

**SHARPE**



## Sharpe Reservation Curriculum

### SPECIAL HALF DAY PROGRAMS

**Predator Prey:** Students will move into the animal's world and actively experience the daily challenges of surviving, thus illustrating the principles of population dynamics and food chains. Active participation is required from teacher/chaperones as each team must have an adult leader to answer questions, encourage team decision-making, explain the site map, keep time and regroup the team. This activity works best with groups of 50 or more.

**Teams Course:** Sharpe features two separate challenge courses containing a variety of low ropes elements. These elements are designed to encourage groups to work together as a team in a positive and creative social environment. Activities can be adapted for different age levels ranging from fifth grade through adults. *(Age 12 and up; Recommend 8-12 students per instructor)*

**High Ropes Course:** This course is a series of individual and group physical challenges that require a combination of teamwork skill and individual commitment. Elements are constructed of rope, cables and wood. Participants are on a "belay" system with the Fresh Air Fund staff. *(Age 12 and up; Recommend 10-20 students per two instructors).*

**Fresh Air Farm Hike:** Visit the Fresh Air Farm and learn about domestic livestock and organic gardens. Students will learn the origin of basic foods and how agriculture replaced hunting and gathering allowing civilization to blossom. Students will also learn about compost and how it reduces food waste. *(June and September only).*

### BIOLOGICAL AND PHYSICAL SCIENCES

**Aquatic Ecology:** Water is essential to all life on Earth. Students will discover the interdependence of living things as they search for myriad life forms in our ponds and streams. An emphasis on water's physical characteristics as they relate to the health of the pond or stream community will be highlighted.

**Forest Ecology:** Become acquainted with the hardwood forest of the Northeast. Your students will take a close look at the interrelationships that are necessary for a healthy forest. Included will be an overview of food chains and webs, deciduous vs. coniferous trees, soil, water, and temperature conditions, and the animals that inhabit the forest.

**Geology:** The Hudson River Valley is an ideal setting for the study of glacial processes. Following our interpretive geology trail, students will study glacial effects firsthand. Also included is the study of various land forms and other earth processes.

**Soil Science:** An introduction to the physical characteristics of various types of minerals, soils, and rocks, and their effect on resulting plant communities. Percolation rate, grain size, pH, compaction ability and other qualities will be examined.

**Meadow Ecology:** Study the variety of insects that inhabit the meadow environment. Insects form the very beginning of the food chain.

**Tracks and Traces:** We do not always see the wildlife around us, but we know it exists by the evidence left behind. Students will become "nature detectives" in search of Sharpe's animal inhabitants.

**Wildlife/Animal Adaptations:** Students will learn how animals have adapted to different environments. Students will participate in an activity called "Fill the Bill" and understand how birds adapt to acquire

different foods. Also, students will learn about skulls and furs from the Sharpe collection. (*Owl Pellet Dissection is available as part of this class*).

**Worm Ecology:** Decomposers are fundamentally important to a functional food web. This class will explore the purpose and role of decomposers in the environment. Earthworms will be the organism of focus.

**Weather:** Students will become meteorologists and begin to forecast the weather as they are introduced to a variety of weather concepts and instruments.

### ENVIRONMENTAL / HISTORICAL ISSUES

**\*\*New in 2008! Environmental Impact Series:** *The objective of this series is to educate students on current environmental issues and practical ways that we can make a difference.*

**Series #1- Dirty Water-** Students will learn about the effects of human activities on the environment. They will study a simulated historical reconstruction of the pollution of the Hudson River, attempt a hands-on cleanup or remediation effort, and decide the impact on plants, animals, the environment, and other human activities.

**Series #2- Environmental Solutions-** Students will learn to CONSERVE and take the Energy Challenge, a component of Energy Smart Students, NYSEDA. Students will investigate simple ways to reduce energy consumption by becoming aware of their surroundings; students will critique their own energy consumption and analyze a building at Sharpe for energy efficiency and make recommendations to improve their energy efficiency. They will also be introduced to renewable and non-renewable energy sources and discuss the pros and cons of each.

**Series #3- Climate Change-** According to science, climate is changing and weather patterns are changing worldwide. Students will learn the theory of what causes global warming and why it is a crucial issue. The class will participate in hands-on demonstrations and will go on a "global warming hike" to look at some of the local species and habitats that may be affected by climate change.

**Series #4- Biodiversity** – What is biodiversity and why is it important to the health of the planet? Students will explore the forest by sampling a plot and species survey to determine if the forest has a diversity of plants and animals. This science based class will require an inquisitive eye to discover the hidden discoveries in the forest of Sharpe Reservation.

**Series #5- New York's Endangered Species-** New York's ecosystems are recovering from years of abuse during the industrial age. With increased habitat protection and a ban on DDT and other harmful insecticides, NY's animals are on a rebound. This class is a good news class of recovery from loss. Today eagles and falcons fly in our skies while beaver, fisher, moose and other animals prowl the forests. From this success story we can continue to forge a healthier environment for future generations!

**Historical Trail:** Take a trip into the past and discover the relationship that early settlers had with the land. Students will learn about Hudson Valley History, including the life of early homesteaders, loggers and charcoal pits. (*New 2007! Charcoal Interpretive area, with collier's hut and Charcoal pit.*)

### OUTDOOR SKILLS

**Group Dynamics:** Small groups will participate in active games and tasks involving problem solving ideas that develop cooperation and trust.

**Introduction to Compass:** An introduction to this fundamental navigational tool. The basics of the compass are described, as well as the Earth's magnetic field and poles. Newly acquired skills will be implemented in a series of activities.

**Interpretive Hike:** A basic nature interpretive hike up one of the Hudson Highland Mountains at Sharpe Reservation. Overlook the Hudson Valley and learn a little wildlife, forest ecology and geology along the way.

**Orienteering:** Join us for this lesson in map reading. Students then put their skills to the test by navigating their way through a course set up throughout camp. This class *does not* involve compass work. Longer and slightly more challenging courses (with or without compasses) are available for older or returning students.

**Outdoor Café:** Students will explore the forests and fields of Sharpe Reservation. They will assume the role of gatherers and discover and taste the wild foods once utilized by early people. Each season offers a different menu.

**Sensory Trail:** Students will experience a temporary loss of this major sense and travel blindfolded along a rope-guided course, focusing on sensory awareness and development.

**Wilderness Survival:** Would you know what to do if you were lost in the woods? Could you survive? Learn some of the basic skills of staying alive in the wild. Skills include staying warm, building shelter, finding food and water, what to carry in your survival or hiking kit, getting found, and achieving the mental attitude for surviving a crisis.

#### NATURE CRAFTS

**Dream Catchers:** Students will learn the Native American Ojibwa legend behind dream catchers and create their very own dream catcher. Please, 5<sup>th</sup> grade and up.

**Papermaking:** Students will learn techniques of papermaking using recycled and natural materials. This program will follow the entire papermaking process from the forest to a final product of paper that students will take home. The activity will focus on waste reduction and help students develop awareness of their impact on the environment.

#### GUSTAFSON PLANETARIUM AT SHARPE RESERVATION

The Gustafson Planetarium is a fully-equipped 49 seat theatre where audiences can learn about the wonders of the night sky. Our operators will present a show that best suits each topic. The cost per show is \$150.00 for a 45 minute to one hour presentation. **All Shows will point out familiar constellations and current objects visible in the sky (planet locations, comets, meteor showers and other celestial events)**

- ❖ **Tour of the eight planets -**
  - The following are featured planets due to current space missions;
    - Mars – Mars Orbiters, Mars Rovers, Phoenix Lander
    - Saturn – Cassini Probe
    - Pluto (Dwarf Planet) – New Horizons
  - Other solar systems and the search for other earth-like planets
  - The definition of a planet and Pluto’s demotion
  - “How the Planets got their names; interpreted through Greek Mythology”
- ❖ **Native American Star Legends**
  - The creation of the stars
  - Six Brothers (Pleiades)
  - Great Bear
- ❖ **Our Place in the Solar System – an in-depth look at Earth**
  - Our place in the Universe
  - Formation of the planet

- A focus on life and the biodiversity within the temperate deciduous forest
- Earth as a case-study for the search for life on other planets

❖ **Life Cycle of Stars**

- Nebulas and planet formation
- Types of stars; compare and contrast
- The ingredients of a star and its mechanics
- Novas and supernovas
- Stars as a part of galaxies

❖ **The Moon and Moons of the solar system**

- Eclipses
- Phases of the moon
- Creation of the moon; possible theories
- A look at the moons of other planets including Titan

Shows will be tailored to an audience's age and knowledge. To enhance your planetarium experience other programs can be added (**daytime shows only**) including;

- **Solar System Walk:** Imagine taking a walking tour of the solar system. When the sun and its planets are reduced to a manageable scale the solar system is easily and quickly traversed at Sharpe Reservation. Students will see the inner rocky planets as tiny objects closely circling the sun while the outer gaseous giants circle the sun at vastly greater distances.
- **Star Clocks\*\*:** The rotating Earth gives the illusion that the stars travel across the nighttime sky. Conveniently, this allowed ancient societies to use the position of the big and little dipper as a giant time-keeping device. Students will cut out and assemble their own Star Clock that they can take home and use in their own backyard.
- **Sundials\*\*:** From the ancients comes this "primitive" way of telling time. As the earth spins on its axis to give us night and day, the sun appears to creep across the sky and shadows shift to produce the hour. Have your students delve into the world of dials and gnomons, solstices and equinoxes, as they make and test their own sundials. This activity is the perfect compliment to the planetarium.

\*\*additional cost