems model, we will then examine a set of daily behaviors and choices we all make and track the resources used and pollutants produced using marbles. Then we will learn about the natural laws that guide our planet and go back to reexamine the behaviors and choices through these laws to determine if the resources and pollution produced has changed. After comparing the usage results, we will learn about how to create behavior change and new habits. **Assembly Model Not Available - 1-2 classes/1 hour**

## **MAP MAKING ADVENTURE SCI 21 ALIVE**

**Location:** School/Madden

**Presentation Style:** Assembly/Individual Class Visits

**Instructional Resources:** PP presentation, Mapping boards and supplies, various map examples

Students will become junior cartographers in this marvelous mapping program! After learning about parts of a map and the many different types of maps, they will be broken up into small groups and challenged to map an area using the plane table mapping technique. This program includes options such as simple games, interactive presentations, and hands-on demonstrations. This program can be done either at Madden or on your school grounds.

## **MAPPING YOUR SCHOOL’S ECOLOGICAL RESOURCES SCI 21 ALIVE**

**Location:** School

**Presentation Style:** Individual Class Visits

**Instructor Resources:** Introduction, biological field study and animal artifacts

After a brief introduction about how scientists calculate animal and plant populations, we will go outside and do a field study of the animals and plants found on your school grounds. The outdoor activity will include mapping, how to calculate estimates and the natural services provided by the flora and fauna found.

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at PNW BOCES

## MARINE ECOSYSTEMS

**Location:** School      **Presentation Style:** Individual Class Visits      **Instructional Resources:** PP presentation, specimens, models

75% of the earth's surface is covered in water! This program introduces students to the different marine ecosystems and the life that inhabits our oceans. From the beach, down to the deep hydrothermal vent communities, using shells, plants and preserved specimens, models, colorful slides and real-life stories, participants will learn about the animals and plants that live there, why the ocean is important to us, how humans are impacting the ocean and some of the ways humans are using what they are learning from ocean animals to solve human problems.

## NATIVE AMERICAN STUDY

**Location:** School/Madden      **Presentation Style:** Individual Class Visits

**Instructor Resources:** PP Presentation, Native American Artifacts, Animal Artifacts, Live Animal Ambassador

This program takes a close look at the indigenous tribes of the Hudson Valley and their fascinating culture. Students will learn about their pre-European lifestyles and philosophies, meet a live animal ambassador, and take part in hands-on activities such as examining fur pelts, playing native games and looking at their toys, exploring native artifacts, and playing a matching game between Native American and present-day items. In longer programs, Native American games and storytelling activities can be included if requested. **Assembly Model Not Available - 1 classes/45 minutes - 1 hour**

**ON TRIPS TO MADDEN, STUDENTS WILL VISIT A Native American WIGWAM.**

## NATURE ACTIVITIES TO RECONNECT WITH OUR NATURAL WORLD SCI 21 ALIVE

**Location:** School/Madden      **Presentation Style:** Individual Class Visits      **Instructional Resources:** Animal artifacts, and nature-based activities

Nature Deficit Disorder? Not here! We will take your students outside to learn and connect with our natural world through a series of fun and educational nature games! This program can complement almost any area of focus from predator/prey relationships, to camouflage, trees, or animals. Just let us know what you are studying! **Assembly Model Not Available - 1 classes/1 hour**

## NOCTURNAL WORLD OF NEW YORK SCI 21 ALIVE

**Location:** School/Madden      **Presentation Style:** Assembly/Class Visits

**Instructional Resources:** short PP presentation, listening to animal calls, animal artifacts, live animal ambassador

Using pictures of nocturnal and diurnal animals, students will be asked to create a list of differences between them and explore their special adaptations. Through the use of animal sounds, artifacts, and a live ambassador animal, students will learn about why some animals are active at night and how their specialized senses enable them to survive in the dark.

### **ORIENTEERING SCI 21 ALIVE**

**Location:** Madden    **Presentation Style:** Individual Class Visits    **Instructor Resources:** Compasses interactive compass and pacing activity, orienteering trails

During this full day program at Madden, students will learn the parts of a compass and how to use it. Next to reinforce their navigation skills, they will play the compass circle game and then learn how to measure distances through the use of pacing. After lunch, students will be taught to use their newly acquired skills to orienteer and will be sent out on the orienteering trails that crisscross through the woods of Madden.

### **OWL PELLET STUDY (MATERIAL FEE) SCI 21 ALIVE**

**Location:** School    **Presentation Style:** Assembly followed by Individual Class Visits

**Instructor Resources:** PP Presentation, Live owl ambassador, animal artifacts

Owls are very unique birds that have fascinated humans throughout history. In this program, students will learn about their hunting and survival adaptations. They will be introduced to the sights and sounds of the owls native to New York State, and meet one of our resident ambassador owls! Following a discussion about the owl's unique digestive system, students will have the opportunity to dissect an owl pellet to determine what that owl had for dinner to help them understand the owl's role in the ecosystem! **Your district will be billed a material fee of \$2.00 per student.**

### **POLLINATOR PARTNERSHIPS SCI 21 ALIVE**

**Location:** School/Madden    **Presentation Style:** Individual Class Visits    **Instructional Resources:** PP presentation, animal artifacts, game supplies

In this program, students will be introduced to the important interactions between plants and pollinators. Through our interactive presentation, students will investigate butterflies, hummingbirds, bees, and bats to learn how they are specially adapted to pollinate certain flowers and how flowers are dependent on pollinators. After exploring the various pollinator adaptations, we can either head outside to explore your school garden or woods to look for signs of pollination or play an exciting pollination tag game on your school's field.

### **POND ECOLOGY (SPRING ONLY) SCI 21 ALIVE**

**Location:** Madden    **Presentation Style:** Individual Classes

**Instructional Resources:** Introduction, student driven collection of live specimens from Madden Pond, ID Charts

Students will determine the differences between a pond and a lake, before going outside to visit the Madden pond! There they will use scoop nets to catch samples of the animals and insects living in the pond. Following the collection period, the group will observe and identify their catch, using identification keys, learn about metamorphosis, interdependence, food webs, some of the organisms' fascinating adaptations as well as the conditions necessary for a healthy pond. If you can't come to Madden, we can bring the pond to you!! See our *Classroom Pond Study* program.

## RECYCLING: WHAT HAPPENS TO MY RECYCLABLES?

**Location:** School      **Presentation Style:** Assembly or Individual Class Visits      **Instructional Resources:** PP Presentation, materials related to sustainability

Recycling is something that is familiar to almost everyone, but what happens to the item once it leaves the bin? This program will give your students a better understanding of the route a recycled item takes to become something new, examples of products being made with recycled content, and the additional advantages they offer in terms of sustainability. This program will also examine some examples of solid waste found in our home and workplace that can be kept out of the waste stream altogether.

## SECRET LIFE OF THE AMERICAN HAMBURGER & OTHER FAVORITE TEENAGE FOODS

**Location:** School      **Presentation Style:** Assembly or Individual Class Visits      **Instructional Resources:** PP Presentation

The average American eats more than 68 pounds of beef a year. That's well over a pound a week. The problem is that there is a lot more to every hamburger than just the meat. This is not a vegetarian vs. meat eater program, it is a systems analysis that enables students to examine the full cycle of common foods eaten by Americans from the field/pasture to the plate. Students will create systems maps which will inventory and calculate the resources used by a number of common food items along with healthy, locally produced alternatives. Using the analysis of each system, students will be asked to create an argument, using evidence, on the sustainability of each. ***This program can be done as a 1-hour assembly for a full grade level or done as in-class program for individual classes throughout the day.***

## SEED STUDY SCI 21 ALIVE

**Location:** School/Madden      **Presentation Style:** Individual Class Visits      **Instructional Resources:** PP presentation, seed sorting activity, seed game

Through seed sorting and critical thinking, students will learn the differences between a seed and a non-seed in this fun, interactive program! The lesson will also include the parts of a seed and all of the different ways seeds travel. After investigating many different types of seeds, students will play a game where they find out how hard it is for seeds to sprout, and why they are so valuable to the natural world.

## SKULL STUDY SCI 21 ALIVE

**Location:** School/Madden      **Presentation Style:** Individual Class Visits      **Instructional Resources:** PP Presentation, animal artifacts, live animal ambassador

This program uses hands-on activities that emphasize critical thinking skills. It begins with a presentation which focuses on animal survival adaptations. Then, using skulls of endangered species and local animals, students will be asked to make observations of eye location, nasal passageways, and teeth configuration to draw conclusions and identify facts about each animal. In the last part of the program, students will be divided into groups to identify/create their own animal based on the skull assigned to them for study. This program includes a live animal.

### **SNOWSHOEING ADVENTURE (WINTER MONTHS/SNOW ONLY)**

**Location:** School/Madden

**Presentation Style:** Individual Classes

**Instructional Resources:** Introduction, snowshoes, live animal ambassador

Before going outside to try out our snowshoes, students will learn about the history and physics of snowshoes. Animals that are adapted to the winter months and what makes them so good at moving from place to place in the snowy months will be examined. Students will also learn about animals that utilize snowshoeing technology. Then it's outside for a snowshoe adventure!

### **SOIL - THE BASIS OF LIFE SCI 21 ALIVE**

**Location:** School/Madden

**Presentation Style:** Assembly followed by individual class visits or individual class visits

**Instructional Resources:** PP presentation, live specimens, a soil making experiment

This program includes live specimens, a PowerPoint as well as a soil making experiment.

From the food we eat, to the clothes we wear, to the air we breathe, humanity depends upon the soil beneath our feet. Although it is only a thin layer of our planet, it nurtures life, supports cities, forests and oceans and feeds all terrestrial life on Earth. Soil could arguably be called Earth's most critical resource. Part biology, part chemistry and part CSI, students will learn the "dirt" on soil as we examine its remarkable properties, its crucial role in the carbon cycle, how it is made and its ecological importance.

### **SUPERMARKET BOTANY SCI 21 ALIVE SEE: WHERE DOES YOUR FOOD COME FROM?**

### **TEAMBUILDING: SEE COOPERATIVE KINDNESS**

### **TREE LIFECYCLE SCI 21 ALIVE**

**Location:** School/Madden

**Presentation Style:** Individual Class Visits

**Instructional Resources:** PP presentation, leaf and twig presses, tree "cookies"

In this program, students will learn about the two fascinating cycles of a tree, how trees communicate their needs, and how they transfer their nutrients to neighboring plants before they die. After an interactive presentation, students will explore all parts of a tree from leaves to the trunk using our many leaf, twig, and trunk specimens. Using the information from the presentation, students will have the opportunity to count the annual rings in a tree "cookie" and deduce the life history of the tree.

**GRADE 4 PROGRAMS**

**PNW BOCES CENTER FOR ENVIRONMENTAL EDUCATION**

**TO BOOK A PROGRAM: <http://portal.pnwboces.org/cee/>**



at PNW BOCES

## **TROPICAL RAINFORESTS SCI 21 ALIVE**

**Location:** school      **Presentation Style:** *Assembly followed by Individual Class Visits*

**Instructional Resources:** *PP presentation, animal artifacts, rainforest artifacts, live animal ambassador*

Tropical rainforests are home to more than half of the plant and animal species on Earth and are the oldest and most diverse ecosystems on our planet today! Yet deforestation of these amazing ecosystems is occurring at a rate of over 20 million acres of forests each year. Students will learn about the locations of rainforests around the world, the layers of a rainforest, and the unique plants and animals that inhabit them. Interactive stations with colorful and rare artifacts will give students a hands-on opportunity to discover more of the animals, products, and cultures found in these rainforests. This program will include a live animal ambassador during the stations.

## **TURTLES, FROGS, TOADS, SNAKES, WHAT'S THE DIFFERENCE SCI 21 ALIVE**

**Location:** School      **Presentation Style:** *Individual Class Visits*      **Instructional Resources:** *PP presentation, Live animal ambassador, animal artifacts*

Turtles, frogs, toads, snakes... what's the difference? This program examines the characteristics and adaptations of amphibians and reptiles, and the differences among species within in each class. Students will then rotate through hands-on stations including amphibian and reptile artifacts and preserved specimens. Students will also meet a living reptile, to dispel some of common misconceptions about them.

## **UNDERSTANDING THE COMMONS**

**Location:** School      **Presentation Style:** *Individual Class Visits*      **Instructional Resources:** *PP Presentation, hands on student activity, animal artifacts*

Healthy Commons such as air, biodiversity, climate regulation, our collective future, water, libraries, public health, heritage sites and top soil are what we all depend on, and for which we are all responsible. Through a series of activities, this program will introduce students to the concept of the commons, their value and importance in our lives and for our future. Together the group will establish a list of responsibilities, behaviors and actions to care for our Commons.

## **UNDERSTANDING THE CONSEQUENCES OF ECOSYSTEM MANIPULATION**

**Location:** School      **Presentation Style:** *Individual Class Visits*

**Instructional Resources:** *PP Presentation, materials related to sustainability, animal artifacts*

The health of our planet depends on a delicate balance of species. Humans are part of this balance but unfortunately our actions sometimes tip the scale. When we move plants to different regions, either intentionally or unintentionally, we introduce the native plants to a new competition. This program will begin in the classroom with an examination of examples of plant competition. Then we will head out to your school grounds where we will identify native and invasive species and do population counts. Finally, we will chart and graph the data we collected and discuss possible future ramifications, trends and remediation techniques.

## **WATER: THE MOST DESTRUCTIVE FORCE ON EARTH!**

**Location:** School    **Presentation Style:** Individual classes

**Instructional Resources:** PP presentation, hands on student activity

This erosion and natural sciences program explores how water has shaped our environment, and how it continues to this very day. Constantly in motion, water is pushing and pulling the Earth around us, forming new structures, lakes, rivers and other geologic formations over thousands of years. It changes the boundaries of countries, and the patterns of all animal life. This program explores how we measure those changes, and perhaps make predictions for them as well as the effects that they have on human life and the directions that we choose to take ourselves. Who knew that a stream could be so fascinating?

## **WE ALL LIVE IN A WATERSHED SCI 21 ALIVE**

**Location:** School

**Presentation Style:** Individual Class Visits

**Instructional Resources:** PP Presentation, hands-on water activity

What's a watershed? Using hands on models students will explore watersheds and groundwater, point and non-point source pollution, and learn how this natural resource connects us all. The class will then learn about local water sources and issues that the Lower Hudson River Watershed is facing, and how they can reduce their impact on their watershed.

## **WEATHER SCI 21 ALIVE**

**Location:** School

**Presentation Style:** Assembly followed by individual class visits or individual class visits

**Instructional Resources:** PP presentation, meteorological tools, data collection pages

Rain, sleet, snow, humidity, muggy, what does it all mean!? This program will introduce the concepts and tools necessary to understand the weather. Students will learn about weather forecasting through the use of simple meteorology tools, how the water cycle affects our daily weather, and what different cloud types tell us about the coming weather. They will leave the program with an understanding of the importance of weather prediction and how to collect weather data. After a presentation indoors, we will head outside to use meteorology tools to collect data and then analyze and discuss the data collected to make a short-term forecast.

## **WHAT'S YOUR FOOTPRINT?**

**Location:** School

**Presentation Style:** Individual Class Visits

**Instructional Resources:** PP Presentation, interactive student activity, materials related to sustainability

This program uses the Ecological Footprint to help students assess how their lifestyle impacts our planet. The Ecological Footprint is a measure of the amount of nature it takes to sustain a given population over the course of a year. Through the use of a PowerPoint presentation and a simulation, students will examine two very different lifestyles that creates two very different ecological footprints. First a typical American, and then an American with different habits, to demonstrate the impact of behavioral change, one that includes mitigated behavior. Using what they learned, students will be asked to identify mitigating behaviors that are personally attainable. **Assembly Model Not Available - 1-2 classes/1 hour**

## WHERE DOES MY GARBAGE GO?

**Location:** School

**Presentation Style:** Individual Class Visits

**Instructional Resources:** PP presentation, materials related to sustainability

Lunch is over and your students are anxious to get outside for recess. They clear off their tables, and toss their uneaten food, paper napkins and cups, and plastic utensils into the nearest trash can. But where does it go from there? The average American generates approximately 6 pounds each of trash per day! There's everything from paper, uneaten food, construction leftovers, cut grass, plastic, glass, metal, old batteries, computers, phones, and tons of other stuff. Come take a journey with your garbage to learn where it goes and along the way encounter a waste-to-energy incinerator, landfills, a recycling plant and composting.

## WHERE DOES YOUR FOOD COME FROM? (FORMALLY SUPERMARKET BOTANY)

**Location:** School/Madden

**Presentation Style:** Individual Class Visits

**Instructional Resources:** PP presentation, food samples and games

What seeds do we find in the produce section of the supermarket? Exploring food typically found in the produce section, we will determine what parts are edible and if a new plant can be grown from a seed from one of those plants. Through games and activities, students will learn all about how food arrives at the supermarket and will never look at the produce aisle the same way again!

## WILDLIFE SCI 21 ALIVE

**Location:** School

**Presentation Style:** Assembly/Individual Class Visits

**Instructional Resources:** PP Presentation, live animal ambassadors, animal artifacts

This wildlife program is designed to give students an understanding of the classification system of animals, animal habitats, animal adaptations and consumers' crucial role within an ecosystem. Among the topics that will be discussed are camouflage, natural services such as how fox and possums keep ticks away, and threatened and endangered species. Through demonstrations and activities using pelts, skulls, and many of our rare animal artifacts, students will gain an up close and personal understanding of wildlife and their role in the ecosystem and our lives. The program includes several animal ambassadors.

## WILDLIFE CSI SCI 21 ALIVE

**Location:** School/Madden

**Presentation Style:** Individual Class Visits

**Instructional Resources:** PP Presentation, Live animal ambassadors, animal artifacts, hand-on CSI activity

Coyotes, raccoons, owls, bobcats, and thousands of other wild animals are impressive creatures to see in the natural world. Unfortunately for the curious observer, some of these animals are also among the most reclusive, their presence only evident through the clues they leave behind. Students will investigate several wildlife "crime" scenes to find evidence that can include tracks, scat, food remains, feathers or fur, to draw conclusions about who was there and what happened. The program will conclude with a discussion to help students better understand predator and prey relationships and the food chain, and will include a live animal ambassador.