Virginia's Wildlife Resources

Virginians are fortunate to share their home with a wide diversity of wildlife. Over 10,000 species of birds, mammals, fish, reptiles, amphibians, and different classes of invertebrates may be found from the depths of the Atlantic Ocean to Virginia's highest mountaintop, Mt. Rogers. Regardless of whether a species flies, swims, or crawls, it must have a healthy habitat, or home, to thrive.

The Importance of Habitat

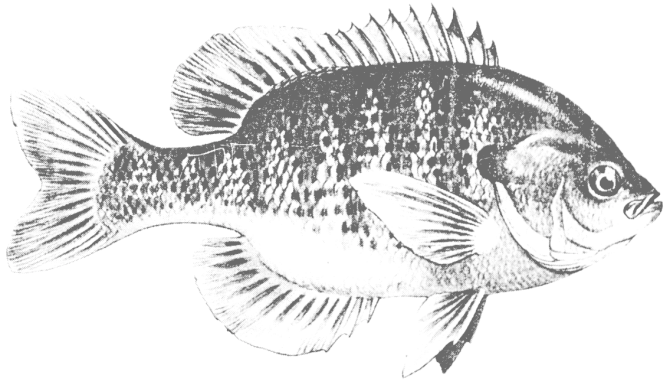
Habitat is more than just the space an animal occupies. Within that space are food, water, and shelter, arranged so that the animal can travel with minimal exposure to predators, foul weather, and other dangers. Like a well-built home, a suitable habitat must serve all of these purposes throughout the year.

The number of individuals of a given species that a habitat can support is called its "carrying capacity." This number fluctuates with the seasons, and a habitat generally supports more animals during the growing seasons than during the harsh days of winter. Carrying capacity will also change according to the age of the habitat's population. Finally, interrelationships between species influence carrying capacity for an area. The availability of prey species, for instance, affects the number of predators that can thrive.

Over the past 400 years, Virginia's wildlife habitats have changed in many ways. Where once grew large expanses of old growth forests covering hundreds of square miles, there grow today young forests interrupted by fields, roads, and houses. In lower reaches, large wetlands and flood plains along the rivers which serve as natural sponges have been filled to extend fields for the growing of corn and other crops. Large and small reservoirs cover areas where rivers and streams once flowed.

Some "clean" farming activities may threaten wildlife habitat.

With the loss of habitat diversity and acreage comes a change in species mix and numbers. Gone are the woods buffalo, timber wolf, elk, and other large mammals. In their place is a white-tailed deer herd numbering almost a million individuals, more robins than in colonial times, fewer warblers, and more bass but less trout.



Wildlife Management in Virginia

Throughout the Commonwealth wildlife is managed by balancing three considerations: the health of the species, the health of the ecosystem, and the needs of the people who share the space. The Virginia Department of Game and Inland Fisheries has the primary responsibility for managing all wildlife species. Wildlife is a public resource and, as such, the state must ensure that populations remain healthy to be enjoyed by future generations. *This means that citizens must obtain a proper permit or license to possess any wildlife species.* Because the majority of our wildlife live on private lands, public education and partnerships with individual land owners are extremely important to the overall health of all wild animals.

Management Tools Vary

The relationship between man and animal is unique and as diverse as the number of species. Several factors influence which tools are used by individuals and the Department of Game & Inland Fisheries to manage wildlife. Although habitat management is a widely used tool for conserving wild animals, it is not always available. Most of the land in the Commonwealth is privately owned, and human uses sometimes come into direct conflict with habitat best management practices.

Since wild animals often cross state and international boundaries, Virginia wildlife and fisheries biologists work with their counterparts throughout North America to maintain healthy populations and habitats. Many migratory species—ducks, songbirds, anadromous fish, and bats, for example—depend upon good communication among biologists from other states or other countries to guarantee that habitat needs are met.

For management purposes, wildlife is legally divided into several categories. The largest of these is **nongame**. Included are most of the species found in Virginia. These species are important to the overall ecological health of natural systems but are usually taken for granted. Amphibians, insects, crayfish, birds, and reptiles are represented in this group. Most nongame species are not intensively managed. They thrive in the yards, forests, rivers, and meadows of the state.

Animals that are managed for recreation are collectively called **game** species. These are the species that can be hunted or fished with a proper license, allowing you to take a specific limit or number of individuals. Game species include trout, largemouth bass, deer, squirrel, turkey and a variety of other fish, birds, and mammals. The populations of game species are managed in such a way that our "use" is not detrimental to the species' survival.

Game species are managed by wildlife biologists and a network of game wardens, who enforce state regulations limiting the number of animals that can be taken. Some species, such as the fish bluegill, reproduce in large numbers and become stunted when living space is limited. Fishing removes a portion of these fish and provides recreation for thousands of citizens. For other species, such as deer, the only effective management tool is an annual hunting season. Since much of Virginia is covered by fields and forests, deer populations are increasing. Deer also do well in suburban settings where they feed on ornamental bushes (much to the gardener's dismay). Although there have been other attempts to control the increasing deer herd here and across the United States, hunting remains the most practical method.

The third category of wildlife covers those species that are listed as **endangered, threatened,** or of **special concern** by the federal or state government. These species are closely watched and intensively managed in order to stabilize their populations. The goal is to keep species off the list by effectively monitoring and managing all wildlife populations.

Habitat Loss is Primary Threat

As of 1999, Virginia claims over 110 species on its list of Endangered and Threatened Wildlife. All of the species currently listed in Virginia have been placed on the list because of habitat loss. When a species' habitat is compromised and a suitable arrangement of food, water, shelter, and space is disturbed, the animal must adapt, move on, or die.

Unfortunately, in most situations the species cannot adapt or move on and many individuals die. When continued destruction of a habitat occurs over time, species become endangered or even extinct. Mussels are a case in point. Virginia has over 50 species of endangered or threatened mussels. The majority of these freshwater mussels are remnant populations native to the Tennessee and Ohio rivers. The lower stretches of those river systems have been dammed, changing habitat conditions and creating river bottoms unsuitable for mussel habitation. As a result, the mussels were confined to headwater reaches (which extend into Virginia). Many of these species are now extinct in Tennessee, Ohio, and West Virginia.

Amazing Adaptive Responses

Other species can adapt if given protection over time. Bald eagles initially became endangered due to overuse of the pesticide, DDT. The pesticide caused a thinning in their egg shells and reproduction was disrupted. The eagle also did not tolerate human activity near its nest, resulting in a limited number of successful nest sites. With the banning of DDT and its subsequent decline in the eagles' food chain, along with protection of their nest sites, bald eagles made a comeback. Their status was down-listed from endangered to threatened in 1995.

Today, human population growth and settlement patterns threaten their continued recovery. But promising signs are at hand. Younger eagles are building nests nearer to humans and seem to be less skittish about sharing their space. It appears they are adapting to man's presence.

Unknowns

How much time a population needs to adapt varies and is not readily understood. If a species fails to adapt and is not capable of moving on, it will become

Bald Eagle Productivity in Virginia From 1980-1998

Year	Total Active Nests	Total Prod. Nests	Total Unprod. Nests	% Nests Prod.	Total Young Fledged	Fledglings per Prod. Nest	Fledglings per Active Nest
1980	35	23	12	66	35	1.52	1.00
1981	39	27	12	69	40	1.48	0.93
1982	45	28	17	62	41	1.52	0.93
1983	52	31	21	60	51	1.68	0.98
1984	60	34	26	57	58	1.68	0.97
1985	65	47	18	72	84	1.79	1.29
1986	66	42	23	65	83	1.93	1.26
1987	73	61	12	84	107	1.75	1.47
1988	81	65	16	80	118	1.82	1.46
1989	92	52	40	57	88	1.69	0.96
1990	99	75	24	76	142	1.89	1.43
1991	111	94	17	85	157	1.67	1.41
1992	131	82	49	63	140	1.71	1.07
1993	151	99	51	66	173	1.75	1.15
1994	144	96	48	68	158	1.65	1.10
1995	154	124	30	82	223	1.80	1.48
1996	180	135	65	75	243	1.80	1.35
1997	214	169	45	79	321	1.89	1.50
1998	229	184	45	81	314	1.70	1.38

extinct. Unfortunately, we don't have answers to the adaptation question and, in some situations, adaptation is not an option. As you may know, in any ecosystem there is an interdependent relationship between plant and animal species. Although we may not currently understand all the links provided by and between ecosystems, we know that healthy plants and animals are critical and are mutually dependent, and they need clean air and clean water.

Humans also depend upon healthy, diverse ecosystems. Think for a moment about the tremendous jobs performed by some of the "lesser" species:

u Insects are responsible for the pollination of much of the food we eat.

u Birds, bats, and other small animals feed on insects.

u Earthworms enrich soils so that plants can grow, and plants exchange carbon dioxide for oxygen.

Each species has a "niche," or job, within an ecosystem and must work with others to keep the entire system healthy.

Through research and continued observation, wildlife managers are learning how to balance basic animal needs with the needs of a growing human population in Virginia. While many decisions about wildlife remain, expanding our knowledge will help ensure that the decisions made are good ones.

Partners in Wildlife Conservation

Virginia families can help conserve wildlife by constructing and installing shelters for birds and mammals that require cavities for nesting or roosting. Department staff are available to consult with land owners on proper placement, to prevent over-predation of the nestlings. Improving public land by creating wildlife habitats on school grounds and state and federal properties, or privately in our own backyards, can greatly benefit species by providing much needed food, water, shelter, and travel corridors.

Additional Resources

Web Sites:

u Virginia Department of Game & Inland Fisheries; www.dgif.state.va.us

u Project WILD; www.projectwild.org

u U.S. Fish and Wildlife Service; www.fws.gov/

Other Resources:

u *Virginia Wildlife.* Monthly magazine sent to school libraries. Richmond: Virginia Department of Game & Inland Fisheries.

u Heiser, Carol. "Educators and Virginia's Wildlife Laws." Richmond: Virginia Department of Game & Inland Fisheries.

Fundamental Learnings Related to Wildlife Resources

R Humans and wildlife have similar basic needs and depend upon food, water, shelter and space.

R The health and well-being of both humans and wildlife are dependent upon the quality of the natural environment.

R Wildlife has many values including; ecological, scientific, aesthetic, economic, recreational social and intrinsic.

R Wildlife conservation and management techniques include information and education programs, regulations involving people, inventory, damage control, habitat management, stocking, artificial propagation, transplanting and direct implementation of wildlife populations.

R Plants and animals in ecological systems live in a web of interdependence in which each species contributes to the functioning of the overall system.

R Living things tend to reproduce in numbers greater than their habitat can support. Various mortality factors, such as disease, predation, climatic conditions, pollution, accidents, and shortages of life's necessities will cause a percentage to die each year. Carrying capacity is determined by climatic, geological, biological and /or behavioral factors along with human activities.

R Wise resource and environmental management can improve the quality of life for wildlife and humans.

R Philosophies, objectives and practices of various types of resource management are sometimes incompatible with each other and therefore conflicts and tradeoffs can occur.

Counting Critters

Grade Levels: 3 - 6

Science SOLs: 3.10, 4.8, 6.11

Materials Needed:
- **Copies of Wildlife Observation Record (back side)**
- **FWIS on-line database**

Objectives:
Students will be able to:
1. **Conduct a wildlife inventory of their community;**
2. **Describe cause and effect relationships that help and hinder wildlife in their community; and**
3. **Recommend changes in their community that could benefit wildlife.**

Vocabulary Words:
geographic information system
habitat
WildlifeMapping

Method

Students inventory wildlife and investigate their neighborhoods for "cause and effect" relationships affecting wildlife; develop and use Wildlife Observation Record sheets; and recommend actions to improve and/or maintain the quality of wildlife habitat in their community.

Background

Virginia is home to more than 10,000 species of wildlife which are found in every corner of the landscape: in backyards, schoolyards, and throughout communities. You don't need to travel to the Commonwealth's forests, mountains, rivers, or bay to see a variety of wildlife. They live right in your own backyard!

Since wild animals share our neighborhoods, we have a direct impact on their numbers (populations), the diversity of a particular ecosystem, and the general health of their habitats (homes). For the purpose of this activity remind students that "wildlife" also includes insects, spiders, reptiles, and all other forms of non-domesticated animals.

Careful management of such a wide spectrum of wildlife requires extensive surveys and inventories across the state. This activity introduces the concept of inventorying various types of wildlife found within a student's neighborhood, determining the effects that a student and others have on such wildlife, and comparing student observations with those of the Fish and Wildlife Information Service (FWIS), found on the Department of Game and Inland Fisheries web page: www.dgif.state.va.us. Click on wildlife information online. The FWIS is a database that uses a geographic information system (a digitized system) to store and retrieve information on wildlife and their related habitats. Schools may download a list of species that are known or likely to occur within a 3-mile radius of their property. The species list will note whether the species has been confirmed in the search area with a "yes" or "no" in the confirmed column. Therefore, students involved in the WildlifeMapping program can actually help supply data on specific locations of wildlife species and help to keep common species common.

Once students have completed their inventory, they may become motivated to enhance wildlife habitat on their school grounds. The WILD School Sites program at the Department of Game and Inland Fisheries can provide additional information on how to get started.

Procedure

With your students, brainstorm the types of wildlife and habitats you might see within your community. Post this preliminary list on the bulletin board or blackboard. For a one-week period, ask students to look for wildlife or evidence that wild animals exist in their communities. Students should also look for clues about how wildlife are affected by human actions. Ask each student to bring in at least one example to share with the class each day.

Results can be written on the "Wildlife Observation Record" individually or in small groups.

Discuss what was found each day. Encourage students to explain their basis for identifying "cause and effect" relationships. Consider the following:

- What were some of the most surprising observations you made?
- How does this list compared to the preliminary list made at the beginning of the week?
- Which species may be [more] affected by actions of people in the community.
- What kinds of actions are people taking that directly affect wildlife?
- Which actions harm, help, or have no effect on wildlife?

Have students compare their list of species with the list on the FWIS database. How many additional species were they able to confirm from their observations? Plan some action that will enhance wildlife habitat on the school grounds. [See resources for ideas.] Set aside time each week to check on the enhanced habitat site. Keep a record of the types of wildlife that visit the habitat throughout the year.

Assessment

Identify and describe three types of habitat in the community and list at least three species that may live in that habitat. List any actions that may impact those species in a positive or negative way.

WILDLIFE OBSERVATION RECORD

Student name(s) _____ Date _____

Species _____

Habitat / Location _____

Impacts +/- _____

Comments _____

_____

Recommendations for action _____

_____

_____

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u Using the data above, construct a bar graph that shows the number of nesting pairs for each year.

u How many total nests were active between 1980 and 1998?

u Between 1980 and 1998, what is the percentage increase in the number of birds fledged?