

VIRGINIA ANIMALS & THEIR HABITATS

Unit Introduction

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Virginia Animals and their Habitats Unit Introduction

Unit Overview Statement

Virginia Animals and their Habitats is a second-grade cross-curricular unit that is aligned to the Virginia Standards of Learning (SOL). The following SOL were used for alignment of unit activities: 2008 *History and Social Science SOL*, 2009 *Mathematics SOL*, 2010 *English SOL*, and 2010 *Science SOL*. The unit integrates the second-grade content areas of science, language arts, mathematics, and social studies. Students will develop an understanding of Virginia animals and their habitats through active research, and will observe and collect data to communicate their understanding. They will investigate life cycles of animals within the animal's habitat and the interdependence of animals with their environment. Students will utilize reading and writing skills to research new information about their animals and their habitats. Students will use mathematical concepts such as measurement, data collection, and computation as research tools. Students will develop the geography skills necessary to compare and contrast Virginia's ecosystems.

During this unit, students will work in small groups to demonstrate their learning of a specific animal and its habitat. Each student group will present their findings in a variety of oral, written, and visual formats. The unit will culminate with the development of higher order thinking skills as the class synthesizes each group's data related to its specific animal. The class will draw conclusions about the interdependency of organisms within Virginia's ecosystems. This will enable students to gain an appreciation of wildlife in Virginia and the ways to conserve animals and habitats for future generations.

Virginia Animals and their Habitats was created and written by a group of six Virginia second-grade teachers in partnership with the Virginia Department of Education's Office of Elementary Instructional Services and the Virginia Department of Game and Inland Fisheries' Wildlife Education Office. The unit was pilot tested by 36 Virginia second-grade teachers.

Unit Instructional Pedagogy

The *Virginia Animals and their Habitats* unit is a cross-curricular unit. The unit integrates the content and skills of science, mathematics, social studies, language arts, and the arts. Through the use of a cross-curricular approach to the unit, students will see their school subjects as connected and interrelated, rather than isolated and divided. This approach allows students to build on their current knowledge base and connect what they know with what they are learning; and it promotes the higher level thinking and collaborative skills needed for lifelong success.

Inquiry-based teaching puts the emphasis on the students seeking answers for themselves and helps them become creative problem solvers. Students will have opportunities to make observations, collect, analyze, and synthesize information, draw conclusions, develop problem-solving skills, and report about and display the information they have learned. Throughout the unit, the teacher will guide the students to think critically, to ask difficult questions and to seek answers to those questions. Students will learn to think, explore and research.

There is a project-based learning component to the unit. During the instruction in the classroom of the *Virginia Animals and their Habitats* unit, students will participate in small, cooperative learning groups to research and complete a group project about a “student-group-selected” Virginia animal. At the culmination of their project, they will present what they have learned to the class using multiple presentation modes.

The cross-curricular design of the *Virginia Animals and their Habitats* unit has strategies imbedded for differentiation so that all students in the class can be successful learners. This unit uses children’s natural curiosity and interests to engage them in learning, and provides the connections to their world that provides relevance to their learning.

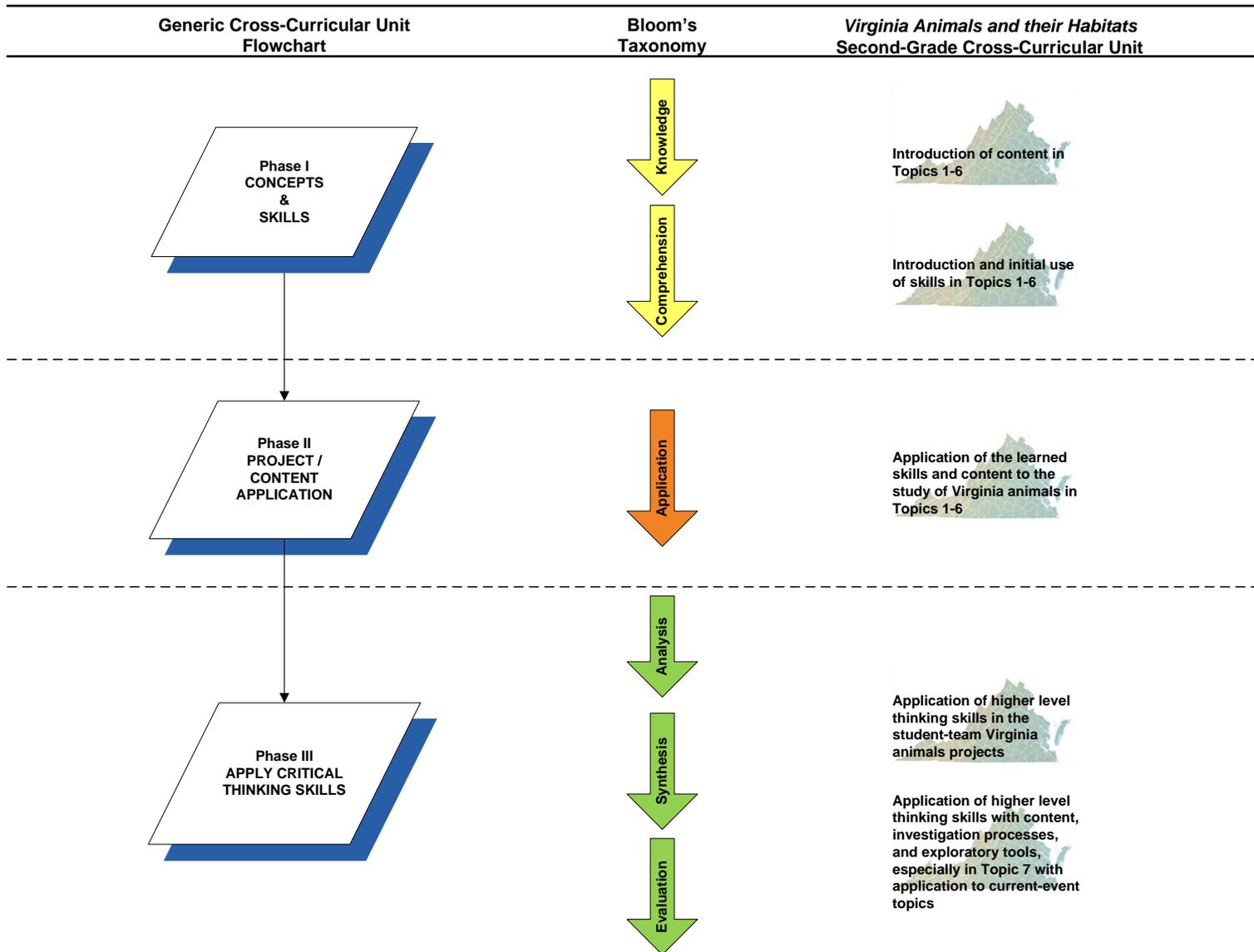
A summary of the *Virginia Animals and their Habitats* unit’s topics and sessions can be found on page iii.

A visual view of the overall flow of the *Virginia Animals and their Habitats* unit aligned to the flow of generic cross-curricular units and Bloom’s Taxonomy is on page iv.

Summary of the Unit Topics and Sessions

Topic #	Topic	Session #	Session
1	What Makes Something Alive?	1.1	Unit Introduction
		1.2	Living vs. Nonliving
		1.3	Real and Imaginary
2	How Do Scientists Classify Animals?	2.1	Animal Sorting
		2.2	Insects!
		2.3	Insect Math
		2.4	Animal Poetry Introduction
		2.5	Animal Poetry Work Session
		2.6	Animal Poetry Completion Session
		2.7	Student Team Project Introduction
3	What is a Habitat?	3.1	Introduction to Animal Habitats
		3.2	Animal Habitats Components
		3.3	Sensory Observations
		3.4	Talking with a Habitat Scientist
		3.5	Measurement Preparation
		3.6	Writing for the Student Team Project
		3.7	Measuring Tree Heights
		3.8	Square Meter Habitats – Observation One
		3.9	Student Project Work Time – Visual Project Product
		3.10	Square Meter Habitats – Observation Two, Three, and Four (will take a minimum of three session times to complete)
4	What is a Life Cycle?	4.1	Introduction to Animal Life Cycles
		4.2	Butterflies and Moths
		4.3	Frogs
		4.4	Life Cycle Models
		4.5	Student Project Work Time – Life Cycles
5	What is a Food Chain?	5.1	Animals and their Food
		5.2	Black Bears
		5.3	Food Chains
		5.4	Food Chains and Food Webs
		5.5	Student Project Work Time – Food Chains and Food Webs
6	How Do Animals Adapt to Survive?	6.1	Introduction to Animal Adaptations
		6.2	No Water Off a Duck’s Back
		6.3	Designer Animals
		6.4	Student Project Work Time – Introduction to the Project Presentation Guidelines
		6.5	Adaptations – Migration
		6.6	Migration Math
		6.7	Tundra Swan Migration
		6.8	Other Animals Migrate, too!
		6.9	Caterpillar Adaptations
		6.10	Yum Yum Caterpillars
		6.11	Hidden Lizards
		6.12	Student Project Work Time – General
7	Unit Culmination	7.1	Student Project Presentation Preparations
		7.2	Student Project Presentations (may take several sessions)
		7.3	Interdependence – Animals with their Living and Nonliving Surroundings
		7.4	Classifying our Virginia Animals
		7.5	Virginia Animal Food Chains and Food Webs
		7.6	Protecting Virginia’s Habitats

Overall Flow of *Virginia Animals and their Habitats* Unit



Student Journals

As part of the *Virginia Animals and their Habitats* unit, students will make and use on a regular basis a journal. The student journals are a very important part of the unit.

Student journals provide your students with the opportunity to read, write, describe and think about the science they are learning. The student journals will make nature the subject, and use observation, data collection and analysis, reflection, drawing, and writing as the processes for learning. A student journal that includes drawings and narratives, as well as a written record of a student's thoughts and feelings, can help to tie together science, mathematics, reading, history and social science, and art and provide opportunities for creativity and reflection.

During the unit, the student journals will have multiple educational purposes.

1. The journals will model the real-life data collection tool that scientists use when they do field studies. You can indicate to your students that journals have been kept by historic scientists as a means of documenting their work, their discoveries, and their thoughts. (*A good example of a historic journal is the work of Lewis and Clark who were commissioned to find a water route to the Pacific and explore the uncharted West. We know details about their journey and the discoveries they made during their travels because they documented everything in their journey log.*) (http://www.nationalgeographic.com/lewisandclark/journey_intro.html)
2. The journals will be an excellent tool to improve student writing and reading skills.
3. The journals will become a reference and resource for your students to use throughout the unit. Their journals will be a means for them to record information they learn, things they observe, thoughts and feelings about things they learn, and will be a place for data collection and analysis. Students will be able to refer back to the information they have collected.
4. The journals will provide a tool for you as the teacher to help make each student more successful. Journaling can help your students see that their own observations and feelings about the world are important.
5. The journals can be used as a periodic assessment tool for you to monitor your students' understanding of the unit content and the unit processes; and to periodically check your students' progress in strengthening their writing and reading skills.

The actual physical journals can be made in several different ways. You will want to select the format that your students will use before beginning the unit. Some of the different journal formats are (but are not limited to):

- a. Each student uses a loose-leaf notebook.
- b. Each student uses a spiral notebook.

- c. Each student keeps a folder of journal pages that will then be put into a book at the end of the unit.

Give students an opportunity to decorate their journal covers. The decorations can be as elaborate or as simple as you would like.

Suggested journal sections:

- a. Journal Table of Contents (TOC) – be sure to leave several pages at the beginning of the journal to add items to the TOC as students make new journal entries. You may want to define with your students some of the sections of their TOC at the beginning of the unit (e.g., vocabulary section, experiments and activities section, daily diary section).
- b. Vocabulary/glossary list – as students learn new vocabulary for the unit, add them to a vocabulary/glossary list. Pages will need to be reserved for this.
- c. There are specific references throughout the unit that describe journal entries that are to be made. Some of these entries can be completed on unit student sheets which can be attached in the journal or they can be written directly into the journal. Additional journal entries can be added beyond what are suggested in the unit lessons.
- d. The journal can be used for periodic (e.g., daily, every other day) student “diary” entries. These entries can be put on the “next page” of the journal each time or a specific section of the journal can be designated for “diary” entries. The “diary” entries give the students the opportunity to describe in their own words what they have done or how they feel about information they have learned. The journal “diary” entries can be entered in many different formats such as poems, stories, lists, etc.
- e. Student drawings, photographs, etc., can be added to the journal.
- f. You can determine any other entries you would like for your students to include in their journals.



Project WILD and *Virginia Animals and their Habitats*

The Virginia Department of Game and Inland Fisheries' mission in part is to provide education about our wildlife resources to all citizens in the Commonwealth. The Department's main K-12 effort is the implementation and distribution of Project WILD, a national wildlife education program made available through teacher inservice workshops. Project WILD links students and wildlife through wildlife-based conservation and environmental education that fosters responsible actions toward wildlife and related natural resources. It is based on the premise that young people and educators have a vital interest in learning about our natural world.

Each Project WILD activity contains information needed to conduct that activity including objectives, method, background information, a list of materials needed, procedures, evaluation suggestions, recommended grade levels, subject areas, duration, group size, setting, and key terms. A glossary is provided, as well as a cross-reference by topics and skills. Many of the activities support Virginia's Standards of Learning objectives.

The Department of Game and Inland Fisheries will offer the Project WILD activity guides through workshops designed to supplement the *Virginia Animals and their Habitats* cross-curricular unit. Background information from Project WILD activities will provide additional content information on each topic.

Teachers who attend the workshops will receive both of the Project WILD activity guides.

- *K-12 Curriculum and Activity Guide* is the original guide featuring 122 activities emphasizing terrestrial species and their habitats. A wide range of ecological concepts are covered including: food webs or energy flow, adaptations, interdependence, carrying capacity and habitats.
- *Aquatic K-12 Curriculum and Activity Guide* provides a look at aquatic wildlife and their ecosystems. This guide with 49 activities supports the watershed and Chesapeake Bay related SOLs as well as the wildlife concepts mentioned above.

***From the tiny minnow to the majestic eagle, wildlife and humans are integrally connected.
Earth is Home to us all, share it responsibly.***

To schedule a local Project WILD workshop for 15 or more teachers contact: Suzie Gilley, Project WILD State Coordinator, 804/367-0188 or suzie.gilley@dgif.virginia.gov
Additional information about Project WILD and wildlife in Virginia can be found at www.dgif.virginia.gov

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**Insect Workbook*

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Columbus, Ohio

Twenty/Twenty-Projects and Activities for WILD School Sites

**Insect Safari*

Pennsylvania State University – Department of Entomology
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Insect Image Gallery

**Tailed Jay Butterfly (Jon Lelito, photographer)*

**Postman Butterfly (Jon Lelito, photographer)*

**Julia Butterfly (Jon Lelito, photographer)*

**Isabella Butterfly (Jon Lelito, photographer)*

**Leopard Moth (Maryann Frazier, photographer)*

**Imperial Moth (Maryann Frazier, photographer)*

**Io Moth (Maryann Frazier, photographer)*

**Giant Swallowtail Butterfly Caterpillar (Maryann Frazier, photographer)*

**Pandora Sphinx Moth Caterpillar (Maryann Frazier, photographer)*

Smithsonian National Zoological Park
Washington, DC

Animals – Backyard Biology

**Black Swallowtail Butterfly*

**American Painted Lady Butterfly*

**Great Spangled Fritillary*

**Monarch Butterfly*

**Tiger Swallowtail Butterfly*

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- **Waved Sphinx Moth* (Blake Newton, photographer)
- **Clearwing Sphinx Moth* (Blake Newton, photographer)
- **Pipevine Swallowtail Caterpillar* (Ric Bessin, photographer)
- **Spicebush Butterfly Caterpillar* (Ric Bessin, photographer)
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- **Prince Baskettail* (David Arboux, photographer)
- **Argiope Spider* (David Arboux, photographer)

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- **Measuring Tree Height*

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Wildlife Information

- **Eastern Gray Fox* (Dave Schaffer, USFWS, photographer)
- **Virginia Opossum* (John White, photographer)
- **White-tailed Deer* (Lee Walker, photographer)
- **White-tailed Deer Fawn* (WJ Berg, USFWS, photographer)
- **Black Bear* (Steven Ferguson, photographer)
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- **Black Vulture*
- **Gray Squirrel* (Jeff Trollinger, photographer)
- **Eastern Box Turtle* (John White, photographer)
- **Osprey*
- **American Toad* (John White, photographer)
- **Largemouth Bass*
- **Bullfrog* (Bob Greenlee, photographer)
- **Little Grass Frog* (Paul Sattler, photographer)
- **Mountain Chorus Frog* (Paul Sattler, photographer)
- **Northern Green Frog* (Paul Sattler, photographer)
- **Pickerel Frog* (John White, photographer)
- **Insects student sheet*
- **A Look Outside DVD*

- *Compare Yourself to a Black Bear student sheet*
- *Virginia map with no labels*
- *Tundra Swan 888 Migration Path*
- *Tundra Swan 893 Migration Path*
- *Tundra Swan 894 Migration Path*

Virginia Tech – Department of Entomology
Blacksburg, Virginia

Insect Identification Lab

- *Gypsy Moth (E.A. Roberts, Senior Research Associate, Department of Entomology; Virginia Tech)*
- *Tent Caterpillar*
- *Green-striped Mapleworm*
- *Gypsy Moth Caterpillar (E.A. Roberts, Senior Research Associate, Department of Entomology; Virginia Tech)*
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- *Saddleback Caterpillar*
- *Fall Webworm Caterpillars*