



Project WILD and the Virginia Standards of Learning for Science

Project WILD Curriculum K-12 and Aquatic Guides support the 2010 Virginia Standards of Learning objectives for Science by providing background content for teachers and activities that help teach science standards using creative instructional methods. The following correlations to WILD activities directly match the Science Standard as they are written; extensions, adaptations or secondary objectives are not included. Additional activities build on the student's knowledge and further the understanding of a concept but do not correlate exactly and are not included in the listings. Other activities will support the standards in math and language arts. Reviewing the activities in the Project WILD guide along with the Topic, Subject, and Skills indexes found in the appendices will create a comprehensive correlation to the standards.

Topics such as food webs are part of the standards at different grade levels and build upon knowledge learned at an earlier grade. Activities in this correlation are listed where they would best meet the student's skill level and the SOL. Teachers are encouraged to adapt activities to the abilities of their students and can either simplify or enhance the content.

Within Virginia's Science SOLs, the first objective or ".1" standard deals the Nature of Science and Process Skills such as *classification* and *predicting*. These skills should be a part of all science lessons and can be found incorporated into every Project WILD activity. All of the Project WILD activities build on the natural curiosity students have in natural sciences and support these objectives. The outdoor classroom is a learning lab for many scientific field investigations. Teachers are referred to the *Skills Index* in the back of their Project WILD Activity Guides for activities that would assist in teaching any given skill.

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PROJECT WILD CORRELATION TO VIRGINIA'S SCIENCE STANDARDS OF LEARNING

Kindergarten	Project WILD K-12	WILD Aquatic
<p>K.2 Students will investigate and understand that humans have senses that allow them to seek, find, take in, and react or respond to information in order to learn about their surroundings. Key concepts include:</p> <p>a. The five senses and corresponding sensing organs b. sensory descriptors used to describe common objects and phenomena.</p>	<p><i>Learning to Look – Looking to See</i></p>	
<p>K.6 The student will investigate and understand the differences between living organisms and nonliving objects. Key concepts include</p> <p>a) all things can be classified as living or nonliving; and b) living organisms have certain characteristics that distinguish them from nonliving objects including growth, movement, response to the environment, having offspring, and the need for food, air, and water.</p>	<ul style="list-style-type: none"> • <i>My Kingdom for a Shelter</i> • <i>Environmental Barometer</i> • <i>Insect Inspection</i> • 	
<p>K.7 The student will investigate and understand basic needs and life processes of plants and animals. Key concepts include:</p> <p>a. animals need adequate food, water shelter and space to survive; b. plants need nutrients, water, air, light and a place to grow to survive; c. plants and animals change as they grow and have varied life cycles and eventually die; d. offspring of plants and animals are similar but not identical to their parents or to one another.</p>	<ul style="list-style-type: none"> • <i>My Kingdom for a Shelter</i> • <i>What's That Habitat</i> 	<ul style="list-style-type: none"> • <i>Are You Me?</i>
<p>K.8 The student will investigate and understand that there are simple repeating patterns in his/her daily life. Key concepts include</p> <p>a. weather observations; b. the shapes and forms of many common natural objects including seeds, cones, and leaves; and c. animal and plant growth;.</p>	<ul style="list-style-type: none"> • <i>Color Crazy</i> • <i>What's That Habitat?</i> • <i>Seed Need</i> 	<ul style="list-style-type: none"> • <i>Are You Me?</i> • <i>Water Plant Art</i>
<p>K.11 The student will investigate and understand that materials can be reused, recycled and conserved. Key concepts include</p> <p>a. materials and objects can be used over and over again; b. everyday materials can be recycled; and c. water and energy conservation at home and in school helps ensure resources are available for future use.</p>		<ul style="list-style-type: none"> • <i>Plastic Voyages</i> • <i>Aqua Words</i>

First Grade	Project WILD K-12	WILD Aquatic
<p>1.4 The student will investigate and understand that plants have basic life needs and functional parts and can be classified according to certain characteristics. Key concepts include:</p> <p>a. plant needs (nutrients, air water, light, and a place to grow); b. basic parts of plants; and c. plants can be classified on a variety of characteristics:</p>	<ul style="list-style-type: none"> • <i>Seed Need</i> 	<ul style="list-style-type: none"> • <i>Water Plant Art</i>
<p>1.5 The student will investigate and understand that animals, including humans, have basic needs and certain distinguishing characteristics. Key concepts include:</p> <p>a. basic needs include adequate air, food, water, shelter and space); b. animals, including humans have many different physical characteristics c. animals can be classified according to a variety of characteristics.</p>	<ul style="list-style-type: none"> • <i>What's Wild</i> • <i>Color Crazy</i> • <i>What Bear Goes Where</i> • <i>My Kingdom for a Shelter</i> • <i>Insect Inspection</i> • <i>Busy Bees, Busy Blooms</i> • 	<ul style="list-style-type: none"> • <i>Fashion A Fish</i> • <i>Water We Eating?</i>
<p>1.7 The student will investigate and understand that weather and seasonal changes. Key concepts include:</p>	<ul style="list-style-type: none"> • <i>The Thicket Game</i> • <i>What You Wear is What They were</i> 	

<ul style="list-style-type: none"> a. changes in temperature, light and precipitation affect plants and animals including humans; b. there are relationships between daily and seasonal changes; and c. changes in temperature, light, and precipitation can be observed and recorded over time. 		
1.8 The student will investigate and understand that natural resources are limited. Key concepts include <ul style="list-style-type: none"> a. identification of natural resources; b. factors that affect air and water quality; and c. recycling, reusing and reducing consumption of natural resources. 	<ul style="list-style-type: none"> • <i>What's Wild</i> • <i>Learning to Look, Looking to See</i> 	

Second Grade	Project WILD K-12	WILD Aquatic
2.4 The student will investigate and understand that plants and animals go through a series of orderly changes as they mature and grow. Key concepts include: <ul style="list-style-type: none"> a. animal life cycles; b. plants life cycles 	<ul style="list-style-type: none"> • <i>Busy Bees, Busy Blooms</i> 	<ul style="list-style-type: none"> • <i>Are you Me?</i> • <i>Hooks and Ladders</i>
2.5 The student will investigate and understand that living things are part of a system. Key concepts include: <ul style="list-style-type: none"> a. living organisms are interdependent with their living and nonliving surroundings b. an animals habitat includes adequate food, water, shelter or cover and space; c. habitats change over time due to many influences; and d. fossils provide information about living systems that were on Earth years ago. 	<ul style="list-style-type: none"> • <i>What Bear Goes Where?</i> • <i>Forest In a Jar</i> • <i>Urban Nature Search</i> 	<ul style="list-style-type: none"> • <i>Puddle Wonders!</i> • <i>Marsh Munchers</i>
2.7 The student will investigate and understand that weather and seasonal changes affect plants, animals, and their surroundings. Key concepts include <ul style="list-style-type: none"> a. effects of weather and seasonal changes on the growth and behavior of living things; and b. weathering and erosion of land surfaces. 	<ul style="list-style-type: none"> • <i>Color Crazy</i> • <i>Surprise Terrarium</i> • <i>What Bear Goes Where</i> 	<ul style="list-style-type: none"> • <i>Silt: A Dirty Word</i>
2.8 The student will investigate and understand that plants produce oxygen and food, are a source of useful products, and provide benefits in nature. Key concepts include: <ul style="list-style-type: none"> a. important plant products are identified and classified; b. the availability of plant products affects the development of a geographic area; c. plants provide oxygen, homes and food for many animals; and d. plants can help reduce erosion. 	<ul style="list-style-type: none"> • <i>Food Footprint</i> • <i>Busy Bees, Busy Blooms</i> 	<ul style="list-style-type: none"> • <i>Water We Eating?</i> • <i>Water Plant Art</i>

Third Grade	Project WILD K-12	WILD Aquatic
3.4 The student will investigate and understand that adaptations allow animals to satisfy to life needs and respond to the environment. Key concepts include: <ul style="list-style-type: none"> a. behavioral adaptations; and b. physical adaptations 	<ul style="list-style-type: none"> • <i>Ants on a Twig</i> • <i>Surprise Terrarium</i> • <i>Adaptation Artistry</i> • <i>Keeping Cool</i> 	<ul style="list-style-type: none"> • <i>Marsh Munchers</i> • <i>Fashion A Fish</i> • <i>Sockeye Scents</i>
3.5 The student will investigate and understand relationships among organisms in aquatic and terrestrial food chains. Key concepts include: <ul style="list-style-type: none"> a. producer, consumer, decomposer; b. herbivore, carnivore, omnivore; c. predator-prey. 	<ul style="list-style-type: none"> • <i>Thicket Game</i> • <i>Owl Pellets</i> • <i>Quick Frozen Critters</i> 	<ul style="list-style-type: none"> • <i>Marsh Munchers</i>
3.6 The student will investigate and understand that ecosystems support a diversity of plants and animals that share limited resources. Key concepts include: <ul style="list-style-type: none"> a. aquatic ecosystems; b. terrestrial ecosystems; 	<ul style="list-style-type: none"> • <i>Map that Habitat</i> • <i>Urban Nature Search</i> • <i>Limiting Factors:How Many Bears?</i> • <i>Graphanimal</i> 	<ul style="list-style-type: none"> • <i>Water Plant Art</i> • <i>Marsh Munchers</i>

<ul style="list-style-type: none"> c. populations and communities; and d. the human role in conserving limited resources 	<ul style="list-style-type: none"> • <i>Habicache (indirect)</i> • <i>Environmental Barometer</i> 	
<p>3.8 The student will investigate and understand basic patterns and cycles occurring in nature. Key concepts include</p> <ul style="list-style-type: none"> a. patterns of natural events such as day and night, seasonal changes, simple phases of the moon, and tides; b. animal life cycles; and c. plant life cycles. 	<ul style="list-style-type: none"> • Lights Out 	<ul style="list-style-type: none"> • <i>Are You Me</i>
<p>3.9 The student will investigate and understand the water cycle and its relationship to life on Earth. Key concepts include</p> <ul style="list-style-type: none"> a. there are many sources of water on Earth b. the energy from the sun drives the water cycle; c. the water cycle involves several processes; d. water is essential for living things; and e. water on Earth is limited and needs to be conserved. 		<ul style="list-style-type: none"> • <i>How Wet is Our Planet?</i> • <i>Aqua Words (indirect)</i>
<p>3.10 The student will investigate and understand that natural events and human influences can affect the survival of species. Key concepts include:</p> <ul style="list-style-type: none"> a. the interdependency of plants and animals; b. human effects on the quality of air, water, and habitat; c. the effects of fire, flood, disease, erosion, on organisms; and d. conservation and resource renewal. 	<ul style="list-style-type: none"> • <i>Environmental Barometer</i> • <i>Lights Out</i> 	<ul style="list-style-type: none"> • <i>What's In The Water?</i>

Fourth Grade	Project WILD K-12	WILD Aquatic
<p>4.5 The student will investigate and understand how plants and animals including humans in an ecosystem interact with one another and with the nonliving components of the ecosystem. Key concepts include:</p> <ul style="list-style-type: none"> a. plant and animal adaptations; b. organization of populations, communities and ecosystems and how they interrelate; c. flow of energy through food webs; d. habitats and niches; e. changes in an organism's niche at various stages of its life cycles; f. influence of human activity on ecosystems. 	<ul style="list-style-type: none"> • <i>Habicache</i> • <i>Quick Frozen Critters</i> • <i>Owl Pellet</i> • <i>Adaptation Artistry</i> • <i>Busy Bees, Busy Blooms</i> • <i>Keeping Cool</i> • <i>Monarch Marathon</i> • <i>Lights Out</i> 	<ul style="list-style-type: none"> • <i>Edge of Home</i> • <i>Designing a Habitat Water Plant Art</i> • <i>Fashion a Fish</i> • <i>Got Water?</i>
<p>4.6 The students will investigate and understand how weather conditions and phenomena occur and can be predicted. Key concepts include:</p> <ul style="list-style-type: none"> a. weather phenomena b. weather measurements and meteorological tools 		<ul style="list-style-type: none"> • <i>Where Does Water Run?</i> • <i>Puddle Wonders!</i>
<p>4.9 The student will investigate and understand important Virginia natural resources. Key concepts include:</p> <ul style="list-style-type: none"> a. watershed and water resources; b. animals and plants; c. minerals, rocks, ores, and energy sources; d. forests, soil, and land 	<ul style="list-style-type: none"> • <i>Animal Charades</i> • <i>Bat Blitz</i> 	<ul style="list-style-type: none"> • <i>Fishy Who's Who</i> • <i>Where Does Water Run</i> • <i>Watershed</i> • <i>Watered-Down History</i>

Fifth Grade	Project WILD K-12	WILD Aquatic
<p>5.5 The student will investigate and understand that organisms are made of one or more cells and have distinguishing characteristics that play a vital role in the organism's ability to survive and thrive in the environment. Key concepts include:</p> <ul style="list-style-type: none"> a. basic cell structures and functions; b. classification of organisms using physical characteristics, body structures, and behavior of the organism; and c. traits of organisms that allow them to survive in their environment. 	<ul style="list-style-type: none"> • <i>Interview a Spider</i> • <i>A Home Away From Home</i> 	<ul style="list-style-type: none"> • <i>Micro Odyssey</i> • <i>Fashion A Fish</i>

<p>5.6 The student will investigate and understand characteristics of the ocean environment. Key concepts include:</p> <ul style="list-style-type: none"> a. geological characteristics; b. physical characteristics; and c. ecological characteristics. 		<ul style="list-style-type: none"> • <i>Marsh Munchers</i> • <i>Turtle Hurdles</i> • <i>Net Gain, Net Effect</i> • <i>Whale of a Tail</i>
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Sixth Grade	Project WILD K-12	WILD Aquatic
<p>6.7 The student will investigate and understand the natural processes and human interactions that affect watershed systems. Key concepts include</p> <ul style="list-style-type: none"> a. the health of ecosystems and the abiotic factors of a watershed; b. the location and structure of Virginia's regional watershed systems; c. divides, tributaries, river systems, and river and stream processes; d. wetlands; e. estuaries; f. major conservation, health, and safety issues associated with watersheds; and g. water monitoring and analysis using field equipment including hand-held technology. 		<ul style="list-style-type: none"> • <i>Where Does Water Run?</i> • <i>Watershed</i> • <i>Marsh Munchers</i> • <i>Wetland Metaphors</i>
<p>6.9 The student will investigate and understand public policy decisions relating to the environment. Key concepts include</p> <ul style="list-style-type: none"> a. management of renewable resources; b. management of nonrenewable resources; c. the mitigation of land-use and environmental hazards through preventive measures; and d. cost/benefit tradeoffs in conservation policies. 	<ul style="list-style-type: none"> • <i>The Power of Planning</i> • <i>A Dire Diet</i> • <i>Sustainability: Then, Now, Later</i> • <i>Pay to Play</i> • <i>Changing the Land</i> • <i>Lights Out</i> 	<ul style="list-style-type: none"> • <i>Where Have All the Salmon Gone?</i> • <i>Dragonfly Pond</i> • <i>Conservation Messaging</i>

7 th grade Life Science	Project WILD K-12	WILD Aquatic
<p>LS.4 The student will investigate and understand how organisms can be classified. Key concepts include</p> <ul style="list-style-type: none"> a. distinguishing characteristics among domains of organisms b. distinguishing characteristics among kingdoms of organisms; c. distinguishing characteristics of major animal phyla and plant divisions; and d. the characteristics that define a species. 	<ul style="list-style-type: none"> • <i>Adaptation Artistry</i> • <i>Tracks (indirect)</i> 	<ul style="list-style-type: none"> • <i>Micro Odyssey</i> • <i>Fashion a Fish</i>
<p>LS.6 The student will investigate and understand that organisms within an ecosystem are dependent on one another and on nonliving components of the environment. Key concepts include:</p> <ul style="list-style-type: none"> a. the carbon, water, and nitrogen cycles; b. interactions resulting in a flow of energy and matter throughout the system; c. complex relationships within terrestrial, freshwater, and marine ecosystems; and d. energy flow in food webs and energy pyramids. 	<ul style="list-style-type: none"> • <i>Eco- Enrichers</i> • <i>Which Niche?</i> • <i>Ecosystem Architects</i> • <i>Bat Blitz</i> • <i>Phenology at Play</i> 	<ul style="list-style-type: none"> • <i>Water Canaries</i> • <i>The Edge of Home</i> • <i>Blue-Ribbon Niche</i>
<p>LS.7 The student will investigate and understand that interactions exist among members of a population. Key concepts include:</p> <ul style="list-style-type: none"> a. competition, cooperation, social hierarchy, territorial imperative; b. influence of behavior on population interactions. 	<ul style="list-style-type: none"> • <i>Carrying Capacity</i> • <i>Muskox Maneuvers</i> • <i>Bat Blitz</i> • <i>Phenology at Play</i> 	
<p>LS.8 The student will investigate and understand interactions among populations in a biological community. Key concepts include:</p> <ul style="list-style-type: none"> a. the relationship among producers, consumers, and decomposers in food webs; b. the relationship of predators and prey; c. competition and cooperation; d. symbiotic relationships; and 	<ul style="list-style-type: none"> • <i>Good Buddies</i> • <i>Ecosystem Architects</i> • <i>Bat Blitz</i> • <i>Monarch Marathon</i> 	<ul style="list-style-type: none"> • <i>Blue Ribbon Niche</i>

e. niches; f.		
LS.9 The student will investigate and understand how organisms adapt to biotic and abiotic factors in a biome. Key concepts include: a. differences between ecosystems and biomes; b. characteristics of land, marine, and freshwater biomes; c. adaptations that enable organisms to survive within a specific biome.	<ul style="list-style-type: none"> • <i>Which Niche?</i> • <i>Ecosystem Architects</i> • <i>Birds of Prey</i> 	
LS.10 The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic and change over time and respond to daily, seasonal and long term changes in their environment. Key concepts include: a. phototropism, hibernation, and dormancy; b. factors that increase or decrease population size; and c. eutrophication, climate change, and catastrophic disturbances.	<ul style="list-style-type: none"> • <i>Checks and Balances</i> • <i>Carrying Capacity</i> • <i>Raindrops and Ranges</i> • <i>Forest in a Jar</i> 	<ul style="list-style-type: none"> • <i>Migration Headache</i> • <i>The Glass Menagerie</i> • <i>Pond Succession</i>
LS.11 The student will investigate and understand the relationships between ecosystem dynamics and human activity. Key concepts include: a. food production and harvest; b. change in habitat size, quality, and structure; c. change in species competition; d. population disturbances and factors that threaten and enhance species survival; e. environmental issues.	<ul style="list-style-type: none"> • <i>Pay to Play</i> • <i>Changing The Land</i> • <i>Migration Barriers</i> • <i>Sustainability: Then and Now</i> • <i>Lights Out</i> 	<ul style="list-style-type: none"> • <i>Aquatic Roots</i> • <i>Net Gain, Net Effect</i> • <i>Where Have All the Salmon Gone?</i>
LS.12 The student will investigate and understand that organisms reproduce and transmit genetic information to new generations. Key concepts include a. the structure and role of DNA; b. the function of genes and chromosomes; c. genotypes and phenotypes; d. characteristics that can and cannot be inherited; e. genetic engineering and its applications; and f. historical contributions and significance of discoveries related to genetics	<ul style="list-style-type: none"> • <i>Bottleneck Genes</i> 	
LS.13 The student will investigate and understand that populations of organisms change over time. Key concepts include: a. the relationships of mutation, adaptation, natural selection, and extinction; b. evidence of evolution of different species in the fossil record; and c. how environmental influences, as well as genetic variation, can lead to diversity of organisms.	<ul style="list-style-type: none"> • <i>Here Today, Gone Tomorrow</i> • <i>Bottleneck Genes</i> • <i>Back from the Brink (indirect)</i> 	

Earth Science	Project WILD K-12	WILD Aquatic
ES.6 The student will investigate and understand the differences between renewable and nonrenewable resources. Key concepts include: a. fossil fuels, minerals, rocks, water, and vegetation; b. advantages and disadvantages of various energy sources; c. resources found in Virginia; and d. environmental costs and benefits	<ul style="list-style-type: none"> • <i>Sustainability: Then, Now, Later</i> • <i>The Power of Planning</i> 	<ul style="list-style-type: none"> • <i>Dragonfly Pond</i> • <i>To Dam or Not to Dam</i>

<p>ES.8 The student will investigate and understand how freshwater resources are influenced by geologic processes and the activities of humans. Key concepts include</p> <ol style="list-style-type: none"> processes of soil development; development of karst topography; relationships between groundwater zones including saturated and unsaturated zones and the water table; identification of sources of fresh water including rivers, springs, and aquifers with reference to the hydrologic cycle; dependence on freshwater resources and the effects of human usage on water quality; and identification of the major watershed systems in Virginia including the Chesapeake Bay and its tributaries. 	<ul style="list-style-type: none"> <i>Raindrops and Ranges</i> 	<ul style="list-style-type: none"> <i>Alice in Waterland</i> <i>Where Does Water Run?</i> <i>Watershed</i>
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Biological Science	Project WILD K-12	WILD Aquatic
<p>Bio. 6 The student will investigate and understand common mechanisms of inheritance and protein synthesis. Key concepts include</p> <ol style="list-style-type: none"> cell division; sex cell formation; cell specialization prediction of inheritance of traits based on the Mendelian laws of heredity; historical development of the structural model of DNA; genetic variation; the structure, function and replication of nucleic acids events involved in the construction of proteins; use, limitations and misuse of genetic information; and exploration of the impact of DNA technologies 	<ul style="list-style-type: none"> <i>Bottleneck Genes</i> 	
<p>Bio. 7 The student will investigate and understand how populations change over time. Key concepts include</p> <ol style="list-style-type: none"> evidence found in fossil records; how genetic variation, reproductive strategies and environmental pressures impact the survival of populations; how natural selection leads to adaptations; and emergence of new species; and scientific evidence and explanations for biological evolution. 	<ul style="list-style-type: none"> <i>Back from the Brink</i> <i>Bottleneck Genes</i> 	<ul style="list-style-type: none"> <i>Eat and Glow (indirect)</i>
<p>Bio. 8 The student will investigate and understand dynamic equilibria within populations, communities, and ecosystems. Key concepts include</p> <ol style="list-style-type: none"> interactions within and among populations including carrying capacities, limiting factors and growth curves; nutrient cycling with energy flow through ecosystems; succession patterns in ecosystems; the effects of natural events and human influences on ecosystems; and analysis of the flora, fauna and microorganisms on Virginia ecosystems. 	<ul style="list-style-type: none"> <i>Turkey Tallies</i> <i>Carrying Capacity</i> <i>Checks and Balances</i> <i>Changing the Land</i> 	<ul style="list-style-type: none"> <i>Migration Headaches Where Have All The Salmon Gone</i>

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