

Kindergarten – 2nd Grade

Weather Works: Measuring Weather and Climate (2-hour visit)

Overview: Students will explore, observe, and measure a variety of elements of weather, using simple tools and equipment and will compare their observations to those captured by a digital weather station. Students will conduct hands-on nature explorations that focus on how temperature changes based on the local environment. They will also create their own weather reports in small groups.

Associated Academic Standards:

Kindergarten

- 3.1.K.C3- CONSTANCY AND CHANGE Describe changes that occur as a result of climate.
- 3.2.K.A5 - CONSTANCY AND CHANGE Recognize that everything is made of matter.

1st Grade

- 3.2.1.B3- Observe and record daily temperatures. Draw conclusions from daily temperature records as related to heating and cooling.

2nd Grade

- 3.2.2.A4- Experiment and explain what happens when two or more substances are combined (e.g. mixing, dissolving, and separated (e.g. filtering, evaporation)).
- 3.2.2.A5- CONSTANCY AND CHANGE Recognize that everything is made of matter.
- 3.2.2.B2- Explore and describe how different forms of energy cause changes. (e.g., sunlight, heat, wind)

Habitats Essentials: Food, Water, Shelter, and Space (2-hour or 4-hour visit)

Overview: Students learn about the 4 essential things that habitats provide to living things through interactive games, using iPads to take pictures in different habitats, and conducting an insulation experiment.

Associated Academic Standards:

Kindergarten

- 4.1.K.A- Identify the similarities and differences of living and non-living things within the immediate and surrounding environment
- 4.1.K.D- Observe and describe what happens to living things when needs are met
- 4.2.K.C- Identify that there are living and nonliving components in an aquatic habitat

1st Grade

- 3.1.1. A5- Investigate the dependence of living things on the sun's energy, water, food/nutrients, air, living space, and shelter.
- 3.1.1.C3- Describe changes that occur as a result of habitat
- 4.1.1.A- Identify and describe the basic needs of living things in a terrestrial habitat

2nd Grade

- 3.1.2.C2- Explain that living things can only survive if their needs are being met.
- 4.1.2.A- Describe how a plant or an animal is dependent on living and nonliving things in an aquatic habitat.
- 4.3.2.A- Describe the jobs/hobbies people have in the community that relate to natural resources.

What Am I?: Animal Classification (2 hour visit)

Overview: Students learn how to classify mammals, reptiles, birds, mammals and amphibians through small and large group activities and by meeting several of Asbury Woods' ambassador animals. They also go on a hike to learn about adaptations and what animals live where.

Associated Academic Standards:

Kindergarten

- 3.1.K.A5- Observe and describe the structures and behaviors of a variety of common animals.
- 3.1.K.A5- Observe and describe the structures and behaviors of a variety of common animals.
- 3.1.K.C2- Describe changes animals and plants undergo throughout the seasons.

1st Grade

- 3.1.1.A1- Identify the similarities and differences of living and non-living things.

Maple Magic: Energy Flow from Sun to Syrup (2 hour visit)

Overview: Students will learn how maple trees make sap, why it is important to them, and be introduced to the concept of photosynthesis. They will tour Asbury Woods' syrup-making process and sugar shack, and learn about the structure of trees. This visit is best done during maple syrup season February-March.

Associated Academic Standards:

3.2.K.B6/3.2.1.B6/3.2.2.B6: Recognize that light from the sun is an important source of energy for living and nonliving systems and some source of energy is needed for all organisms to stay alive and grow.

Kindergarten

- 3.1.K.C2: Describe changes animals and plants undergo throughout the seasons.
- 3.1.K.C3: Describe changes animals and plants undergo throughout the seasons.

1st Grade

- 3.1.1.A2: Investigate the dependence of living things on the sun's energy, water, food/nutrients, air, living space, and shelter.
- 4.1.1.A: Identify and describe the basic needs of living things in a terrestrial habitat.
- 4.1.1.E: Describe the seasons and describe how the change of the season affects living things.
- 4.3.1.A: Identify some renewable resources used in the community.
- 4.5.1.A: Identify resources humans use from the environment.
- 3.1.1.A5: Identify and describe plant parts and their function.

2nd Grade

- 3.1.2.A5: Explain how different parts of a plant work together to make the organism function.
- 3.1.2.C2: Describe changes animals and plants undergo throughout the seasons.
- 4.5.2.A: Identify the natural resources used to make various products.

New Beginnings: Growth and Development of Living Things (2 hour visit)

Overview: Students discover how plants and animals grow and develop from the very start of their lives. They will explore different shaped seeds, walk outside to “find” eggs, and meet several Asbury Woods ambassador animals and learn whether they began life as eggs or from live birth.

Associated Academic Standards:

Kindergarten

- 3.1.K.A3- Observe, compare, and describe stages of life cycles for plants and/or animals.
- 4.1.K.D- Observe and describe what happens to living things when needs are met.
- 4.4.K.C- Observe and describe stages of life cycles for plants and animals.

1st Grade

- 3.1.1.B1- Grow plants from seed and describe how they grow and change. Compare to adult plants.
- 4.1.1.A- Identify and describe the basic needs of living things in a terrestrial habitat.
- 4.4.1.C- Describe the life cycles of different plants and animals in a terrestrial habitat.

2nd Grade

- 3.1.2.A3- Identify similarities and differences in the life cycles of plants and animals.
- 3.1.2.C2- Explain that living things can only survive if their needs are being met.
- 4.1.2.D- Identify differences in living things (color, shape, size, etc.) and describe how adaptations are important for survival.
- 4.4.2.C- Examine life cycles of plants and animals in an aquatic habitat.

3rd Grade- 5th Grade

The Power of Water: The Role of Water in Shaping the Earth (4 hour visit)

Overview: Students will use models and diagrams to explain the distribution and forms of water and water environments. The students will explore, observe, and predict the effects of water on the Earth’s surface utilizing virtual and actual manipulative models and actual waterways and landforms created over time by the energy of the flowing water. They will also see how manipulation of the land by humans can influence the flow and effects of water on the Earth’s surface.

Associated Academic Standards:

4th Grade

- 4.3.4.A- Identify ways humans depend on natural resources for survival. Identify resources used to provide humans with energy, food, employment, housing and water.
- 3.3.4.A1: Recognize that the surface of the earth changes due to slow processes and rapid processes.
- 3.3.4.A4: Recognize Earth’s different water resources, including both fresh and saltwater.
- 3.3.4.A5: Describe phase changes in the forms of water on Earth.

5th Grade

- 3.3.5.A1: Describe how landforms are the result of a combination of destructive forces such as erosion and constructive erosion, deposition of sediment, etc.
- 3.3.5.A4: Explain the basic components of the water cycle.
- 3.3.5.A1: Describe how landforms are the result of a combination of destructive forces such as erosion and constructive erosion, deposition of sediment, etc.
- 4.1.5.B- Explain the basic components of the water cycle.

Feeding Frenzy: Exploring Food Chains and Food Webs (2 or 4 hour visit)

Overview: Students will learn about food chains, food webs, and the scientific process. They will conduct a plot study outside, compare and contrast soils from different habitats, play a game to learn about predator/prey interactions, and explore food chains and webs in small groups.

Associated Academic Standards:

3rd Grade

- 3.2.3.B6- ENERGY Recognize that light from the sun is an important source of energy for living and nonliving systems and some source of energy is needed for all organisms to stay alive and grow.
- 3.3.3.A1- Explain and give examples of the ways in which soil is formed.

4th Grade

- 3.1.4.A1- Classify plants and animals according to the physical characteristics that they share.
- 3.1.4.A2- Describe the different resources that plants and animals need to live.
- 3.2.4.A1- Identify and classify objects based on their observable and measurable physical properties. Compare and contrast solids, liquids, and gases based on their properties.
- 4.1.4.B- Identify how matter cycles through an ecosystem. Trace how death, growth, and decay cycle matter through an ecosystem.
- 4.4.4.C- Use scientific inquiry to investigate the composition of various soils.
- 4.5.4.C- Describe how human activities affect the environment.

5th Grade

- 3.1.5.A2- Describe how life on earth depends on energy from the sun.
- 4.1.5.A- Describe the roles of producers, consumers, and decomposers within a local ecosystem.
- 4.1.5.C- Describe different food webs including a food web containing humans.

Advanced Standards

- 3.1.7.A8- Apply the appropriate models to show interactions among organisms in an environment.
- 3.1.6.A2- Describe how energy derived from the sun is used by plants to produce sugars (photosynthesis) and is transferred within a food chain from producers (plants) to consumers to decomposers.

EcoSeekers: Discovering, Protecting and Restoring Healthy Ecosystems (4 hour visit)

Overview: Students will use a variety of field equipment and tools to measure abiotic conditions and identify biotic components of three distinct ecosystems; wetland, field, and forest. They also learn how to use a compass and complete a compass course

Associated Academic Standards:

3rd Grade

- 3.1.3.A2 – Describe the basic needs of living things and their dependence on light, food, air, water, and shelter.
- 4.1.3.A - Differentiate between the living and non-living components in an environment.
- 4.1.3.D - Identify organisms that are dependent on one another in a given ecosystem. Define habitat and explain how a change in habitat affect an organism
- 4.1.3.E- Identify changes in the environment over time
- 4.2.3.B- Identify plants and animals found in a wetland

4th Grade

- 3.1.4.A2- Describe the different resources that plants and animals need to live.
- 3.1.4.A5- Describe common functions living things share to help them function in a specific environment.
- 3.1.4.B5- Identify observable patterns in the physical characteristics of plants or groups of animals.
- 3.1.4.C2- Describe plant and animal adaptations that are important to survival.
- 4.1.4.A- Explain how living things are dependent upon other living and nonliving things for survival.
- 4.1.4.B- Identify how matter cycles through an ecosystem. Trace how death, growth, and decay cycle matter through an ecosystem
- 4.1.4.C - Explain how most life on earth gets its energy from the sun.
- 4.1.4.D - Explain how specific adaptations can help organisms survive in their environment.
- 4.1.4.E- Explain that ecosystems change over time due to natural and/ or human influences.

5th Grade

- 3.1.5.A2- Describe how life on earth depends on energy from the sun.
- 4.1.5.A - Describe the roles of producers, consumers, and decomposers within a local ecosystem.
- 4.4.5.C - Investigate the factors influencing plant and animal growth. (e.g., soil, water, nutrients, and light)

Metamorphosis and More: Discovering Life Cycles (2 or 4 hour visit)

Overview: Students will learn all about animal life cycles, including complete and incomplete metamorphosis, through role playing, by meeting and observing animals at Asbury Woods, and by exploring animals that living in vernal pools.

3rd Grade

- 3.1.3. A3 – Illustrate how plants and animals go through predictable life cycles that include birth, growth, development, reproduction, and death.
- 3.1.3.B1 – Understand that plants and animals resemble their parents
- 3.1.3.C2 – Describe animal characteristics that are necessary for survival.

4th Grade

- 3.1.4.A3- Identify the differences in the life cycles of plants and animals
- 3.1.4.A8- Construct and interpret models and diagrams of various animals and plant life cycles
- 3.1.4.B1 – Describe features that are observable in both parents and their offspring.
- 3.1.4.C2 – Describe plant and animal adaptations that are important to survival.

5th Grade

- 3.1.5.A3 – Compare and contrast the similarities and differences in the life cycles of different organisms.
- 3.1.5.B1- Differentiate between inherited and acquired characteristics of plants and animals

- 4.4.5.C- Investigate the factors influencing plant and animal growth (e.g. soil, water, lights, and nutrients)
- 3.1.5.C2- Give examples of how inherited characteristics may change over time as adaptations to changes in the environment that enable organisms to survive

The Earth is My Home: Measuring the Human Impact on Earth’s Resources

Overview: Students will explore the impact that humans have on the Earth and learn how they can reduce their impact. Through interactive activities, a hike, and real-life examples, the students will learn about natural resources and how humans use them. They will also go on a hike to learn about invasive species and play a game to learn about human impacts on the environment.

Associated Academic Standards:

4th Grade

- 4.3.4.A- Identify ways humans depend on **natural resources** for survival (identify resources used to provide humans with energy, food, employment, housing and water).
- 4.3.10.A- Evaluate factors affecting the use of **natural resources**.
 - Evaluate the effect of **consumer** demands on the use of **natural resources**.
 - Analyze how technologies such as modern mining, harvesting, and transportation equipment affect the use of our **natural resources**.
 - Describe how local and state agencies manage **natural resources**.

5th Grade

- 13.1.5A/B- Describe the impact of individual/personal interests and abilities on career choices.

Advanced Standards

- 3.1.6.A2- Describe how energy derived from the sun is used by plants to produce sugars (**photosynthesis**) and is transferred within a food chain from producers (plants) to consumers to decomposers.

6th Grade- 8th Grade

Watershed Analysis: A Deep Dive into Water Quality (4-5 hour visit)

Overview: Students will learn about the health of local watersheds and how water systems are connected. Students will engage in hands on investigation of the macroinvertebrate species living in the creek, conduct chemical tests to determine water quality, analyze long term data, and learn about the importance of healthy riparian zones.

Associated Academic Standards:

6th Grade

- 4.2.6.C- Identify natural and human-made factors that affect water quality.

7th Grade

- 4.2.7.C-Use appropriate tools and techniques to analyze a freshwater environment. Interpret physical, chemical, and biological data as a means of assessing the environment
- 4.2.7.D

- Identify questions that can be answered through scientific investigations and evaluate the appropriateness of questions.
- Design and conduct a scientific investigation and understand that current scientific knowledge guides scientific investigations.
- Use appropriate tools and technologies to gather, analyze, and interpret data and understand that it enhances accuracy and allows scientists to analyze and quantify results of investigations.
- Develop descriptions, explanations, and models using evidence and understand that these emphasize evidence, have logically consistent arguments and are based on scientific principles, models, and theories.
- Use mathematics in all aspects of scientific inquiry.
- Understand that scientific investigations may result in new ideas for study, new methods or procedures for an investigation, or new technologies to improve data collection.
- 4.5.7.C- Explain how human actions affect the health of the environment. Identify residential and industrial sources of pollution and their effects on environmental health.

8th Grade

- 4.2.8.B- Explain the value of wetlands to other living things.
- 4.2.8.C- Describe how a diversity index is used to assess water quality.

HydroQuest: Exploring Human Impacts on Water (4 hour visit)

Overview: Students will learn about the many properties of wetlands that make them valuable ecosystems. They will work with mini stream tables, take soil samples, identify hydric plants, and calculate runoff from a parking lot to examine these benefits in interactive and hands-on ways.

Associated Academic Standards:

6th Grade

- 4.2.6.A- Identify the five major watersheds of Pennsylvania.
- 4.2.6.B- Describe the characteristics of soils found in a wetland.
- 4.2.6.C- Identify natural and human-made factors that affect water quality.
- 4.5.6.A- Examine how historical events have shaped the sustainable use of natural resources.
- CC.2.3.6.A.1- Apply appropriate tools to solve real-world and mathematical problems involving area, surface area, and volume.

7th Grade

- 4.2.7.A- Explain how water enters, moves through, and leaves a watershed.
 - Explain the concept of stream order.
 - Describe factors that affect the flow and water quality within a watershed
- 4.2.7.B- Explain the primary functions of a wetland within a watershed.
 - Providing habitat, flood control, water purification.
 - Serving as buffer zones, wildlife propagation areas, and food and fiber systems.
- 4.5.7.A: Describe how the development of civilization affects the use of natural resources.
- 4.5.7.C- Explain how human actions affect the health of the environment.
 - Identify residential and industrial sources of pollution and their effects on environmental health.
- CC.2.3.7.A.1- Solve real-world and mathematical problems involving angle measure, area, surface area, circumference, and volume.

8th Grade

- 4.2.8.B Explain the value of wetlands to other living things.

Change Begins With Me: Renewable and Non-renewable Resources (4 hour visit)

Overview: Students will compare and contrast renewable and nonrenewable resources and will be able to identify examples of each. They will gain hands-on experience with different sources of renewable energy and use handheld sensors to measure temperature, humidity, and luminescence in various locations.

Associated Academic Standard:

8th Grade

- 3.3.8.A2- Describe renewable and nonrenewable energy resources
- 4.3.8.A- Compare and contrast alternative sources of energy
- 3.4.8.B2- Compare and contrast decisions to develop and use technologies as related to environmental and economic concerns
- 4.5.8.D- Compare and contrast waste generated from various sources of energy
- 13.1.8.E- Analyze the economic factors that impact employment opportunities, such as, but not limited to: Competition
- 13.1.8.F- Analyze the relationship of school subjects, extracurricular activities, and community experiences to career preparation.

Advanced Standards

- 3.3.10.A2 Analyze the effects on the environment and the carbon cycle of using both renewable and nonrenewable sources of energy
- 4.5.10.E- Describe the impact of occupational exposure to pollutants.
 - Analyze laws and regulations designed to protect human health.
 - Analyze efforts to prevent, control, and/or reduce pollution through cost and benefit analysis and risk management.