

PNW BOCES CENTER FOR ENVIRONMENTAL EDUCATION PROGRAM OFFERINGS FOR GRADE 6-8

PROGRAM	SCI 21 CORRELATIONS	SOCIAL STUDIES ENGLISH LANGUAGE ARTS CORRELATIONS
<i>A, Bee, C's of the Honey Bee</i>	GR 6 UNIT 4	
<i>Bats & Moths: An Evolutionary Arms Race</i>	GR 6 UNIT 4	
<i>Biography of a Tomato: A Systems Fable</i>	GR 6 UNIT 4	Gr 6 Unit 5 Lesson 4
<i>Biomimicry Introduction: The Science of Today and Jobs of Tomorrow</i>	GR 6 UNIT 1	
<i>Biomimicry Design Challenge</i>	GR 6 UNIT 1	
<i>Birds & Raptors</i>	GR 6 UNIT 4	
<i>Cemetery Study: Using Historical Data to Bring Colonial History Alive</i>		
<i>Challenge Course @ Yorktown OR</i> <i>Challenge Course @ Madden</i>		
<i>Classroom Pond Study</i>	GR 6 UNIT 4	
<i>Climate Change</i>	GR 6 UNIT 4	Gr 8 Unit 5 Lesson 6
<i>Composting: Nature's Recyclers and Decomposers</i>	GR 6 UNIT 4	
<i>Conservation Biology: Introduction to the Concepts of Conservation & Environmental Stewardship</i>	GR 5 UNIT 3, 4	Unit 5 Lessons 1, 5
<i>Coral Reefs</i>		
<i>Earth Portable Classroom (FEE)</i>		Gr 6 Unit 1 Lesson 1 Gr 6 Unit 3 Lesson 1
<i>Energy Transfer in Predator/Prey Relationships (Food Webs)</i>	GR 6 UNIT 4	
<i>Examining Invasive & Native Competition</i>	GR 6 UNIT 1, 4	
<i>The Extraordinary Journey of Ordinary Stuff</i>	GR 5 UNIT 3, 4	Unit 5 Lessons 1, 5
<i>Fearsome Predator: Carrying Capacity of an Ecosystem</i>	GR 6 UNIT 4	
<i>Forest Ecology</i>	GR 6 UNIT 4	
<i>Forest Measurements/Plot Study</i>	GR 6 UNIT 4	
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GRADES 6 – 8 PROGRAMS
PNW BOCES CENTER FOR ENVIRONMENTAL EDUCATION
TO BOOK A PROGRAM: <http://portal.pnwboces.org/cee/>



PROGRAM	SCI 21 CORRELATIONS	SOCIAL STUDIES ENGLISH LANGUAGE ARTS CORRELATIONS
<i>How Beavers Built the Hudson Valley</i>	GR 6 UNIT 4	
<i>Hudson River</i>		
<i>If the World Were a Village: Multiple Perspectives</i>	GR 6 UNIT 4	Gr 6 Unit 5 Lesson 1, 4, 5 Gr 8 Unit 5 Lesson 6
<i>I'm Only One Person, What Can I Do? Assembly</i>	GR 6 UNIT 4	Gr 6 Unit 5 Lesson 1, 4, 5 Gr 8 Unit 5 Lesson 6
<i>Insects: Incredible Creatures</i>	GR 6 UNIT 4	
<i>Introduction to Sustainability</i>	GR 6 UNIT 4	Gr 6 Unit 5 Lesson 1, 4, 5 Gr 8 Unit 5 Lesson 6
<i>Map Making</i>	GR 4 UNIT 1	
<i>Mapping Your School's Ecological Resources</i>	GR 6 UNIT 4	
<i>Marine Ecosystems</i>	GR 6 UNIT 4	
<i>Monster Storms & Climate Change with Jim Witt (FEE)</i>		
<i>Native American Artifacts & Tools</i>		Grade 6 Unit 1 Lesson 2
<i>Nocturnal World of New York</i>	GR 6 UNIT 4	
<i>Oil Spills: Where Does the Oil Go?</i>	GR 6 UNIT 4	Gr 6 Unit 5 Lesson 5 Gr 8 Unit 5 Lesson 6
<i>Orienteering</i>		
<i>Owl Pellet Study (material fee)</i>	GR 6 UNIT 4	
<i>Pond Ecology (spring only)</i>	GR 6 UNIT 4	
<i>Recycling: What Happens to My Recyclables?</i>	GR 6 UNIT 4	Gr 6 Unit 5 Lesson 5
<i>Secret Life of Your Hamburger & Other Favorite Teenage Foods</i>		Gr 6 Unit 5 Lesson 4, 5 Gr 8 Unit 5 Lesson 6
<i>Skull Study</i>	GR 6 UNIT 4	
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PROGRAM	SCI 21 CORRELATIONS	SOCIAL STUDIES ENGLISH LANGUAGE ARTS CORRELATIONS
<i>Snowshoeing Adventure</i>		
<i>Soil - The Basis of Life</i>	GR 6 UNIT 4	
<i>Teambuilding Activities</i>		
<i>Understanding the Commons</i>	GR 6 UNIT 4	Gr 6 Unit 5 Lesson 1, 4, 5 Gr 8 Unit 5 Lesson 6
<i>Understanding the Consequences of Ecosystem Manipulation</i>	GR 6 UNIT 4	Gr 8 Unit 5 Lesson 6
<i>We All Live in a Watershed</i>	GR 6 UNIT 4	
<i>Weather</i>		
<i>What's Your Footprint?</i>	GR 6 UNIT 4	Gr 6 Unit 5 Lesson 1, 4, 5 Gr 8 Unit 5 Lesson 6
<i>Where Does My Garbage Go?</i>	GR 6 UNIT 4	Gr 6 Unit 5 Lesson 1, 4, 5
<i>Wildlife</i>	GR 6 UNIT 4	
<i>Wildlife CSI</i>	GR 6 UNIT 4	

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: PP Presentation, animal artifacts

This program is designed to help students recognize the importance and function honeybees. In addition to an introduction in honey production, this program will cover pollination, anatomy, and the honeybee's role in the ecosystem along with its interconnectedness with human life. Current events such as the disappearance of the honeybee will be addressed and students will have a chance to see equipment beekeepers use as they learn how honey goes from hive to the jar.

BAT AND MOTH: AN EVOLUTIONARY ARMS RACE SCI 21 ALIVE

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

Bats and moths are an example of an evolutionary struggle between competing organisms that over time develop adaptations and counter-adaptations against each other in order to survive. This program will examine the adaptations that bats have developed and the counter strategies the moth has evolved to detect and evade the moth's strategies. Examples of other species' evolutionary struggles will be presented to illustrate co-evolution and adaptation.

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BIOGRAPHY OF A TOMATO: A LESSON IN SYSTEMS THINKING SCI 21 ALIVE

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 SCI 21 ALIVE

Location: School

Presentation Style: Individual Class Visits

Instructional Resources: PP presentation, biomimicry products, matching activity

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.**

BIOMIMICRY DESIGN CHALLENGE

Location: School

Presentation Style: Individual Class Visits

Instructional Resources: PP presentation, biomimicry products, design challenge cards

This program is a follow up to the Introduction to Biomimicry program which is prerequisite. After a brief review of biomimicry, students are introduced to the two approaches to biomimicry design using actual design examples: biology to challenge and challenge to biology. We explore the difference between bio-inspired and biomimicry by examining the earth operating principles vs the human operating principles. From that we will extrapolate a set of sustainable guide lines that student will use in the evaluation part of their design process. Finally, students are given a design challenge around water. To support their work, they will be given a set of organism cards, and a walk through of AskNature.org. This challenge is taken over by the teacher as a follow up to this program. One suggestion is to have a bio-inspired design challenge within the school.

BIRDS & RAPTORS SCI 21 ALIVE

Location: School/Madden

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.

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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.

CHALLENGE COURSE/TEAM BUILDING/DIGNITY ACT SUPPORT (Special fee may apply depending on group size)

Location: *Madden or Yorktown*

Presentation Style: *students will be put into groups of 12-14*

Instructional Resources: *all outdoors using initiative game material and challenge course*

The challenge course is an extremely effective method of creating bonds and developing a positive, supportive and safe classroom environment. Students will be divided into groups of 11-13 and asked to work together to solve a series of physical and mental challenges. In the process of solving the challenges, they will utilize such skills as team building, effective communication, problem solving, acceptance of others, risk taking, physical and emotional support and working with people of different styles. Equally important, the participants will have fun together. Often, the student who doesn't do well in the classroom, excels on the challenge course and some children who do well in the classroom can struggle in this setting. Consequently, students see their peers and teachers see their students in a very different light, changing the classroom environment and creating a bond to last the entire year. The first part of the program will be spent doing team building activities to prepare the group for the challenge course. The remainder of the day is spent on the challenge course. **FOR THOSE THAT CAN'T COME TO OUR CHALLENGE COURSE, WE CAN BRING THE PROGRAM TO YOU! SEE THE TEAM BUILDING ACTIVITIES PROGRAM LISTING.**

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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CLIMATE CHANGE

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

Instructional Resources: PP Presentation, live animal ambassador, preserved animals and specimens

Students will be introduced to the main scientific principles of global warming/climate change the causes of this transformations to our planet. By incorporating what we already know about good "green" practices and using new information, students will problem solve ways to help slow down the impacts of global climate change. Students will also learn about animals and plants which are at risk of extinction due to climate change, while also learning about some very interesting animals which actually help to slow down the production of greenhouse gases! Examples will be shown of the many places on Earth which climate change has already had an impact. This class will incorporate live animals and artifacts to support the presentation. **Can be done as an assembly.**

COMPOSTING: NATURE'S RECYCLERS AND DECOMPOSERS SCI 21 ALIVE

Location: School **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 today's ever-changing social and environmental climates. 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.

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 and 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!

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EARTH PORTABLE CLASSROOM

Location: School

Presentation Style: Individual Class Visits

Instructional Resources: need large space to accommodate a 20' wide x 22' high 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. The globe can accommodate no more than 25 students. NO MORE THAN five 40 minute programs can be done in one day. **(Special Fee)**

ENERGY TRANSFER IN PREDATOR/PREY RELATIONSHIPS (formally Food Webs) SCI 21 ALIVE

Location: School/Madden

Presentation Style: Individual Class Visits

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

Energy flows in predator-prey relationships will be studied using the food pyramid and trophic levels, following a discussion about food webs. This program will explore energy transfer, bioaccumulation and bio-magnification, indirect interactions among species, and how trophic cascading can affect the health of an ecosystem. This program will include a live animal ambassador.

EXAMINING INVASIVE & NATIVE COMPETITION SCI 21 ALIVE

Location: School/Madden

Presentation Style: Individual class presentation

Instructor Resources: PowerPoint presentation, animal and natural artifacts

The competition between native and invasive species is a growing issue right in our own backyards. We will begin inside with an introduction to how plants compete for resources in the natural world, the native and invasive species in our area, how to take an ecological inventory and how to record data. Outside, we will identify native and invasive species and students will do population counts. Back inside, we will chart and graph the data collected and students will predict possible future ramifications, trends and remediation techniques.

FEARSOME PREDATOR: CARRYING CAPACITY OF AN ECOSYSTEM (ALSO AVAILABLE AS AN EVENING PROGRAM) SCI 21 ALIVE

Location: School

Presentation Style: Individual Class Visits

Instructional Resources: PP Presentation, Live animal ambassadors and animal artifacts

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.

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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 Forest Ecology program is a guided hike through the Madden woods or a local nature trail at your school. 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 biotic and abiotic parts. This program can be adapted to any grade level and many focus areas including: food chains, human impact, sustainable management, problem solving, maple sugaring (spring only), biotic and abiotic forest characteristics, and wildlife. Your forest ecology program can also include a plot study, forest measurements, and tree identification. This program includes live animals.

FOREST MEASUREMENTS/PLOT STUDY SCI 21 ALIVE

Location: School/Madden

Presentation Style: Assembly followed by individual class visits

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

Trees come in all shapes and sizes and are an excellent tool for using math in real world applications! Students will learn how to use measuring techniques and standard units of forest measurement as they measure various species of trees. Activities will vary based on the grade level. Tools and skills include: Biltmore stick, ruler, diameter tape, and pacing.

HOW BEAVERS BUILT THE HUDSON VALLEY SCI 21 ALIVE

Location: School

Presentation 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 PowerPoint, 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 the 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.

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HUDSON RIVER

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 slides, 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 hands-on activities and demonstrations, students will actualize their role as caretakers of the Hudson River Watershed and 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

Presentation Style: Assembly or Individual Class Visits

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 then compare the impact of different life styles and choices on our planetary resources and pollution levels. We will introduce the concept of "Needs vs 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. **Need 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? (ONE HOUR ASSEMBLY FOR LARGE GROUP)

Location: School

Presentation Style: Assembly

Instructor Resources: PP Presentation, materials related to sustainability

This presentation takes an in-depth look at the pressing issues of consumerism, solid waste and energy use. The program will begin with a discussion of how our attitude, behaviors and habits are formed and how they impact our decisions. Through discussion and demonstration, participants will learn about simple changes they can make in their homes and lives that will have a positive impact on our planet. The goal of this program is to empower students, giving them strategies for educating their families and show them how individual action does make a difference.

INSECTS: INCREDIBLE CREATURES SCI 21 ALIVE

Location: School/Madden

Presentation Style: 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 live animal ambassadors and specimens.

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INTRODUCTION TO SUSTAINABILITY: APPLYING 21ST CENTURY THINKING SCI 21 ALIVE

Location: School

Presentation 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

Presentation Style: Individual Class Visits

Instructor Resources: Introduction, biological field study and animal artifacts

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

Students will play the role of field research ecologists in this inquiry-based program designed to calculate animal and plant populations in an ecosystem. Inside, they will be shown how to use a quadrant to take an ecological inventory and how to record their observations. Outside students will be assigned to a quadrant (two per quadrant) where they will do their sampling. Back inside, students will compile their class data, compare final results and together make an interpretation of their data. **This program needs a large area in either a field or woods where multiple quadrants can be set up that morning.**

MARINE ECOSYSTEMS SCI 21 ALIVE

Location: School

Presentation Style: Individual Class Visits

Instructional Resources: Power Point presentation, specimens, models

75% of the earth's surface is covered in water! This program explores the different marine ecosystems from the beach down to the deep hydrothermal vent communities using a PowerPoint presentation, shells, plants and preserved specimens and real life stories. Through learning about the animals and plants that live there, they will learn about why the ocean is important to us and how humans are impacting the ocean. We will also briefly introduce biomimicry by talking about some of the ways humans are using what they are learn from ocean animals to solve human problems.

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MONSTER STORMS SCI 21 ALIVE (SPECIAL FEE)

This program can take place at Madden or your school. In this unique and engaging program, students will rotate between three activities:

- **Weather Program** with meteorologist and radio personality, Jim Witt
- **Class:** Animals as Meteorologists OR Climate Change. Both feature live animals.
- **Hands-on, Interactive Activity** focused on either: animal adaptations, sustainability or watersheds.

Program Length: 3 hours per block of 50 students

If taking place at your school:

- Number of Rooms Needed: 3
- Technology Needed: smart boards and Skype available on the computer in the room where Jim Witt is presenting

FMI: <http://www.pnwboces.org/pdf/Environmental/MonsterStormsFlyer-Registration.aspx>

NATIVE AMERICAN ARTIFACTS & TOOLS

Location: School/Madden

Presentation Style: Individual Class Visits

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

This program introduces students to the indigenous people of the Hudson Valley and their fascinating culture. Students will learn about pre-European lifestyles and philosophies through the use of ancient artifacts (some over 2000 years old), clothes, tools and furs. Students will do a matching activity using the ancient tools and artifacts with modern tools.

NOCTURNAL WORLD OF NEW YORK SCI 21 ALIVE

Location: School/Madden

Presentation Style: Assembly/Class Visits

Instructional Resources: 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.

OIL SPILLS: WHERE DID THE OIL GO? SCI 21 ALIVE

Location: School

Program Style: Individual Class Visits

Instructor Resources: PP Presentation, hands-on experiment

Approximately 206 million gallons spilled into the Gulf of Mexico over a period of 86 days in the spring and summer of 2010. Today there is no oil to be seen. Where did it go? This program will examine some of the ways nature is helping to clean up some of the oil through the molecular and microbial food web. We will also look at places where hidden oil is being found such as wetlands and deep in the Gulf and its impact on those ecosystems as well as human health. **Can be done as an assembly.**

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ORIENTEERING

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

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 study, students will learn about the adaptations they have for hunting and survival. They will be introduced to their 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 and discover what that owl had for dinner to help them understand the owl's role in the ecosystem! **The additional material fee for this program is \$2 per student.**

POND ECOLOGY (SPRING ONLY) SCI 21 ALIVE

Location: *School/Madden*

Presentation Style: *Individual Classes*

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

Students will begin by examining the differences between a pond and a lake, before going outside to visit the Madden pond! Here, they will use scoop nets to catch samples of the animals and insects living there. Following the collection period, the group will observe and identify their catch, using identification keys, learn about metamorphosis, interdependence, food chains, some of the organism's fascinating adaptation 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? SCI 21 ALIVE

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 when an item goes into the bin, what happens to it and is it truly sustainable? We will begin with an explanation of closed loop recycling (i.e. glass and metal) vs. open loop recycling (plastics) and measure both on a sustainability scale. We will follow the route both closed and open loop items take and what they become. Products made with recycled content will be used to assess the level of sustainability and examine other product options. **Can be done as an assembly.**

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SECRET LIFE OF YOUR HAMBURGER & OTHER FAVORITE TEENAGE FOODS

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

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 and create an argument, using evidence, on the sustainability of each. *Can be done as an assembly.*

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

Students will be fully immersed in this historically significant winter activity as they learn the history and physics of snowshoes while on a guided snowshoe hike. Animals that utilize snowshoeing technology will be discussed as students compare and contrast the anatomy and mechanics of their footwear. This program includes snowshoes for students and will only be held outdoors during winter months.

SOIL - THE BASIS OF LIFE SCI 21 ALIVE

Location: School/Madden **Presentation Style:** Assembly/Class Visits
Instructional Resources: PP presentation, live specimens, a soil making experiment

From the food we eat and the clothes we wear, to the air we breathe, humanity depends upon the dirt beneath our feet. Although it is only a thin lay of Earth, 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. This program includes live specimens.

TEAM BUILDING ACTIVITIES

Location: School

Presentation Style: Individual Class Visits

Instructional Resources: Team Building initiatives and portable challenges

Can't come to our challenge course? This alternative team building experience takes place at your school! We will bring our portable challenges and include initiatives that focus on team building, effective communication, problem solving, acceptance of others, risk taking, physical and emotional support, and working with people of different styles. **This program can be used by schools to support their Dignity Act Initiatives.**

THE EXTRAORDINARY JOURNEY OF ORDINARY STUFF

Location: School

Presentation Style: Individual Class Visits

Instructional Resources: PP Presentation, Hands on sustainability puzzle activity

What do sneakers, a cell phone and a pencil have in common? This program will examine everyday items such as sneakers, t-shirt, cell phone, pencils through 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 ever imagined, along with the realization that "away" is not a reality on our crowded planet.

UNDERSTANDING THE COMMONS SCI 21 ALIVE

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 our future. Together the group will establish a list of responsibilities, behaviors and actions to care for the Commons.

UNDERSTANDING THE CONSEQUENCES OF ECOSYSTEM MANIPULATION SCI 21 ALIVE

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.

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WE ALL LIVE IN A WATERSHED SCI 21 ALIVE

Location: School

Presentation Style: Individual Class Visits

Instructional Resources: PP Presentation, hands-on water activity

This program will help students understand the importance of watersheds in their community and on a global scale. Hands-on activities, such as creating a watershed in a bowl, “Who Dirtied the Watershed”, and using watershed and erosion models, will help demonstrate the properties of water, the components of the hydrologic cycle, how a shed works and the impact of water pollution. The program will end with a view of the Hudson Valley watershed, how humans have impacted it and what individuals can do to have a positive impact on our watershed.

WEATHER SCI 21 ALIVE

Location: School

Presentation Style: Assembly/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 analyze the data collected to make a short-term forecast.

WHAT’S YOUR FOOTPRINT? SCI 21 ALIVE

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 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 clear off their tables, and toss their uneaten food, paper napkins and cups, and plastic utensils into the nearest trash can and like magic, it goes “away”. But where is away and what is the impact of our garbage? Beginning with the understanding that the average American generates approximately 6 pounds of trash a day, we follow the trail of food, plastic, glass, metal, old batteries and electronics as they make their way to landfills, waste-to-energy incinerators, electronic waste dumps, recycling plants, composting facilities and our oceans. Students will be asked to assess the pros and cons of each of the garbage destinations. Then through a wants vs. needs activity, we will compare and assess the impact of reduction vs. production of garbage. **Can be done as an assembly.**

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WILDLIFE SCI 21 ALIVE

Location: School **Presentation Style:** 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.

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, turkeys, raccoons, owls, bobcats, and thousands of other New York wildlife are impressive sights to observe in the natural world. Unfortunately, for the curious eye, some of these animals are also some of the most reclusive wild creatures whose presence is only known through the clues they leave behind. Students will investigate several animal "crime" scenes containing scat, tracks, food remains, feathers and fur to discover "who-done-it" and better understand predator/prey relationships and the food chain while building observation skills. This program includes a live animal presentation.

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