ELEMENTS OF THE PRESERVE

"The Pioneers"

Curriculum for 7th through 9th grades

5 Elements of Study

Earth – North – Soils; Uplands & Wetlands; Land Fauna (Animal Tracks & Scat); Flowering Plants; Carnivorous Plants

Air – East – Weather; Clouds; Birds; Geocaching

Fire – South – Trees; Prescribed Burning; Forestry; Mapping (Geocaching); Rocks

Water – West – Water Quality; Stream Assessment; Pollutants; Water Cycle; Water Fauna

Spirit – Center – Ecology; Culture; Heritage; Native Americans; Plant Uses – Medicinal & Culinary; Food Web; Relationships (interactions)

Trips Include:

Full Day – Water (4 hours)

Introduction to Watersheds; Water Quality; Sampling Equipment (costs & calibration); Non Point Source Pollutants – 30 minutes – Canoe Launch

YSI Sampling – 2 groups – 25 minutes

Turbidimeter – 1 group – 25 minutes

Test Kits – 2 groups – 25 minutes

Conclude Assessment of Water Quality Based on All Results; Compare/Contrast Sampling Equipment based on Simplicity & Cost – 15 minutes – Canoe Launch

Introduction to Biogeochemical Cycle; Stream Health; Energy Flow at Trophic Levels; Food Webs; Activity Explanation – 30 minutes – Pavilion

Collect Leaf Litter – 30 minutes – Streamside

Analyze Leaf Litter for Macroinvertebrates & Paperwork – 45 minutes – Pavilion

Conclude Stream Health Assessment & Cleanup – 15 minutes – Pavilion

Half Day – Earth (2.5 hours)

Soil Types, Soil Probes (Wetland/ Upland), & Soils Composition Activity – 30 min

Rock Cycle & Rock Identification Activity – 30 min

Gopher Tortoise Colony Discussion and Activity with Relationships – 15 min

Carnivorous Plants Dissection and Discussions of Relationships –30 min

Animal Tracks & Scat Activity – 45 min

Full Day – Air (4 hours)

Birds of the Preserve: Birdwatching & Identification – 30 minutes
Tour Bird Rescue Facility – 30 minutes

Weather: Winds; Hurricanes (La Nina, EL Nino); Clouds; Lightning, Weather Station – 1 hour

Geocaching: Using satellites and GPS, determine locations of hidden caches – 1 hour

Disc Golf: Using wind knowledge play a round of Frisbee golf

Half Day – Fire (3 hours)

Forestry: Tree Cookie Analysis for Age & Stressors; Habitat Management with Prescribed Burning and Invasive Control; Turpentine Stories & Demonstration – 1.5 hours

Trees: Leaf/Needle Collection & Identification, Dichotomous Key – 1.5 hours

Half Day – Spirit (2 hours)

Plant Hike; Discussion of Culinary, Historical & Medicinal Plants; Plant Adaptations; Historical Stories & Customs from Local Areas Including Native Americans and Pirates

Grade 7, Alabama Science Course of Study

Objective 4 – Six Kingdom Classification - genus and species identification; taxonomy

Objective 5 – Major differences in plants and animals; photosynthesis

Objective 6 – Species variation due to climate and interspecies interaction

Objective 7 – Biotic and abiotic factors in the environment; autotrophs and heterotrophs; sequence of energy flow in ecosystem

Grade 8, Alabama Science Course of Study

Objective 1 – Scientific Process; interpret data; controls and variables; hypotheses

Objective 6 – Solution in terms of solute and solvent; diffusion; osmosis; acids and bases

Grade 9 (Biology), Alabama Science Course of Study

Objective 1 – Scientific Method

Objective 3 – Identify reactants and products associated with photosynthesis and cellular respiration and purposes of the two processes

Objective 5 – Identify organisms, populations, communities, and ecosystems as levels of organization in the biosphere

Objective 9 – Differentiate between 5 kingdom and 6 kingdom classification system; sequencing taxa; use of a dichotomous key; beneficial and harmful Monera, Protista, and Fungi; writing scientific names

Objective 10 – Distinguish between monocots and dicots, angiosperms and gymnosperms, and vascular and nonvascular plants; histology of roots, stems, leaves and flowers; chemical and physical adaptations of plants

Objective 11 – Classify animals according to type of skeletal structure

Objective 12 – Describe protective adaptations of animals, including mimicry, camouflage, beak type, migration, and hibernation; describing natural selection, survival of the fittest

Objective 13 – Trace the energy flow as it decreases through the trophic levels from producers to the quaternary level in food chains; interdependence of biotic and abiotic factors in an ecosystem; contrasting autotrophs and heterotrophs; describing the niche of decomposers

Objective 14 – Trace biogeochemical cycles through the environment, including water, carbon, oxygen, and nitrogen; relating natural disasters, climate changes, nonnative species, and human activity to the dynamic equilibrium of ecosystems; process of ecological succession

Objective 15 – Identify biomes based on environmental factors and native organisms

Objective 16 – Identify density-dependent and density-independent limiting factors that affect populations in an ecosystem; discriminating among symbiotic relationships, including mutualism, commensalism, and parasitism