PNW BOCES CENTER FOR ENVIRONMENTAL EDUCATION PROGRAMS FOR GRADE 2

NYS SCIENCE STANDARD PROGRAMS

(click on title to link to description) ANIMAL SYSTEM MYSTERY: CASE OF THE LOST PREDATOR 2-LS2-2 Develop a simple model that illustrates how plants and animals depend on each other for survival. BIRDS, BATS, BUTTERFLIES & BLOOMS: WHAT'S THE CONNECTION?

2-LS2-2- Develop a simple model that illustrates how plants and animals depend on each other.

FLAVORS OF THE FOREST: INGREDIENTS FOR DIVERSE HABITAT 2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats. **POND PIE: INGREDIENTS FOR A DIVERSE HABITAT**

2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats. SEED DISPERSAL AND POLLINATION: JOURNEY OF A SEED

2-LS2-2 Develop a simple model that illustrates how plants and animals depend on each other for survival. WHERE IS WATER FOUND? THE AMAZING JOURNEY OF WATER 2-ESS2-3. Obtain information to identify where water is found on Earth and that it can be solid or liquid.

CLASSIC CEE PROGRAMS (click on title to link to description)

A, BEE, C'S OF THE HONEY BEE **AMAZING JOURNEY OF WATER** Ват & Мотн **BIRDS & RAPTORS BLUBBER GLOVE (SEE HIBERNATION) BUTTERFLIES CLASSROOM POND STUDY** COMPOSTING: NATURE'S RECYCLERS AND DECOMPOSERS CRAYFISH EARTH PORTABLE CLASSROOM (FEE) FEARSOME PREDATOR: CARRYING CAPACITY OF AN ECOSYSTEM FOOD WEBS: WHO EATS WHOM? FOREST ECOLOGY **HIBERNATION/BLUBBER GLOVE INSECTS: INCREDIBLE CREATURES** MAP MAKING ADVENTURE **MARINE ECOSYSTEMS NATIVE AMERICAN**

NATURE ACTIVITIES TO RECONNECT WITH OUR NATURAL WORLD **NATURE SCAVENGER HUNT NATURE STORY TELLING NOCTURNAL WORLD OF NEW YORK No-Trash Lunch POLLINATOR PARTNERSHIPS** POND ECOLOGY SEED STUDY **SKULL STUDY** SOIL - THE BASIS OF LIFE SUPERMARKET BOTANY (SEE: WHERE DOES YOUR FOOD COME FROM? TREE LIFE CYCLE TURTLES, FROGS, SNAKES, & TOADS WHAT'S THE DIFFERENCE? WEATHER WHERE DOES YOUR FOOD COME FROM? (FORMALLY SUPERMARKET BOTANY) WILDLIFE WILDLIFE CSI



NYS SCIENCE STANDARD PROGRAMS

ANIMAL SYSTEM MYSTERY: CASE OF THE LOST PREDATOR

Presentation Style: Individual Class Visits Instructional Resources: PP presentation, animal artifacts, live animal ambassador

What went wrong in Yellowstone? This program investigates the historical case of the tropic cascading within the Yellowstone ecological community. Using an interactive game, and short Power Point students will examine the food web of this community over a 40-year period to gather evidence to support the claim that there is something missing from this ecosystem that has caused the community's decline. The second part of the program will examine what happened when the missing predator was reintroduced and how scientists are tracking and observing patterns that can be applied to other declining ecosystems. The program will use pelts and animal artifacts.

BIRDS, BATS, BUTTERFLIES AND BLOOMS: WHAT'S THE CONNECTION?

Location: School

Location: School/Madden

Presentation Style: Individual Class Visits

Instructional Resources: PP presentation, animal artifacts, instructional game

Birds, bats, butterflies and blooms, what do they have in common? To solve this mystery, we will explore how plants and pollinators get their needs met through the process of pollination. Students will use mixed media, animal artifacts as well as an interactive game to find evidence to support the claim that animals help pollinate plants.

FLAVORS OF THE FOREST: INGREDIENTS FOR A DIVERSE HABITAT

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

In this program students will begin by exploring the Madden Forest to learn what makes a forest, a forest. They will make observations and gather evidence to support the claim that each part of the ecosystem supports the whole forest system. In the second half of the program, students will explore a wetland to compare the similarities and differences between the plants and animals in the two ecosystems. Students will be asked to describe the patterns that occur between the plants and animals each ecosystem. This program would be best paired with Pond Pie: Ingredients for a Diverse Habitat.

POND PIE: INGREDIENTS FOR A DIVERSE HABITAT

Location: School/Madden Presentation Style: Individual Class Visits Instructional Resources: live pond specimens, live animal ambassador, pictures and ID keys

Students will explore the Madden Pond and learn what makes a pond a pond. They will begin by together creating a recipe for Pond Pie. Then they will spend time at the pond collecting organisms. After a short collection period, they will compare the similarities and differences of the organisms and describe the patterns that occur. They will conclude by making observations to provide evidence to support the claim that each part of the ecosystem supports the whole pond system. This program would be best paired with Flavors of the Forest: Ingredients for a Diverse Habitat.

SEED DISPERSAL AND POLLINATION: JOURNEY OF A SEED

Location: School/Madden Presentation Style: Individual Class Visits Instructional Resources: Pictures, seeds and an interactive game

What does a seed need to grow? How do they get from one place to another? How does the seed's structure and function help it to survive? During an activity with actual seeds, students will create models to communicate the way that different seeds are dispersed to provide evidence about how hard it is for seed to grow.



NYS SCIENCE STANDARD PROGRAMS

WHERE IS WATER FOUND? THE AMAZING JOURNEY OF WATER

2-ESS2-3 OBTAIN INFO ESS2.C PATTERNS

Presentation Style: Individual Class Visits Instructional Resources: PP presentation, interactive game and songs

Where does water come from? Where does water go? Students will explore water in its solid and liquid form, and discover how water moves between glaciers, rivers, and oceans. They will then play an interactive game and observe patterns of where water can be found and how it changes form from solid to liquid to ice.

CLASSIC CEE PROGRAMS

A, BEE, C'S OF THE HONEY BEE

Location: School/Madden

Location: SchoolPresentation Style: Assembly followed by Individual Class VisitsInstructional Resources: PP Presentation, animal artifactsOnly 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 to facts, this program will cover 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

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.



CLASSIC CEE PROGRAMS

ВАТ & МОТН

Location: School Presentation Style: Assembly followed by Individual Class Visits Instructional Resources: PP presentation, bat and moth specimens and game Students will play the role of bats and moths to get an idea of what it would be like to use a sense other than sight to catch prey. In addition to being a sensory game, students will learn about bats and their use of echolocation.

BIRDS & RAPTORS

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

Instructional Resources: PP presentation, preserved bird specimens and parts, bird guides, live avian 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

Presentation Style: 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 head outside to play butterfly hide and seek. After playing this game, they will discuss which butterflies were easiest to find and how animals use coloration for self-protection.

CLASSROOM POND STUDY

Location: School	Presentation Style: Individual Class Visits	Instructional Resources: PP presentation, pond specimens, identification charts, live animal ambassador
This program is designed for gro	oups 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 f	rom 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 p	ond.





COMPOSTING: NATURE'S RECYCLERS AND DECOMPOSERS

Location: School

Presentation Style: Assembly followed by 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.

CRAYFISH

Location: SchoolPresentation Style: Individual class presentationInstructional Resources: Animal artifacts, natural artifacts, crayfish diagrams, and live animal ambassadorsThere are over 500 different species of crayfish and about 350 of those are found in the United States! Besides being a food source, crayfish are also an indicator of the health of streams, ponds, and rivers.Students will learn about their basic anatomy and life cycle and the important role they play in the ecosystem, through a detailed presentation, artifacts, hand-on activities and exploration stations.

EARTH PORTABLE CLASSROOM (FEE)

Location: SchoolPresentation Style: Individual Classes but need an open space with a 23' ceilingInstructional Resources: Earth GlobeAvailable 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 2nd 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/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.

FEARSOME PREDATOR: CARRYING CAPACITY OF AN ECOSYSTEM (AVAILABLE AS AN EVENING PROGRAM)

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

This assembly program is available as an in-school program at your school as well as an evening program at a residential/overnight facility.



FOOD WEBS: WHO EATS WHOM?

Location: School Presentation Style: Assembly followed by Individual Class Visits Instructional Resources: Animal artifacts, hands-on simulation, live animal ambassador This interactive program introduces students to the daily flow of energy from the sun to producers and consumers. After learning how to classify animals based on their level in a food pyramid, students will participate in a hands-on simulation to help them understand how critical the balance of predators and prey is to the ecosystem by trying to create a sustainable food web system. During the presentation, students will meet a live animal ambassador and learn about its role in the ecosystem.

FOREST ECOLOGY

Location: School 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.

HIBERNATION/WINTER ADAPTATIONS/BLUBBER GLOVE

Location: School Presentation Style: Individual Class Visits Instructional Resources: PP presentation, animal artifacts, blubber experiment, live animal ambassadors There are four main methods animals use to survive the winter: go dormant, hibernate, migrate, or stay active. This program introduces students to each method, how it is done, and which animals use each method. During the interactive stations, students will examine animal pelts, preserved specimens and skulls of various animals that use each method, do an experiment to test the insulation quality of blubber and meet one of our animal ambassadors that would normally be dormant or hibernating in the wild.

INSECTS: INCREDIBLE CREATURES

Location: SchoolPresentation Style: Individual Class VisitsInstructional Resources: PP presentation, preserved insect specimens, live animal ambassador, insect guidesDid 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.

MAP MAKING ADVENTURE

Location: SchoolPresentation Style: Assembly/Individual Class VisitsInstructional Resources: Mapping boards and supplies, various map examples, optional presentationStudents 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.



MARINE ECOSYSTEMS

Location: School/Madden Presentation Style: Individual Class Visits Instructional Resources: Power Point 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

Location: School Presentation Style: Individual Class Visits Instructional Resources: PP presentation, animal artifacts, Native American artifacts, games and toys, 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. On trips to the Madden Outdoor Education Center, students will also visit a replica of a Native American wigwam.

NATURE ACTIVITIES TO RECONNECT WITH OUR NATURAL WORLD

Location: School Presentation Style: Individual Class Visits Instructional Resources: game supplies

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!

NATURE SCAVENGER HUNT

Location: School

Instructional Resources: scavenger hunt sheets, collection buckets, animal artifacts

Students will become detectives by using four of their five senses to search for a number of items in the outdoors such as a leaf, something round, water, or a live animal. Following the search, a discussion will focus on what they found and the role of those objects in our ecosystem.

NATURE STORY TELLING

Location: School Presentation Style: Individual Class Visits

Presentation Style: Individual Class Visits

Instructional Resources: animal artifacts, props, books

This program gives your students the opportunity to experience story telling in its purest form. Using animated voices, gestures, expressions and in some cases, songs, our story tellers will present a story with a nature or Native American theme that will engage and enthrall your students. This program can be tailored for specific items, shapes, smells, and numbers for primary students and may be adapted to include local history and folklore for older students. Specific preferences can be made.



NOCTURNAL WORLD OF NEW YORK

Location: School Presentation Style: Assembly followed by Individual 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.

No-TRASH LUNCH

Location: SchoolPresentation Style: Individual Class VisitsInstructional Resources: PP presentation, examples of different lunch packaging and recycling materialThe average elementary school produces 324 pounds of lunch trash every day. That adds up to 58,329 pounds a year! Not only is that a lot of trash to deal with, but a lot of the packaging gets used once and
thrown away. What a waste of natural resources! This program helps young people understand the consequences of throw-away lunches and how to pack a no-trash lunch.

POLLINATOR PARTNERSHIPS

Location: SchoolPresentation Style: Individual Class VisitsInstructional 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)

Location: SchoolPresentation Style: Individual Class VisitsInstructional Resources: models and live organisms from the pondStudents 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 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.

SEED STUDY

Location: School 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 an exploration of all of the different ways seeds travel. Following this introduction, students will play a game where they discover how hard it is for seeds to sprout, and why they are so valuable to the natural world.



SKULL STUDY

Location: School Presentation Style: Individual Class Visits Instructional Resources: PP presentation, animal skulls, animal artifacts, recording sheets

What conclusions can your students draw about an animal by observing its skull? This program begins with a presentation focused on the adaptations we can learn about from a skull. Working in small groups, students will examine the skull assigned to them and make observations of eye location, teeth configuration, nasal passageways, and size. They then share their data with the class and their hypothesis of what animal it came from.

SOIL - THE BASIS OF LIFE

Location: School Presentation Style: Individual Class Visits Instructional Resources: PP Presentation, hands on soil making experiment, live specimens, animal ambassadors, natural artifacts 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 (SEE WHERE DOES YOUR FOOD COME FROM?)

TREE LIFE CYCLE

Location: School 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.

TURTLES, FROGS, TOADS, SNAKES: WHAT'S THE DIFFERENCE?

Location: School Presentation Style: Individual Class Visits

Instructional Resources: PP presentation, animal artifacts, preserved animal specimens, photographs, live animal ambassador

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.



WEATHER SCI

Location: School

Presentation Style: Assembly followed by Individual Class Visits

Presentation Style: Individual Class Visits

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.

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

Location: School/MaddenPresentation Style: Individual Class VisitsInstructional Resources: PP presentation, food samples and gamesWhat 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 seedfrom 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

Location: SchoolPresentation Style: Assembly followed by Individual Class VisitsInstructional Resources: PP Presentation, live animal ambassadors, animal artifactsThis 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

Location: School

Instructional Resources: Hands-on investigation for animal evidence, live animal ambassador

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.



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