<table>
<thead>
<tr>
<th>Grade 9-12</th>
<th>CONTENT</th>
<th>STANDARDS/CURRICULUM CONNECTION</th>
<th>LOCATION</th>
<th>SPECIAL NOTE</th>
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<tr>
<td><strong>NYSSLS Aligned Programs Available 2nd Semester of the 2019/20 School Year</strong></td>
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### Grade 9-12

**NYSSLS Aligned Programs Available 2nd Semester of the 2019/20 School Year**

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<th>Program</th>
<th>Sustainability</th>
<th>Ecosystem Studies</th>
<th>Earth Science</th>
<th>Living Things/Wildlife</th>
<th>Agriculture &amp; Gardening</th>
<th>Social Studies</th>
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<th>NYS SEL Benchmarks</th>
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<th>Yorktown BOCES</th>
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<th>Live Animal</th>
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**To choose this program 1) select “OTHER…” from the program drop-down and 2) write the name of the program into the comments section.**
**BIOGRAPHY OF A STRAWBERRY: A SYSTEMS FABLE**

*Location: School  Presentation Style: Individual Class Visits*

*Instructional Resources: Projector*

This program presents two systems fables: the story of a typical North American strawberry and one of a locally grown strawberry. Both fables are told through a PowerPoint and follow the strawberry from the development of the seed to its planting, growing, picking and shipping to our table. Then the students are asked to compare the resources that go into making each agricultural process happen and the waste that is produced in order to have a better understanding about sustainable food systems.

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

*Location: School  Presentation Style: Individual Class Visits*

*Instructional Resources: Projector, biomimicry products*

What is the connection between a $100 bill and a beetle or a window pane and spider’s web? Students will explore the abundance of connections that Biomimicry creates between humans and our natural world in this hands-on program. 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 solving a human problem.

**BIRDS & RAPTORS**

*Location: School  Presentation Style: Individual Class Visits*

*Instructional Resources: Projector, 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 observe these adaptations on a live ambassador bird of prey.

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

*Location: Yorktown BOCES  Presentation Style: Small Group (12)*

*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.**
COMPASS SKILL BUILDING
Location: School  
Presentation Style: Individual Class Visits
Instructional Resources: Compasses, Orienteering trail

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

COMPOSTING: NATURE’S RECYCLERS AND DECOMPOSERS
Location: School  
Presentation Style: Assembly/Class Visits
Instructional Resources: Projector, 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: Projector, live animal ambassadors, Animal Artifacts

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

EARTH PORTABLE CLASSROOM (FEE)
Location: School  
Presentation Style: Individual Classes but need an open space with a 23’ ceiling
Instructional Resources: Earth Globe

Available in late May to early June, this unique program brings a 20’ high x 22’ diameter hand-painted representation of our earth into your school. Your class will enter the globe through a zipper along the International Dateline in the Pacific Ocean. Once inside, students can participate in activities covering continents, oceans, mountains, rivers, cities, geographic terms and places in the news. They may also discuss environmental issues such as rainforests, coral reefs, ozone, pollution, and growing deserts. Program length is 40 minutes for 2nd grade. The globe can accommodate no more than 25 students. NO MORE THAN six programs can be done in one day. Program Cost: 1 program day + $150 (the rental fee for the globe)/member, $800/non-member for a full day (no more than 6 programs) (this program is eligible for state aid through the environmental CO-SER)

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

**EROSION BY WATER**

*Location: School  Presentation Style: Individual Class Visits  Instructional Resources: Projector, hands-on water activity*

Water is the most destructive force on Earth! Through a presentation and a water based hands-on water erosion activity, students will learn how shapes our planet through breaking it down, moving it around, and even building it up. Students will make the connection between water and the ever-changing face of our planet.

**EXAMINING INVASIVE & NATIVE COMPETITION**

*Location: School  Presentation Style: Individual class presentation  Instructional Resources: PowerPoint presentation, animal and natural artifacts*

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

**FEARSOME PREDATOR: CARRYING CAPACITY OF AN ECOSYSTEM**

*Location: School  Presentation Style: Individual Class Visits  Instructional Resources: Projector, 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.
Location: School/Yorktown BOCES  Presentation Style: Individual Classes Outside if Possible  
Instructional Resources: Introduction using Live Animal Ambassadors, Animal Artifacts with interpretive hike to follow  
The focus of this program is a guided hike on a local nature trail. Using interpretive stops, games, and ‘hands-on’ activities, the students will be introduced to the temperate forest and the relationships between the habitat and its inhabitants. This program can be adapted to any grade level and many focus areas including food webs, human impact, sustainable management, problem solving, living and non-living things, and wildlife. A forest ecology program can also include a plot study, forest measurements, and tree identification.

FOREST MEASUREMENTS/PLOT STUDY  
Location: School/Yorktown BOCES  Presentation Style: Individual Class Visits  
Instructional Resources: short Projector, Forestry equipment, Tree/plant specimens  
Trees come in all shapes and sizes and are an excellent tool for a mathematical exercise! Students will measure trees to become familiar with the tree structure as they learn the importance of measuring techniques and standard units of measurement. Activities will vary based on the grade level. Tools and skills include: Biltmore stick, ruler, diameter tape, and pacing.

HOW BEAVERS BUILT THE HUDSON VALLEY  
Location: School  Presentation Style: Assembly followed by individual class visits  
Instructional Resources: Projector, animal ambassador, animal artifacts, and Native American Artifacts  
The ingenious beaver played an important role in the economic, cultural and ecological development of the Hudson Valley that can still be seen today. This program will use furs and skulls to introduce students to the beaver and what made its pelt so valuable. We will examine chew patterns to understand the beaver’s unique ability to alter its environment. Then through a detailed and hands-on presentation, we will examine the beaver’s place in the Hudson River’s ecology; how the beaver trade influenced the relationship between the colonists and the Native Americans; the impact of the beaver trade on local tribes, why the beaver is on the official seal of New York City; the impact of their decline on the 18th century economy as well as the environment of the Valley, and how their return has had both positive and negative impacts for residents of the Hudson Valley.

HUDSON RIVER  
Location: School  Presentation Style: Assembly followed by Individual Class Visits  
Instructional Resources: Projector, animal ambassador, animal artifacts, hands-on water activity  
The Hudson River has played a dominant role in the history of New York State. Through discussion and an engaging presentation, this program will explore the history and ecology of the Hudson River. Special emphasis is placed on the river’s ecological problems, the condition of the river today, current events, and the future of the Hudson. Through a hands-on activity using water and pollution simulations, students will actualize their role as caretakers of the Hudson River Watershed to understand the effects of pollution on the aquatic and terrestrial life in and around the Hudson.

I’M ONLY ONE PERSON, WHAT CAN I DO? – Large Group Assembly
Location: School  Presentation Style: Assembly  
**Instructional Resources: Projector, materials related to sustainability**

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

**MAPPING YOUR SCHOOL’S ECOLOGICAL RESOURCES**

Location: School  Presentation Style: Individual Class Visits  
**Instructional Resources: Introduction, biological field study and animal artifacts**

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

**MARINE ECOSYSTEMS**

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

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

**OFF-SITE POND STUDY**
Location: Local Pond or wetland    Presentation Style: Individual Class Visits
Instructional Resources: Pond exploration materials and instruments

This program will bring students out of the classroom and into a pond ecosystem! Schools have the option to choose a local pond area where their students will learn to use CEE provided 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 and expert Naturalists. They will learn about metamorphosis, interdependence, food chains, some of the organism's fascinating adaptation as well as the conditions necessary for a healthy pond.

**Oil Spills: Where Did the Oil Go?**

**Location: School**    **Presentation Style: Individual Class Visits**
**Instructional Resources: Projector, hands-on experiment**

Approximately 206 million gallons of oil 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? What was the effect of the spill on local ecosystems and human health? This program will examine these questions as well as how nature is helping to clean up some of the oil through the molecular and microbial food web. We will also look at how human efforts to clean up the oil have affected local environments, where hidden oil is still being found today and some of the long term economic and environmental goals. **This program can be done as a 1-hour assembly for a full grade level or done as an in-class program for individual classes throughout the day.**

**Orienteering**

**Location: Yorktown BOCES**    **Presentation Style: Individual Class Visit**
**Instructional Resources: Compasses interactive compass and pacing activity, orienteering trails**

During this full day program at Yorktown BOCES, 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 Yorktown BOCES. Orienteering is also a very effective way to increase student independence and confidence while also spending time outside. Depending on preference and comfort, individuals and pairs of students may be invited to develop themselves with independent orienteering challenges.

**Owl Pellet Study (Material fee)**

**Location: School**    **Presentation Style: Assembly followed by Individual Class Visits**
**Instructional Resources: Projector, Live owl ambassador, animal artifacts**

Owls are very unique birds that have fascinated humans throughout history. In this program, students will learn about their hunting and survival adaptations. They will be introduced to the sights and sounds of the owls native to New York State, and meet one of our resident ambassador owls! Following a discussion about the owl’s unique digestive system, students will have the opportunity to dissect an owl pellet to determine what that owl had for dinner to help them understand the owl’s role in the ecosystem! **Your district will be billed a material fee of $2.50 per student.**

**Secret Life of the American Hamburger & Other Foods We Love**
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 several common food items along with healthy, locally produced alternatives. Using the analysis of each system, students will be asked to create an argument, using evidence, on the sustainability of each. This program can be done as a 1-hour assembly for a full grade level or done as in-class program for individual classes throughout the day.

**SKULL STUDY**

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

**TEAM BUILDING**

*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 to support Dignity Act Initiatives.

**THE EXTRAORDINARY JOURNEY OF ORDINARY STUFF**

*Location: School  Presentation Style: Individual class visits  Instructional Resources: Projector, life cycle analysis boards*

What do sneakers, a cell phone and a pencil have in common? This program will examine everyday items such as these as well as sneakers and t-shirts using a cradle to grave assessment and an interactive mapping activity to help students better understand the extraordinary amount of natural resources and energy used to manufacture and transport these items around the globe. Students will leave with a new prospective as they discover how these everyday items are far more complex than imagined, along with the realization that "away" is not a reality on our crowded planet.
Tropical rainforests are home to more than half of the plant and animal species on Earth and are the oldest and most diverse ecosystems on our planet today! Yet deforestation of these amazing ecosystems is occurring at a rate of over 20 million acres of forests each year. Students will learn about the locations of rainforests around the world, the layers of a rainforest, and the unique plants and animals that inhabit them. Interactive stations with colorful and rare artifacts will give students a hands-on opportunity to discover more of the animals, products, and cultures found in these rainforests. This program will include a live animal ambassador during the stations.

UNDERSTANDING THE COMMONS

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

UNDERSTANDING THE CONSEQUENCES OF ECOSYSTEM MANIPULATION

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.

WEATHER

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?

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.
**Instructional Resources: Projector, interactive student activity, materials related to sustainability**

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

**WILDLIFE**

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

**Instructional Resources: Projector, pelts, skulls, shells, claws, artifacts, models and live animals**

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**

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

**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.