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<tr>
<th><strong>ALL NYSSLS</strong></th>
<th><strong>CONTENT</strong></th>
<th><strong>STANDARDS/CURRICULUM CONNECTION</strong></th>
<th><strong>LOCATION</strong></th>
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<tr>
<td>Daniel Novak, Program Coordinator</td>
<td>Sustainability</td>
<td>Ecosystem Studies</td>
<td>Earth Science</td>
<td>Living Things/Wildlife Agriculture &amp; Gardening</td>
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<td>PHONE: 914.248.2335, FAX: 914.248.2390</td>
<td>EMAIL: <a href="mailto:dnovak@pnwboces.org">dnovak@pnwboces.org</a></td>
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**KINDERGARTEN**

**Exploring the Weather with My Senses (NYSSLS)**
- + + + + U1 + + + +

**Forest Systems (NYSSLS)**
- + + + + U3 U2 + + + +

**Insects: Nature’s Architects**
- + + + + U3 + +

**Modeling Plant and Animal Systems (NYSSLS)**
- + + + + U3 + +

**Nocturnal Systems (NYSSLS)**
- + + + + U3 + +

**Pond Systems (NYSSLS)**
- + + + + U3 U2 + + + + +

**Wildlife, How Animals Change Their Environment**
- + + + + U3 + +

**1ST GRADE**

**Biomimicry Introduction: Nature’s Solutions to Human Problems (NYSSLS)**
- + + + + U3 +

**Birds and Wildlife Survival Behaviors (NYSSLS)**
- + + + + U3 + +

**Growing Up In a Pond: Similarities and Differences (NYSSLS)**
- + + + + U3 + + + + +

**How Nature Engineers for Winter Survival (NYSSLS)**
- + + + + U3 + +

**Nature’s Engineers: Insects (NYSSLS)**
- + + + + U3 + +

**2ND GRADE**

**Animal Systems Mystery: Case of the Lost Predator (NYSSLS)**
- + + + + U3 U2, U4 + +

**Birds, Bats, Butterflies and Blooms: What’s the Connection? (NYSSLS)**
- + + + + U3 U4 + +

**Erosion: Changing the face of our planet (NYSSLS)**
- + + + + U2 + +

**Ingredients for a Diverse Ecosystem (NYSSLS)**
- + + + + U3 + +

**Pond Pie: Ingredients for a Diverse Habitat (NYSSLS)**
- + + + + U1, U3 U2 + + + + +

**Seed Dispersal and Pollination: Journey of a Seed (NYSSLS)**
- + + + + U3 + +

**Where is Water Found: Amazing Journey of Water (NYSSLS)**
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EXPLORING THE WEATHER WITH MY SENSES (NYSSLS GRADE K)

*Location: School  Presentation Style: Individual Class Visits*

*Instructional Resources: Hands-on senses stations, weather data sheets, live animal ambassador*

This program introduces students to the various kinds of weather we have in the Hudson Valley. Through engaging and a hands-on presentation, students will learn what makes weather and how meteorologists measure and record weather conditions. The class will make its way outside and use real meteorology tools to gather weather data, then analyze the data and look for local weather patterns.

FOREST SYSTEMS (NYSSLS GRADE K)

*Location: School  Presentation Style: Individual Class Visits*

*Instructional Resources: pictures of plants and animals, soil compaction experiment*

Beginning with an introduction to the forest habitat, students will establish the pattern of what all living things need to survive. They will make observations of living organisms during an interpretive walk, discover what causes positive and negative impacts to the forest, and learn how to reduce their impact on the forest while in the classroom.

INSECTS: NATURE’S ARCHITECTS (NYSSLS GRADE K)

*Location: School  Presentation Style: Individual Class Visits*

*Instructional Resources: Projector, insect mounts, live animal ambassador*

Students will learn the basic parts of an insect and then make the claim that “Insects can change their environment”. While investigating three insects, students will observe the pattern that animals change the environment to meet their needs and use those insects as evidence to support or refute their claim. The program concludes with a hands-on activity and a live animal ambassador that will be used as more evidence to support the claim made at the beginning of the program.

MODELING PLANT AND ANIMAL SYSTEMS: THE BEAR AND THE BEECHNUT (NYSSLS GRADE K)

*Location: School  Presentation Style: Individual Class Visits*

*Instructional Resources: Animal artifacts, beech nuts, animal artifacts and laminated pictures, live animal ambassador*

Using animal and plant artifacts from different habitats, students will draw models of plants and animals getting what they need from the places they live and the system of which they are a part. A live animal ambassador will be brought to the class for students to explore and to demonstrate what part an animal plays
in the habitat it lives. This program contains a formative assessment of the models that students will create and provides a follow up assessment that teachers can use.

**Nocturnal Systems (NYSSLS Grade K)**

*Location: School  Presentation Style: Individual Class Visits*

*Instructional Resources: Projector, animal artifacts, live animal ambassador*

While exploring mixed media, animal artifacts and a live nocturnal mammal, students will determine why some animals are nocturnal and what adaptations they have that make them creatures of the night. Students will then be tasked in arguing what makes humans and nocturnal animals different by creating a comparison of what each animal-type needs to survive and thrive!

**Pond Systems (NYSSLS Grade K)**

*Location: School  Presentation Style: Individual Class Visits*

*Instructional Resources: live pond specimens, live animal ambassador, pictures and ID keys*

Students will learn about and explore what lives in a pond, how organisms that live in a pond get what they need, and what makes a pond a system. Students will be get to interact with live pond specimen create interactive pond systems models that demonstrate how plants and animals that live in a pond get what they need.

**Wildlife, How Animals Change Their Environment (NYSSLS Grade K)**

*Location: School  Presentation Style: Individual Class Visits*

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

Using media, models, and a live animal to gather evidence students will explore and discover how plants and animals can change their environment. A live animal ambassador will be brought for the class to examine and determine what part the animal plays in a system. Students will be able to use evidence to explain how plants and animals change the environment to meet their needs by the end of the program.

**Biomimicry Introduction: Nature’s Solution to Human Problems (NYSSLS Grade 1)**

*Location: School  Presentation Style: Individual Class Visits*

*Instructional Resources: Projector, biomimicry products*

This program will use actual bio-inspired products to help students better understand nature as a source of ideas and the concept of bio-inspired design. Students will participate in an exercise that asks them to be the biomimicry engineers tasked with creating a new technology which will help a human to survive while hiking through New York State. Students will be given the chance to present their biomimicry design to the group and come up with inspiration and human problems of their own to design after the program. (Follow up activity provided to teachers post-program).

**Birds & Wildlife Survival Behaviors (NYSSLS Grade 1)**

*Location: School  Presentation Style: Individual Class Visits*

*Instructional Resources: Projector, animal artifacts, live animal ambassador*
Looking at birds and other wildlife, students will examine the patterns in survival behaviors. By examining animal artifacts and media and playing a survival game, students will explore various survival techniques including vocalizations and camouflage. Students will also engage in observation of a live animal ambassador, learn what survival behaviors help the animal, and how those techniques are used by adults to protect their young.

**GROWING UP IN A POND: SIMILARITIES AND DIFFERENCES (SPRING ONLY) (NYSSLS GRADE 1)**

*Location: School  Presentation Style: Individual Class Visits*

*Instructional Resources: Projector, insect mounts, live animal ambassadors*

Using artifacts, live animals (availability based on weather conditions), and media, students will explore the lifecycles of some plants and animals that live in a pond. They will make observations of structures and patterns to determine the similarities and differences between adults and juveniles. As an in-class assessment, students will be given numerous pictures and artifacts of juvenile animals and be asked to identify the juvenile stage of one pond animal and explain.

**HOW NATURE ENGINEERS FOR WINTER SURVIVAL (NYSSLS GRADE 1)**

*Location: School  Presentation Style: Individual Class Visits*

*Instructional Resources: Projector, plant and animal artifacts, live animal ambassador*

Students will be introduced to how animals use their external body parts to survive in the winter. Through the exploration of animal artifacts, students will use structure and function as evidence to determine which animals go dormant, migrate, and stay active. The program will conclude with an introduction to Biomimicry and several devices that are bio-inspired in design to mimic external animal structures that help humans survive and meet their needs. A post program design activity will be provided. The activity asks students to pick a human problem and choose one external body part that helps plants and animals survive winter to inspire a design solution to their chosen problem.

**NATURE’S ENGINEERS: INSECTS (NYSSLS GRADE 1)**

*Location: School  Presentation Style: Individual Class Visits*

*Instructional Resources: Projector, insect mounts, live animal ambassador*

Students will be introduced to how insects use their external body parts to survive. Through the exploration of unique artifacts, students will use structure and function as evidence to determine which animals are insects and which are not. The program concludes with an introduction to biomimicry and a design activity using a particular insect and its unique way of capturing water to inspire design solutions that they could use to collect water.

**ANIMAL SYSTEM MYSTERY: CASE OF THE LOST PREDATOR (NYSSLS GRADE 2)**

*Location: School  Presentation Style: Individual Class Visits*

*Instructional Resources: Projector, animal artifacts, live animal ambassador*

What went wrong in Yellowstone? This program investigates the historical case of the trophic 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? (NYSSLS GRADE 2)**

*Location: School  Presentation Style: Individual Class Visits*

*Instructional Resources: Projector, 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.

**EROSION: CHANGING THE FACE OF THE PLANET (NYSSLS GRADE 2)**

*Location: School  Presentation Style: Individual Class Visits*

*Instructional Resources: Projector, hands-on water activity*

Our planet has been shaped by the forces of weathering and erosion! Students will begin this program with a presentation and exploration of the changing face of our planet. They will connect the dots between weathering, erosion and how these processes create the unique and diverse beauty of our planet. This program includes an interactive challenge for students to put their knowledge to the test, using stream tables to try and construct a geologically stable environment (wet activity).

**Geology: Land and Water Modeling (NYSSLS GRADE 2)**

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

*Instructional Resources: Projector, Geological artifacts, hands-on student experiments at stations*

Rock are also subject to fast and slow changes. In this exploratory program students will explore how rock are formed and changed through natural processes on the earth (weathering) and transported around the earth (erosion). This program serves as a good transition between rock changes and erosion in the SCI 21 2nd grade curriculum.

**INGREDIENTS FOR A DIVERSE HABITAT (NYSSLS GRADE 2)**

*Location: School  Presentation Style: Individual Class Visits*

*Instructional Resources: Projector, animal artifacts, live animal ambassador*

Using unique artifacts, stunning visual aids and the creation of a living model ecosystem, students will look deep into the biodiversity of forest and wetland ecosystems. Using their observations, students will engage in finding evidence to either support or refute the claim that Ecosystems have different parts which all rely on each other and are important.

**POND PIE: INGREDIENTS FOR A DIVERSE HABITAT (NYSSLS GRADE 2)**

*Location: School  Presentation Style: Individual Class Visits*

*Instructional Resources: live pond specimens, live animal ambassador, pictures and ID keys*

Students will explore a local 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 (NYSSLS GRADE 2)**

*Location: School  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.

**WHERE IS WATER FOUND? THE AMAZING JOURNEY OF WATER (NYSSLS GRADE 2)**

*Location: School  Presentation Style: Individual Class Visits*
*Instructional Resources: Projector, 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.

**BIG CHANGES FOR A SPECIES: THE COYOTE (NYSSLS GRADE 3)**

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

No two coyotes are the same! In this program, students will analyze the differences between the Eastern and Western coyotes of North America using pelts, skulls and scientific data and graphics. After making their observations, students will construct explanations as to how the two coyote species ended up becoming so very different and dominant in their own habitats.

**FAMILY GROUPS: HERDS, FLOCKS AND SCHOOLS (NYSSLS GRADE 3)**

*Location: School  Presentation Style: Individual Class Visits*
*Instructional Resources: Projector, plant and animal artifacts, live animal ambassador*

Students will participate in one or more team building activities involving their entire class as animals, working towards the common goal of gaining resources. Then, students will engage in a short assembly presentation about different species of animals that live in groups. Finally, students will be asked to explain why an animal would need to live in a group, based on evidence gained from the previous activities.

**FORCES AND INTERACTIONS (NYSSLS GRADE 3)**

*Location: School  Presentation Style: Individual Class Visits*
*Instructional Resources: Magnet and magnetic/non-magnetic material, hands-on cleanup simulation*
Magnets, a fun toy to play with and a useful tool to hold your report card on the fridge. Magnets are an important part of our lives, but how can they be used for the greater good? In this NYSSLS program, students will learn the basics of magnetism, how we observe them and use them in our lives. As we develop a more mature understanding of practical magnets, we will run a fun, hands on investigation of how magnets can be used for low impact environmental cleanup.

**PEPPERED MOTH: CASE OF THE COLOR CHANGING CREATURE (NYSSLS GRADE 3)**

*Location: School    Presentation Style: Individual Class Visits*

*Instructional Resources: Projector, animal artifacts, game supplies*

Why did the Peppered Moth population change color between 1800 and 1900? Students will learn some background information about Manchester, England, the Industrial Revolution, and what patterns were being observed in the Peppered Moth population, then use this evidence to construct an explanation about what was causing the color change. They will also perform an investigation to demonstrate this classic example of natural selection.

**SPECIES VARIATION (NYSSLS GRADE 3)**

*Location: School    Presentation Style: Individual Class Visits*

*Instructional Resources: Projector, hands on student activity, animal artifacts*

Does every individual in a species look the same? Students will learn about variation of traits through an interactive presentation and viewing two similar live animals. They will also practice making claims supported by evidence and reasoning during an activity designed to help them better understand how offspring are “like but not exactly like” their parents.

**CAN YOU BREAK THE CODE? (NYSSLS GRADE 4)**

*Location: School    Presentation Style: Individual Class Visits*

*Instructional Resources: Projector, various code relaying devices*

Students will be introduced to communication patterns found in nature, learning about the bee’s waggle dance, the chickadees songs and calls, and the lightning bugs light show. They will then be challenged to use available tools to effectively communicate a message with patterns to their classmates and collectively evaluate how each pattern usage was in conveying the information.

**DESIGNING FOR HIKING HAZARDS (NYSSLS GRADE 4)**

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

*Instructional Resources: Projector, hands-on activities*

Students will be assigned to a particular famous international hiking destination and given a surprise weather/natural hazard. Each student will receive a “trading card-like” reference which will let them know typical hiking conditions, map out the hike with a key marking high impact zones, as well as local flora and fauna and their adaptations. Students will be asked to design a piece of bioinspired equipment that will help them to remain safe and lessen the impact of the natural event. Students should be able to create a model of the equipment they design as well as explain the structure and function of their designs.

**ENERGY FUELING MOTION (NYSSLS GRADE 4)**

*Location: School    Presentation Style: Individual Class Visits*
**Instructional Resources:** Projector, live animal, hands-on water activity
Students will obtain information regarding the average movement and physical activity of reptiles (ectothermic) during different times of the year/day. Using this information, students will make observations regarding how the presence of energy, specifically sunlight and food, positively impacts the average movement of the animal. Students will then use this information to design a model car that can operate under different conditions understanding the requirements of propulsion.

**FISHING WITH THE DOLPHINS (NYSSLS GRADE 4)**
*Location: School  Presentation Style: Individual Class Visits*
*Instructional Resources: Projector, hands-on water activity*
Students will explore the concept of waves by observing how waves are used by bottle-nosed dolphins in order to hunt fish. They will then have to utilize the different properties of waves to solve the problem of getting a stuffed animal from a giant parachute into a “feeding” container. They will use their knowledge and their new experience to then discuss how waves are and can be used by them and others in and around the world.

**FOSSILS TELL THE STORY (NYSSLS GRADE 4)**
*Location: School  Presentation Style: Individual Class Visits*
*Instructional Resources: Projector, hands-on water activity*
What stories do fossils tell us? In this hands-on program, students will have the opportunity to hunt for fossils among the contents from a specific Tri-State area stream, identify patterns of the rock layers and the fossils, and use them as evidence to support their explanation of whether that site has changed over time. They will then examine other sites and explain the story of those locations.

**SENSORY STORY (NYSSLS GRADE 4)**
*Location: School  Presentation Style: Individual Class Visits*
*Instructional Resources: Projector, animal artifacts, hands-on activity*
Students will be broken into groups where they will have a particular box which represents a forest ecosystem from the prospective of a particular sense. Each box will allow students to isolate a particular one of their five senses. They all will use the box corresponding with their group, and use their perception and memory of how the ecosystem was being represented in the box to collaborate their findings and create a model of the ecosystem as a class.