# FOREST ECOLOGY

**GOAL:** Students learn the basic components of forest ecosystems through exploration of plants, insects and wildlife.

**OBJECTIVES**:
Gain an understanding of relationships between organisms in the forest ecosystem.
Develop an awareness of the human role within the forest environment.
Learn about local trees and plants adaptations, features, and names.
Learn about the growth, development and maintenance of forests.

**CONCEPTS / TOPICS**:

Environment
Ecosystem
Diversity
Habitat
Forest
Ecology
Interdependence
Biotic / abiotic
Adaptation
Deciduous / evergreen
Photosynthesis
Succession
Trophic levels
Energy flow
Invasive species

**AFTER COMPLETING THIS LESSON THE AIM IS FOR STUDENTS TO BE ABLE TO:**

Define: environment, ecosystem, community, habitat, forest, interdependence and ecology.
Define biotic and abiotic and give examples of each within a forest habitat.
Define and give examples of adaptations.
Define deciduous and evergreen and explain the process of photosynthesis in plant life.
Give a brief explanation of the process of succession in forests.
Define the three trophic levels and give examples of each within the forest community.
Explain why diversity is important.

# WETLAND ECOLOGY

**GOAL:** Students investigate the role and importance of wetlands through hands-on sampling of aquatic organisms and water testing.

**OBJECTIVES**:
Expand awareness of the relationship between wildlife and wetlands.
Investigate biotic and abiotic interrelationships.
Gain an understanding of water quality testing techniques.
Learn to collect and identify aquatic organisms.
Gain an understanding of the water cycle and watersheds.
Discuss human interaction with wetlands.

**CONCEPTS / TOPICS**:
Wetland types
Watershed
Biotic/ abiotic
Water quality
Dissolved oxygen
pH
Indicator species
Macroinvertebrate
Adaptation
Water cycle
Eutrophication
Human Impact

**AFTER COMPLETING THIS LESSON THE AIM IS FOR STUDENTS TO BE ABLE TO:**

Define biotic and abiotic components and give examples of each in a wetland.
Define and describe the differences between at least two types of wetlands.
Conduct water quality testing for dissolved oxygen and pH and explain the results.
Define adaptation and give several examples for aquatic organisms.
Explain the water cycle.
Describe the various ways wetlands are important to many organisms and ecosystems.

# WILDLIFE ECOLOGY

**GOAL**: Explore local wildlife species and how they interact with their natural surroundings.

**OBJECTIVES:**
Employ basic methods used by scientists conducting research in natural areas.
Learn about wildlife, species diversity, habitats, populations and limiting factors.
Recognize the role of wildlife research and wildlife management.
Role play and learn about wildlife adaptation and how adaptations help animals survive.

**CONCEPTS / TOPICS:**

Wildlife
Wildlife research
Wildlife management
Populations
Communities
Observation
Habitat
Local species
Limiting factors
Species diversity
Carrying capacity
Niche
Adaptations (physical and behavioral)
Introduced / Invasive species

**AFTER COMPLETING THIS LESSON THE AIM IS FOR STUDENTS TO BE ABLE TO:**

Define: wildlife, wildlife research and wildlife management.
Identify animal and vegetation study techniques.
Describe at least two of our local species behavior patterns and adaptations.
Describe basic concepts of population dynamics using limiting factors, carrying capacity and niche.
Describe how introduced or invasive species can affect native species populations.
Give examples of why species diversity is important.

# GEOLOGY

**GOAL:** Explore the local geological features and learn about the forces that shaped the New England landscape.

**OBJECTIVES**:
Identify basic rock types.
Recognize minerals and elements used in common products.
Explore local geological features especially those relating to stream morphology and glacial deposition.
Discuss the role of glaciers in forming the current topography.

**CONCEPTS/TOPICS**:
Sedimentary Rock
Igneous Rock
Metamorphic Rock
The Rock Cycle
Minerals
Erosion
Weathering
Deposition
Meandering Stream
Braided Stream
Straight Stream
Cut Bank
Point Bar
Stream Gradient
Glaciers
Moraines
Boulder Field
Kettle Lake
Geological Erratic

**AFTER COMPLETING THIS LESSON THE AIM IS FOR STUDENTS TO BE ABLE TO:**

Identify several types of rocks common in New England.
Understand how the three main rock types, sedimentary, igneous, metamorphic, formed and the distinct properties of each.
Explain that rocks are composed of one or more minerals. Recognize common household products are created because of minerals.
Describe how wind, water, and ice shape and reshape Earth's land surface by eroding rock and soil in some areas and depositing them in other areas producing land forms.

# WINTER ECOLOGY

**GOAL**: Learn how plants and animals adapt to survive the cold winter months. *Winter only.*

**OBJECTIVES:**
Discuss climate, winter weather and the effects of snow and ice on the natural environment.
Explore wildlife adaptations and see how they use them to survive in the winter.
Learn winter botany identification techniques and the ways plants survive sub-freezing temperatures.
Practice techniques of interpreting the winter landscape including animal tracks.
Observe resident bird populations and behavior.
Explore aquatic life in winter wetlands.

**CONCEPTS / TOPICS**:

Hibernation/dormancy/torpor
Migration
Endothermic & exothermic
Adaptation
Snowflakes (the winter water cycle)
Animal tracking
Seasonal changes
Deciduous trees
Food storage
Perennial, biannual, annual plants
Identify plants and trees in winter

**AFTER COMPLETING THIS LESSON THE AIM IS FOR STUDENTS TO BE ABLE TO:**

Describe winter wildlife survival adaptations and define: adaptation, exothermic, endothermic, migration, hibernation, dormancy, torpor
Describe what causes winter;
Describe different plant identification techniques during the winter months;
Describe plant activity during the seasonal change from fall to winter to spring;
Identify local animal species active during winter from tracking to visual identification.

# PREDATOR/PREY

**GOAL**: Students role-play various organisms in a food web to learn about the complexities of predator/prey relationships and the movement of energy through the trophic levels.

**OBJECTIVES:**
Gain a better understanding of predator prey relationships in nature.
Develop an appreciation for organisms' competition for survival in the wild.
Learn how energy travels through the food chain.
Develop an awareness of how introduced toxins and nutrients can affect the food chain.

**CONCEPTS / TOPICS:**
Predator/Prey
Trophic levels
Bio-magnification
Energy flow
Populations
Toxins
Natural mortality
Habitat loss
Food web
Food, water, shelter, air, space

**AFTER COMPLETING THIS LESSON THE AIM IS FOR STUDENTS TO BE ABLE TO:**

Define both predator and prey and give several examples of each.
Create a food chain using organisms from the forest environment.
Describe how energy flows through the food chain.
Define bio-magnification and name a chemical that creates environmental concerns due to its movement through the food pyramid.
Name two factors that can affect population size.
List the five basic needs of living organisms in order to survive over time.

# LIVING HISTORY

**GOAL:** Travel back through time and become part of the everyday life of a rural 19th century community.

**OBJECTIVES:**
Bring the past alive through an historical reenactment.
Observe different characters and learn more about their lives/ roles within the community.
Develop an understanding and appreciation for life in an 19th century rural Rhode Island community.
Identify similarities and differences between the past and the present.

**CONCEPTS / TOPICS:**

Community
Development
Natural resources
Changes to the land
Early industries
Subsistence living
Barter system
Culture
Heritage
Folklore
Lifestyle

**AFTER COMPLETING THIS LESSON THE AIM IS FOR STUDENTS TO BE ABLE TO:**

Define community as it relates to early America.
Explain what roles the various members of the community played and how they were interconnected.
List several natural resources that were utilized in the early settlement and development of West Greenwich and this region of New England.
Identify several early industries of West Greenwich and this region of the country.
List at least five similarities and five differences between life in the 18th century and life today.
Identify at least three environmental concerns caused by the settlement of West Greenwich or this region of the country.

# ARCHAEOLOGY

**GOAL**: Learn the basic principles of archaeology through hands-on discovery by participating in the excavation of a historic site on the W. Alton Jones Campus.

**OBJECTIVES:**

Learn the basic principles of archaeology through hands-on exploration.
Participate in the excavation of an historic site.
Dig in quadrants, sift for artifacts, wash, catalogue and discuss the findings.
Explore and discuss historic features.

**CONCEPTS / TOPICS:**
Archaeology
Feature
Culture
Non-Artifactual
Material
Quadrants
Artifact
Excavation and interpretation
Dating methods
Weathering
Stereotype
Conclusions

**AFTER COMPLETING THIS LESSON THE AIM IS FOR STUDENTS TO BE ABLE TO:**

Define archaeology, feature, and culture.
Explain the purpose of archaeology.
Describe the principal steps of an archeological dig such as the use of quadrants and how to excavate the site.
Discuss stereotypes and how they can affect data.
Explain the relationship between history and archaeology.
Identify zone changes in soil strata and their significance.
Explain how artifacts are dated.

# FARM LIFE

**GOAL**: Learn about small farm agriculture through hands-on activities at Woodvale Farm.

**OBJECTIVES**:
Gain a historical perspective of farm life.
Learn about sustainable agricultural practices.
Gain an understanding of where food comes from and how much energy is involved in food production.
Discuss farming technology.

**CONCEPTS/TOPICS**:

Agriculture
Animal husbandry
Sustainable methods
Organic gardening
Crop rotation
Fertilizer
Compost
Food production
Land use
Change in land over time
Technology

**AFTER COMPLETING THIS LESSON THE AIM IS FOR STUDENTS TO BE ABLE TO:**

Compare and contrast early American farming techniques and present-day American farming techniques.
List at least three different farm animals and their uses on a farm.
Describe two methods of sustainable agriculture.
Discuss some advantages and disadvantages of sustainable agricultural practices.
Generate a list of vegetables and fruits that are commonly grown in this region.
Trace a commonly eaten food product back to its source considering the energy that is involved in production.

# EARLY AMERICAN HISTORY

**GOAL**: Investigate foundations, stonewalls, and historic cemeteries to learn about early American rural history.

**OBJECTIVES**:
Gain a sense of what is was like to live in the past.
Help students appreciate the cultural differences and similarities between lifestyles of the past and lifestyles of today.
Explore evidence of old farm lands, foundations, and stonewalls.

**CONCEPTS**:

Culture
Human impact
Succession
Pioneers
Lifestyles
Survival
Farm life
Regional history
Settlement
Heritage
Folklore

**AFTER COMPLETING THIS LESSON THE AIM IS FOR STUDENTS TO BE ABLE TO:**

Compare and contrast land use during the pioneer time to land use of today
Discuss cultural differences from a historical vantage point.
Explain what culture means and recognize that there are cultures other than our own.
Discuss changes that have taken place over time and why they are important.

# GROUP BUILDING

**GOAL**: Develop teambuilding skills by overcoming a variety of simple but increasingly difficult group challenges.

**OBJECTIVES:**
Build a sense of community among students.
Learn how to set obtainable goals.
Develop communication and creative problem solving skills.
Build leadership skills and a sense of accomplishment.

**CONCEPTS / TOPICS**:
Teamwork
Cooperation
Leadership development
Communication
Planning
Problem solving
Goal setting
Community
Accomplishment

**AFTER COMPLETING THIS LESSON THE AIM IS FOR STUDENTS TO BE ABLE TO:**

List two examples where improving communication helped solve a problem.
Define teamwork and explain the importance and relevance of cooperative problem solving.
Describe one activity where planning ahead helped solve a problem.
Compare and contrast feelings of accomplishment before and after the session.
Compare and contrast the accomplishment of others in your group before and after session.

# CHALLENGE COURSE

**GOAL**: Further develop teambuilding skills learned during Group Building by overcoming a variety of increasingly difficult group challenges on a low-ropes challenge course.

**OBJECTIVES:**
Continue to work on group building using low ropes challenge course elements.
Develop trust and group interactions between students.
Enhance communication among group members.
Show respect and empathy for others and encourage appropriate risk-taking.
Build a sense of community among and between group members.

**CONCEPTS / TOPICS**:
Trust
Respect
Empathy
Frustration management
Risk taking
Commitment
Encouragement
Compromise

**AFTER COMPLETING THIS LESSON THE AIM IS FOR STUDENTS TO BE ABLE TO:**

List two examples where it is critical to trust others.
Define communication and describe how it can help or hinder teamwork.
Describe how respect, empathy, and encouragement influences group dynamics.
Define three ways to help build a sense of community in a group.
Describe a real life situation where skills learned can be applied.

# ORIENTEERING

**GOAL:** Participate in orienteering while learning about different navigation techniques.

**OBJECTIVES**:
Identify the parts of a compass, how it works, and how to use it.
Find out how to orient and read a topographical map.
Learn about historical and modern navigational techniques.
Become familiar with geographical and navigational terms (terrain, elevation, surface structure, landscape, and watersheds).
Participate in an orienteering course to develop skills in taking a bearing, compass use, and pacing.

**CONCEPTS**:

Compass
Map
Bearing
Pace orienteering
Magnetic north
True north
Navigation
Historical navigation
Modern Navigation
Topographic
Declination

**AFTER COMPLETING THIS LESSON THE AIM IS FOR STUDENTS TO BE ABLE TO:**

Use a compass effectively.
Identify water, urban and rural land surfaces, roads, trails, and changes in elevation, on different types of maps.
Apply map-reading skills.
Use a compass and map together to get from one point to another.

# OUTDOOR SKILLS

**GOAL:** Learn and apply basic outdoor survival skills.

**OBJECTIVES:**
Learn the basics of leave-no-trace camping.
Build a fire and a shelter using natural materials.
Gain basic map and compass skills.
Learn what items are valuable to take into the forest with you.

**CONCEPTS / TOPICS**:

Leave-no-trace
Preparation
10 essentials
Planning
Learn to build a shelter in an emergency situation
Three things needed to build a fire.
Define S.T.O.P.
The rules of three
Emergency Management

**AFTER COMPLETING THIS LESSON THE AIM IS FOR STUDENTS TO BE ABLE TO:**

Explain the importance of planning ahead and preparing for a wilderness trip.
Define leave no trace and why it is important.
Explain plan of action in case of an emergency.

# NIGHT HIKE

**GOAL**: Explore the world at night and learn about nocturnal wildlife and their adaptations.

**OBJECTIVES**:
Learn about nocturnal animals and their adaptations.
Experience how our senses are different at night and the changes that occur to the human eye.
Identify various components of the evening sky.
Become more comfortable in and gain appreciation for the forest at night.

**CONCEPTS/TOPICS**:
Nocturnal
Diurnal
Crepuscular
Adaptation
Echolocation
Photoreceptors
Rod and cone cells
Night vision
Bioluminescence
Triboluminescence
Constellations

**AFTER COMPLETING THIS LESSON THE AIM IS FOR STUDENTS TO BE ABLE TO:**

Define nocturnal and give at least three examples of nocturnal organisms.
Define adaptation and give examples of nocturnal adaptations.
Briefly explain the process of echolocation in bats.
Define photoreceptors and explain the two types found in the mammalian eye (rods, cones).
Identify the moon phase if visible for the evening of the night hike.

# CAMPFIRE

**GOAL:** Build community through singing, telling stories, and acting in skits that keep everyone entertained around the fire.

**OBJECTIVES**:
Build a sense of community through shared experience
Engage students in an old fashioned form of entertainment
Have Fun!

**CONCEPTS/TOPICS**:
Community
Old fashioned entertainment
Sing-along
Story telling
Fun

**AFTER COMPLETING THIS ACTIVITY THE AIM IS FOR STUDENTS TO BE ABLE TO:**

Share songs, stories and jokes they have learned with others.
Identify ways to have fun without the help of today's newest technologies.

# TOWN MEETING

**GOAL:** Participate in a mock town meeting while portraying various members of the community in order to come to a decision on an environmental topic.

**OBJECTIVES**:
Learn how a local town meeting may be conducted and its purpose.
Understand why constituents may have different opinions on certain subjects.
Respect others' opinions even when they have opposing views.
Develop an understanding about community and consensus.

**CONCEPTS/TOPICS**:
Decision making
Development
Natural Resources
Small town government
Constituent
Opposing views

**AFTER COMPLETING THIS ACTIVITY THE AIM IS FOR STUDENTS TO BE ABLE TO:**

Understand why community decision-making is important.
Have experience debating issues that may relate to them.

# NEW GAMES

**GOAL:** Participate in cooperative inclusive games while having fun.

**OBJECTIVES**:
Take part in active games where competition is not the emphasis.
Provide a fun way for everyone in a group to get involved in a spirited activity.

**CONCEPTS/TOPICS**:
Fair play
Cooperation
Teamwork
Safety
Fun

**AFTER COMPLETING THIS ACTIVITY THE AIM IS FOR STUDENTS TO BE ABLE TO:**

Know several active group games that they can play with friends.
Experience games where winning is not necessarily the goal.

# EGG DROP

**GOAL**: Work together to create a protective container for an egg using natural materials designed to withstand drops from various heights while keeping the egg from cracking.

**OBJECTIVES**:
Inspire problem-solving ability.
Create a plan and follow through with it.
Develop communication and idea-sharing skills.

**CONCEPTS/TOPICS**:
Teamwork
Planning
Problem Solving
Goal Setting
Communication
Creative thinking

**AFTER COMPLETING THIS ACTIVITY THE AIM IS FOR STUDENTS TO BE ABLE TO:**

Define teamwork.
Describe goal setting and how to set obtainable goals.
Discuss the importance of communication in carrying out an objective.

# THE MYSTERIOUS THING

**GOAL:** Work together to build a replica of an object that can only be viewed by certain group members. Students take on different roles within their group and create a chain of communication in order to complete the task.

**OBJECTIVES**:
Develop problem-solving skills.
Create a plan and follow through with the plan.
Develop communication skills.
Share ideas with one another.

**CONCEPTS/TOPICS**:
Teamwork
Planning
Problem Solving
Goal Setting
Communication
Creative thinking

**AFTER COMPLETING THIS ACTIVITY THE AIM IS FOR STUDENTS TO BE ABLE TO:**

Define teamwork and what it means to them.
Define goal setting and how to set obtainable goals.
Identify difficulties that may arise while communicating ideas.

# NATURE QUIZ SHOW

**GOAL:** Review the material learned during the various lessons at W. Alton Jones in an entertaining and interactive way.

**OBJECTIVES**:
Review and reinforce the W. Alton Jones lessons and concepts using a fun, interactive approach.
Keep students learning while taking part in an entertaining game show format program.
Work together as a team while reviewing and building on concepts they learned.

**CONCEPTS/TOPICS**:
Review
Teamwork
Fun

**AFTER COMPLETING THIS ACTIVITY THE AIM IS FOR STUDENTS TO BE ABLE TO:**

Remember the major topics in the lessons they have completed during their stay.
Realize how much they have learned while they were here, often without realizing it!

# NIGHT SKY

**GOAL**: Learn about the night sky.

**OBJECTIVES**:
Learn about stars, planets, and other celestial objects.
Understand the phases of the moon.
Identify seasonal constellations and learn about their mythology.

**CONCEPTS/TOPICS**:
Constellations
Star myths
Moon phases
Planets
Celestial objects
Circumpolar
Astronomy

**AFTER COMPLETING THIS LESSON THE AIM IS FOR STUDENTS TO BE ABLE TO:**

Define constellation.
Identify some stars and constellations.
Briefly explain astronomy.
Define circumpolar.
Identify the moon phases.

# PAPER BAG SKITS

**GOAL:** Work together in a small group to develop an original skit using props that are provided. Once the skit has been developed and practiced, it will be performed for the rest of the students at campfire. This program is generally an addition to the Campfire program.

**OBJECTIVES:**
Work together towards a common goal
Build a sense of community
Get everyone involved in providing entertainment
Encourage the expression of creativity
Have Fun!

**CONCEPTS/TOPICS:**
Entertainment
Fun
Creativity
Performance
Communication

**AFTER COMPLETING THIS ACTIVITY THE AIM IS FOR STUDENTS TO BE ABLE TO:**

Be an active part of the campfire program
Get up in front of a group and perform an original skit the way they rehearsed it

# UNDERGROUND RAILROAD

**GOAL**: Role-play runaway slaves on the Underground Railroad in 1832.

**OBJECTIVES**:
Experience through interactive performance the good will and struggles that a slave may have encountered when seeking freedom on the Underground Railroad.
Learn about the slave trade in past and present times.
Encounter bounty hunters, abolitionists, and safe houses.
Learn about the role of a conductor.
Experience the different forms of communication that were used in the Underground Railroad.
Learn about actual events that occurred during the Underground Railroad.
Learn about Rhode Island and Rhode Islanders' roles in the Underground Railroad.

**CONCEPTS/TOPICS**:
Slave trade
Bounty hunters
Abolitionist
Conductor
Safe House
Prejudice
1832 American Slaves
Underground Railroad
North Star

**AFTER COMPLETING THIS LESSON THE AIM IS FOR STUDENTS TO BE ABLE TO:**

Define what the Underground Railroad was.
Discuss prejudice and how it affects people.
Briefly explain the role of a conductor.
Define the different types of communication that were used in the Underground Railroad.
Discuss the modern-day slave trade.