

# Field Class Program Menu



We are pleased to offer our current range of field classes for teachers to choose from when planning your visits to Quarrybrook Experiential Education Center. Included are the titles of the classes as well as brief descriptions of their goals and activities. Class Outlines can be downloaded from [www.quarrybrook.org/field-class-program/](http://www.quarrybrook.org/field-class-program/) Participation in our Field Class Program is Free! Visits can be scheduled for Tuesdays through Fridays. Each participating group is asked to commit to three field class visits per school year. Please contact Alicia, our Education Administrator, at [alicia@quarrybrook.org](mailto:alicia@quarrybrook.org) or call 603-890-1222, to schedule your visits. We look forward to working with you and your students on our trails!

## K1 – 12th

### **Sit Spots** (Fall, Spring)

Sitting quietly in the forest allows our senses to focus on making observations of our new surroundings. This calming, exploratory exercise, suitable for all grades, builds observation skills while students gain awareness of the environment around them. Students will record their field observations with words or sketches, and share them with their group.

### **Let's Hike!** (Fall, Spring)

Students will have the opportunity to acclimate themselves to the Quarrybrook forest while learning the basics of hiking. Students will decide what to take with them on a hike to be comfortable and safe. We'll experience how to hike in a forest in a way that reduces our impact, and protects the natural resources around us.

### **Asking Questions Outside** (Fall, Winter, Spring)

Students will have the opportunity to acclimate themselves to the Quarrybrook forest and record the observations they make while on the trail. Students will use their observations to start asking questions that are important for understanding the forest. Students will then develop and refine them into questions that could be tested during activities or investigations on future visits.

### **Which One Doesn't Belong** (Fall, Spring)

In everyday life we are presented with shapes that can be understood or categorized in a number of different ways. Focusing on observation, students will build their ability to categorize information, then have the opportunity to think outside the box and explore why a shape does or does not belong in a group.

## K2 – 1st

### **Shapes** (Fall, Winter, Spring)

Shapes are everywhere! Everyday objects are made up of a combination of five to six basic shapes. Students will learn shape names and characteristics, and will search for and identify these shapes in natural objects.

## 2nd – 4th

### **Structures** (Fall, Winter, Spring)

Students will be introduced to concepts such as forces, tension, and compression. Through hands-on activities, students will become more familiar with different structures and their names, physically form structures with their teammates, and have the opportunity to build their own structure outside with natural materials.

## 4th – 9th

### **Soil Science** (Fall, Spring)

Soil is the link between the bedrock of the Earth and the plant and animal life on its surface. Students will investigate soil composition and formation, and compare and contrast some of the different soil types found at Quarrybrook. Using methods employed by soil scientists, students will identify soil horizons, measure soil characteristics, and collect data from soil profiles. Students will also investigate how healthy soil communities protect water quality and reduce erosion with a rainfall simulation model.

## 4th – 12th

### **Creative Writing in the Forest** (Fall, Spring)

After a pre-writing activity of expressing our sensory observations, students will have the opportunity to experience the stillness of the woods and have a chance to quiet their minds. The new thoughts and ideas that surface will be recorded in a graphic organizer, to be formed into a creative writing piece. Drafting the story will begin at Quarrybrook, with the writing process being completed back at school.

## 5th – 12th

### **Art from the Earth** (Fall, Spring)

We'll learn about environmental artist Andy Goldsworthy and investigate how he collaborates with Nature to create his masterpieces. After walking through the Quarrybrook forest to a trailside artspot, students will have the opportunity to create their own work of art, using only natural materials. Then we'll document our ephemeral art, with a photograph and a reflective journal entry.

## K1 (Pre-K)

### **Sensing the Forest** (Fall, Winter, Spring)

This fun exploration focuses on learning how to use our senses of hearing, touch, smell, and sight to effectively receive and process the new information and sensations present in this forest environment. Students will play several games that guide them to focus, listen, look, and sense what is going on around them. Students will also learn about how different animals use these same senses to survive in this habitat.

### **Animals and their Offspring** (Fall, Spring)

This journey focuses on observing the many similarities and differences between adult animals and their offspring. Students will also learn about the major differences in parenting behaviors between mammals, amphibians, and arthropods, through fun stories, trail explorations, and sorting activities.

### **Where Do You Spend Your Winter?** (Winter)

Different animals spend winter in diverse ways. Not everything sleeps! Through short stories we'll learn about four winter-active animals, and act out the motions/actions of their winter strategies. Then we'll head outside to observe evidence of these actions happening all around us. We'll then return inside to learn about the ways that other animals spend their winters, through a narrated puppet show! We'll meet animal characters who each tell their story of how they must migrate, hibernate, become dormant, sleep lightly, or stay active, to survive their winters.

### **Signs of Spring** (Spring)

The transition from winter to spring brings many observable changes to the forest, including melting snow, new plant growth, and the completion of hibernation cycles for many animals. Students will walk through the woods looking for physical signs of the end of winter and the beginning of a new season of growth. They will engage in games and investigations that will help them to identify and record specific clues and evidence of this transition to a warmer time.

### **Nature's Clean-up Crew** (Fall, Spring)

Students will explore the questions of why and how we need to take care of the Earth. Through stories and trail explorations we will learn about how different decomposers work to keep the forest clean, and then play a fun game rotation, in which we re-purpose trash items and use them as sports equipment.

## **K2 (Kinder)**

### **The Language of Color** (Fall, Winter, Spring)

Students will engage in activities that explore the different ways that animals and plants use color to communicate and survive in the forest. We'll introduce classic artwork created by artists finding inspiration in the natural world. Students will then seek their own inspirations along the trail, in order to create a watercolor painting based on their observations of Nature.

### **Seasonal Sensations** (Fall, Winter)

This journey is an exploration of how animals use their senses to survive the seasonal changes from fall to winter. By visiting several learning stations focused on sound, touch, sight, and smell, we will learn about how forest animals adjust to the changing weather and prepare themselves for the coming winter.

### **Lifecycles** (Fall, Spring)

After learning about the lifecycle changes that a frog goes through, students will act out the sequence of its stages in a simulation game. Then we'll take to the woods to investigate the lifecycle changes that a tree goes through! Learning stations along the trail will help us explore the actions involved in a tree's lifecycle, from seed to decomposing log.

### **Wetlands Exploration** (Spring)

The animals supported by freshwater wetlands have adaptations to live in environments that transition between terrestrial and aquatic. Students will investigate a wetland area to find evidence of beavers and the adaptations they have to live there. We'll puzzle out the progression of the lifecycle stages of a frog. Then students will practice how to carefully collect frogs and invertebrates for observation.

### **The Bear Necessities** (Fall, Spring)

Students will follow in the imaginary footsteps of an American Black Bear cub on its daily journey through the forest. At learning stations along the trail, students will discover facts about their food, shelter, and behavior. Students will then mimic those behaviors through creative role play.

### **Counting and Patterns** (Fall, Spring)

Students will practice counting and sorting objects and will recognize and copy patterns. We will gather various natural items on a trail walk, counting objects in groups of fives and tens along the way. Students will then count, sort, and arrange the items in different patterns. By the end, students will be creating patterns of their own to share with the group.

## 1st

### **Textured Art** (Fall, Winter, Spring)

Students will be introduced to classic works of art and the artists who created them, such as Monet and van Gogh. We will focus on how texture can be conveyed through the use of color and shape. Students will be led on a forest journey to explore the myriad textures found in the woods. Along the way, they will collect rubbings from tree bark, rocks, and other natural objects, and then use them to create their own work of art. Students will explore the same subject using two different media—they will create an image in crayon and then create the same image using watercolors.

### **Habitat Must-Haves** (Fall, Winter, Spring)

Through storytelling and role play, students will embark on a group quest to discover what a habitat truly is. During a forest walk narrated by a fictional character we call "Barney the Beaver," students will stop at several learning stations to collect information about the food, water, shelter, and clean air and space that a habitat must provide. Students will then reflect on what they have learned through an all-group Habitat Survival Game.

### **Habitat Must-Learn** (Fall, Winter, Spring)

What do some animals learn from their parents? This program is a follow-up to "Habitat Must-Haves" and delves deeper into the topic of how animals interact with their habitats. We will continue the story of Barney the Beaver and his forest friends by taking a closer look at how each of these animals learn to survive on their own. Through pattern repetition and habitat investigations, students will gain an understanding of how some animals learn from their parents by imitating their behaviors.

### **Begin with Biomimicry** (Fall, Winter, Spring)

Living things have parts adapted to meet all of their needs. We can look to Nature to find efficient designs to help us meet our needs and take care of our Earth. We'll take a closer look at specific needs of animal species, and the body parts they have that are perfect for meeting those needs. Then we'll investigate some human inventions and figure out which natural objects inspired them. Students will understand that we can mimic

animal and plant adaptations to invent efficient, sustainable objects and processes to solve human challenges. Students will then design their own invention to meet one of their winter needs.

### **The Science of Sound** (Fall, Winter, Spring)

Sound is made by vibrating objects. Sound waves travel, are received by our ears, and our brains process that information into a sound that has a meaning! We'll investigate how sounds are generated, travel through air or a solid, and can make other materials vibrate. Then we'll enjoy a sound-focused walk, learning how the voice anatomies of birds and humans differ, and about the variety of ways that animals produce and use sound.

## 2nd

### **Poetry of the Senses** (Fall, Winter, Spring)

Exploring Nature through our senses can provide the creative inspiration for writing poetry. After connecting movement to words through a humorous game of poetry charades, students will explore the forest through their senses in order to gain creative ideas and build a personal word bank that will inspire them to write a poem. Students will also be introduced to some of the basic elements of a poem such as rhyming, similes, and the creative use of adjectives.

### **Map It Out!** (Fall, Winter, Spring)

With map-reading skills and an understanding of how to link a map to the actual landscape, we can successfully navigate our way through a new, unfamiliar area. Students will learn the cardinal and intercardinal directions and how to use a map legend, and will begin to develop map-reading skills. Learning how to orient themselves, students will begin to transfer information from their maps to their surroundings. Students will then be challenged to help us map out our newest trail at Quarrybrook.

### **Pollinators and Seed Spreaders** (Fall, Spring)

Animals assist plants with pollination and seed dispersal. To learn how plants actively attract the pollen-moving animals best suited to their specific needs, students will simulate the process of pollination. Then we will act out the seed-spreading methods used by plants to investigate how they package their seeds in containers intended to be dispersed by either inner or outer animal transport. Next we'll design our own adaptations, for flowers to attract pollinators or for plants to spread their seeds.

### **Awesome Avians** (Fall, Spring)

We'll learn about the characteristics of birds, which help them survive, and we'll decide which feature is unique to birds. Next we'll learn the terminology of the parts of a bird, which helps us better describe their physical traits. Then we'll explore the forest in search of birds as well as evidence of birds.

### **Who Goes There?** (Winter)

In this introduction to animal tracks and tracking, students will investigate the information we can learn from track patterns in the snow. Students will learn to identify animal tracks and to differentiate the gaits at which animals travel.

### **Maple Sugaring** (Late Winter, Early Spring)

How do we get syrup from a tree's sap? We will learn all about the sugaring process and how it has changed over the years. Students will also learn how to identify which trees are sugar maples, and how to measure a

tree to determine if it is an appropriate size to tap. Then we'll taste maple syrup made from the sap from Quarrybrook's very own tapped trees!

### **Wild Wetlands** (Spring)

Students will closely investigate one of Quarrybrook's wetland habitats, either a vernal pool, flowing stream, or beaver pond. Students will use field equipment to collect invertebrate samples, identify species with field guides, and record information and draw scientific illustrations on their take-home datasheet.

## 3rd

### **Stone Wall Survey** (Fall, Spring)

Students will conduct a geo-archeological survey of the stone walls found at Quarrybrook! Stone walls form a heritage landscape, combining human history and natural history. Students will order the sequence of stages of stone wall development, starting with the glacial formation of the boulders. Students will recognize stone walls as evidence of past human activity at a site, and as evidence of a different land use in the past. We will practice our observation and reasoning skills through using a dichotomous key, and will look for any differences in stone shape, reflecting the different glacial actions experienced.

### **The Art of a Journey** (Fall, Winter, Spring)

Students will enjoy a reading of *The Barefoot Boy*, a poem by John Greenleaf Whittier, adapted to a children's book by Lisa Greenleaf. The story follows a boy's journey through the fields and woods of his farm home and is told through Whittier's inspiring words and Lisa Greenleaf's beautiful illustrations. The students will then take a ramble through the woods, paying attention to their experiences so that they can create their own mini-book, complete with a written story and accompanying illustrations, that reflects their personal walk through Nature that day.

### **Nature's Toolbox** (Fall, Winter, Spring)

Through simulations and explorations students will investigate ways that animals adapt to their environment through learned behavior patterns and specialized body parts. Students will experience the challenges of consuming different food types by mimicking a feeding bird, using fabricated bird beaks to collect materials representing different foods. Students will also explore the area around a beaver pond and observe the effects of this animal's behavior on its environment.

### **Autumn's Anthocyanins!** (Fall)

Through storytelling, forest exploration, and creative arts, students will investigate what's happening in autumn in colorful New England! Students will learn about the chemistry causing the color changes in leaves. Students will explore the autumn forest to learn about what deciduous and coniferous trees have to do to get ready for winter. We will then apply this knowledge through a creative project where students use paint from spices and foods containing the same natural pigments present in the leaves all around us.

### **Surviving the Change!** (Fall, Spring)

Students will explore how different animals respond to changes in their habitats, by migrating or by structurally changing their immediate environments. Through a challenge expedition, students will take on the roles of several different animals working to survive in the forest. Students will encounter challenge cards along the trail, teaching them about animals that are causing change and prompting them to complete short team

challenges mimicking those behaviors. Then students will reflect on what they have learned through an all-group Migration Survival Game.

**Where Can I Grow?** (Fall, Winter, Spring)

Through field study students will observe how trees grow and adapt to their environment, based on its topography and available resources. Investigations will cover classification based on opposite or alternate branching, comparing the physical characteristics of white pines growing in different environments, and the conditions necessary for seeds to grow.

**Magnetic Forces** (Fall, Winter, Spring)

Students will investigate magnetism and experience the effects of the Earth's magnetic field by experimenting with magnets and test objects. Students will learn how to use a compass, and set and follow bearings. Students will then navigate our way through the forest.

## 4th

**Rock Cycle Survey** (Fall, Winter, Spring)

Any rock you pick up from any rocky planet comes from one of just three rock families: it's either Igneous, Sedimentary, or Metamorphic! Students will examine rock samples as we unfold the action story of the Rock Cycle. Clues visible in each rock show us evidence of how it was formed, providing students with the information to decide which rock family it is classified in. We'll then investigate bedrock outcrops, looking for the evidence recorded in the rock of the Earth events that formed it.

**Weathering the Winter** (Winter)

Students will explore a snowy landscape and learn about how different animals are able to survive the challenging conditions of winter through physiological adaptations and seasonal behaviors. Students will actively investigate three major adaptation strategies found in Nature: fur, fat, and shelter.

**Patterns in Nature** (Fall, Winter, Spring)

Students will investigate what information patterns provide us, in our everyday life and in the natural world. After practicing how to recognize patterns and identify what rules they follow, we'll head into the forest to observe and decipher the patterns present in a natural environment, and identify what information those patterns transfer to us.

**Plant Survivors** (Fall, Spring)

How do plants get the resources they need, defend themselves, attract pollinators, and disperse their seeds? All without moving! Students will observe plants in detail, surveying for adaptations and deciding how each serves the plant. Students will then simulate survival methods used by plants. Next we'll design our own adaptations, for a plant to gather its resources, not get eaten, make more of itself, or spread its seeds.

**Deciduous Tree ID with Leaves** (Early Fall, Late Spring)

Students will be introduced to deciduous tree identification, by observing leaf structures, shapes, and patterns. After learning terminology and identification methods used in categorizing, students will make observations and practice how to identify trees by focusing on the leaves. Students will do leaf tracings of various species, in a field journal, to keep for future reference.

### **Habitat Investigation** (Fall, Spring)

Wildlife populations fluctuate based on their habitat's available resources. Students will investigate a sample area within a forest habitat to determine its plant and animal interrelationships. Students will then engage in a simulation activity to better understand the balance between resources and populations within continually changing natural systems.

### **Underwater Metamorphosis** (Spring)

Students will closely investigate one of Quarrybrook's wetland habitats, either a vernal pool, flowing stream, or beaver pond. Students will collect invertebrate samples, identify species with field guides, and record information and draw scientific illustrations on their take-home datasheet. Students will also explore complete and incomplete metamorphosis in insects and the lifecycle stages of amphibians.

## 5th

### **Webs of Life** (Fall, Winter, Spring)

Through this journey students will collect clue cards containing information about species and their roles within an ecosystem. Student teams will organize their species cards into food chains and then learn about how those chains interconnect to form an overall food web. Students will take on the predator and prey roles within one food chain in a simulation activity to better understand the species relationships within an ecosystem. Students will then build an interactive eco-web by connecting the ecosystem elements they have been investigating through the day.

### **Nature's Solar Panels** (Fall, Winter, Spring)

Sunlight becomes the energy for all living things on Earth. Plants and trees are living solar panels, collecting the Sun's energy and converting it into food, through photosynthesis. Students will build the story of photosynthesis, taking a closer look at each step of this process, from its chemistry to its connecting all living things.

### **Tracking the Trees** (Fall, Spring)

Students will visit three different microhabitat study sites, each with varying topography, soil and tree profiles, and water availability. Students will compile forest ecology data sets at each site. We will compare and contrast the physical characteristics and dominant tree species of each site, and draw conclusions about which species grow best in what conditions and why.

### **Migrate, Hibernate, or Live It Up!** (Fall, Winter)

Animals try to live through the winter by a wide variety of strategies, all of which are challenging to the individual involved! Students will investigate an animal's body part adaptations and its food sources, to gather the information needed to decide which survival strategy that animal is likely to use: migrating, hibernating, or staying active! We will learn that for animals that don't migrate, whether they are cold-blooded or warm-blooded determines much of what their body will have to do to survive winter. Students will investigate how the specific habitat needs of an overwintering animal are based on their activity level and their body part adaptations.

### **Compass** (Fall, Winter, Spring)

Learning how to use a compass enables us to keep our direction anywhere on the planet. Through hands-on exploration, students will learn how to find a bearing and travel in that direction, and how to measure distance



based on their individual pace count. Once students have mastered these skills, they will separate into teams and be challenged to complete a compass course in our Quarrybrook woods.

**Primitive Shelter Building** (Fall, Winter, Spring)

Using natural resources found in the forest, students will work in teams to assess available materials, and then design, plan, and construct a shelter that would provide a night of comfortable sleep.

**Stone Structures** (Fall, Winter, Spring)

In this introduction to civil engineering through inquiry learning, we will experiment with the relationship between a structure's shape and its strength, and with the challenges in building an arch bridge. Then we'll explore Quarrybrook's stonearch bridge, stone culverts, and surface quarry pits. We will investigate how the rock blocks used to build these stone structures were quarried, using tools and techniques available in 1848!

## 6th – 8th

**Wetland Ecology Investigation** (Spring)

Students will gain awareness of the importance of biodiversity by observing, collecting, and identifying the invertebrates found in our complex wetland ecosystem. Students will draw their own conclusions about their findings and the value of wetland conservation.

**Organism Must-Haves** (Fall, Spring)

To be classified as biotic, an organism must have all five characteristics used to define living things. Students will sort elements of an ecosystem as being biotic or abiotic, and will investigate what properties all the living things share. Then we'll closely examine a variety of organisms from the plant, animal, and fungi kingdoms, to find in each the five characteristics of biotic organisms.

**Seed Dispersal in the Forest** (Fall, Spring)

Plants have evolved to use many different methods for dispersing their seeds. Students will explore the forest and use their observations to catalog seeds by how they are dispersed in the wild. Students will make an observation log to bring home with them for future learning. Students will then design and test their own seed creations to see how well they are dispersed by wind and gravity.

**Winter Tree ID** (Winter)

Tree ID doesn't stop when there aren't any leaves! After learning how to use a dichotomous key, students will conduct a field study to identify trees during winter—by observing buds, twigs, bark, and more! Students will learn what actions trees take internally and externally to prepare for the colder and darker winter months.

**Survival Science** (Winter)

Through exploring winter and learning about the mechanics of hypothermia, students will investigate how sensory receptors respond to environmental stimuli and send messages to the brain that support the survival of an organism. We'll observe the effects of freezing on soft tissues (fruit slices or lettuce), then head outside to learn about overwintering adaptations in plants and animals. Student teams will participate in a winter survival challenge scenario, constructing snow shelter quinzees.

**Adventure Writing** (Fall, Winter, Spring)

Students will read an excerpt from *The Wild Muir*, a book of short stories written by conservationist and

adventurer John Muir. In Book Club groups, they will work together to analyze the writing and identify important elements such as theme, pace, voice, and point of view. After sharing their thoughts about Muir's work, students will go on their own adventures through the woods, then journal, illustrate, or write brief narratives about their personal experiences.

### **Playing with Poetry** (Fall, Winter, Spring)

Observing the natural world from a variety of angles and perspectives offers unique inspiration for creating poetry. Students will challenge their current perceptions of the environment by exploring Nature through different lenses. Through personal observation and group experiences, students will collect and record information, emotional responses, and spontaneous ideas in take-home field journals. Their notes and experiences will support them in creating an original work of poetry.

### **Measuring in Nature** (Fall, Winter, Spring)

What are some different ways we would be able to measure if we did not have our usual tools? Students will learn new ways to use everyday objects and actions as means of measuring distances. We will investigate the concept of pace and how to apply it to estimate distance traveled. Then we'll learn how to measure the distance across a river, and how to accurately estimate the height of a tree.

### **Waves in Motion** (Fall, Winter, Spring)

Waves behave in predictable ways, no matter their form. Students will investigate how different types of waves are reflected, absorbed, or transmitted when traveling between mediums, by exploring a variety of instruments, models, and natural phenomena.

### **Electrical Circuits** (Fall, Winter, Spring)

Students will learn about electrons and their behavior, to understand electricity at the atomic level and how it flows naturally through the environment and through manufactured circuits. Students will investigate different examples of electricity, and then head to the "lab" where they will build functioning circuits.

### **Tension and Towers** (Fall, Winter, Spring)

Students will gain an understanding of the forces of tension and compression. Students will compare different building materials, explore a unique structure, and then build their own structures, aiming to support the greatest amount of load.

### **Flying Physics** (Fall, Spring)

Examples of potential and kinetic energy can be observed throughout the natural world. We will explore how they function, then seek examples along a walk through the natural landscape. Students will learn the process of starting a friction fire using a bow drill. Students will then experience slingshot science in our open fields, predicting travel distances, launching various projectiles, and measuring and recording the results.

### **Trapping the Heat** (Fall, Winter, Spring)

Heat Exchange—the transfer of thermal energy—is happening continually all around us, whether we're inside or outdoors. Through a molecule motion demo and investigations around the campfire, students will gain an understanding of heat transfer. Then we'll search for examples in Nature along the hiking trail. Students will also examine the visible geothermal system used to heat and cool the Quarrybrook building, and demonstrate their understanding through a conduction and air pressure experiment.

### **A Solar Harvest** (Fall, Winter, Spring)

Students will explore the transfer of energy through natural and man-made systems. We will investigate photovoltaic technology through experiments with our solar-powered fountain and hand-held solar cells. We'll see how Quarrybrook runs its utilities on energy harvested from the Sun. Along the trail students will investigate light energy conversion in the plant kingdom, via photosynthesis, and the biomechanical design efficiencies of different plants. We'll discuss how biomimicry is helping us to improve solar cell performance, by designing cells that look and feel more like real leaves. Students will be challenged to design, build, test, and re-design a solar oven, with the goal of improving their design efficiency.

### **Particle Pollution** (Fall, Winter, Spring)

Some atmospheric particles can be a health risk for humans and it is important to know where they come from, how to prevent them, and how we can track their occurrence. Students will measure particle pollution at Quarrybrook, then assemble particle collectors to take back to their school or homes, to measure another site.

### **Energy Transfer and Ecosystems** (Fall, Spring)

This journey investigates the nutrient cycle and the flow of energy in an ecosystem. Through a group challenge students will demonstrate how energy dissipates as it moves through a trophic pyramid. Student sub-teams will then explore our ecosystem, each team studying an organism in a different trophic level, such as a producer, a primary consumer, a secondary consumer, or a decomposer, etc. Next, sub-teams will be rearranged to include an "expert" on each of the trophic levels. The new teams will be asked to design a scientific model to explain the relationships between their organisms. Student teams will become "published scientists," each creatively presenting their trophic model to the full group, in the form of a broadcast skit, journal article, poster, etc.

### **Predicting the Weather** (Fall, Winter, Spring)

Students will learn how to correctly use a variety of weather instruments. We will conduct experiments to better understand weather phenomena, and collect data to answer questions relating to the weather. Students will then make weather predictions for the current day and the following day based on their data.

### **Human Impacts on the Environment** (Fall, Winter, Spring)

Students will engage in several activities which guide them to focus on the various ways in which humans affect the environment around them. At the end of each we'll brainstorm ways to monitor and minimize these issues. We'll discuss ways in which human activity could be less detrimental to the environment. It is our hope that we all come to recognize our responsibility to be stewards of the environment!

## **9th – 12th**

### **Bushcraft Basics** (Fall, Winter, Spring)

The practice of bushcraft focuses on developing the knowledge and skills necessary to thrive within a natural environment. Bushcraft presents opportunities to design solutions to everyday challenges. Using natural resources found in the forest, students will work in teams to assess available materials, and then design, plan, and construct a cooking-pot suspension system. Following this, students will learn and practice fire-starting techniques. To demonstrate the functionality of their design, students will work together to cook a snack that will be shared by the group.

**Wild Edibles and Medicinals** (Fall, Spring)

Natural resources have always been a part of human history. We'll enjoy a walk through the woods to discover common tree and plant species used for edible or medicinal purposes. Students will learn how to correctly identify each species, and will make take-home reference cards with a key part of the plant.

**Juicing with Ratios** (Fall)

Students will conduct investigations and reason quantitatively in creating a recipe for their ideal apple cider flavor! This lesson emphasizes ratios and proportions, and asks students to design a model by which they can calculate the proportional ingredients necessary for the amount of cider required—enough for all to enjoy! Students will operate a juicer, a fruit grinder, and an apple cider press.

**What Is A Species?** (Fall, Winter, Spring)

Student teams will first practice methods that quantitatively and qualitatively assess the differences between species within a freshwater bass genus. Using a sequence of observation, then a dataset, then a dichotomous key, students will sort their specimens into the number of species they think are represented. In the field, teams will then select a set of organisms and critically assess their species-defining characteristics and determine those that are the most meaningful and useful in identification. Each team will design a dichotomous key for their organisms, from their observations.

**Biodiversity and Conservation** (Fall, Spring)

Biodiversity of natural resources is essential for healthy ecosystems and for the human race. Students will gain awareness of soil health and learn how concepts of biodiversity can be beneficial in farming. Students will experience the importance of collaboration in conservation, and gain knowledge to support the conservation of all species, due to their known and unknown roles in the environment.

**Wetland Ecology Investigation** (Spring)

Students will gain awareness of the importance of biodiversity by observing, collecting, and identifying the invertebrates found in our complex wetland ecosystem. Students will draw their own conclusions about their findings and the value of wetland conservation.

**Team Building** (Fall, Winter, Spring)

While navigating in sub-teams through the Quarrybrook woods, students work together to solve various challenges or practice specific skills, set up and moderated by Quarrybrook staff at different stations along the trails. Students will reinforce their ability to communicate and work with one another. Contact Alicia at [alicia@quarrybrook.org](mailto:alicia@quarrybrook.org) to begin working with a staffmember on the options of tasks and skills you'd like your students' experience to include.