

Virginia's Open Spaces & Public Lands

In 1607, when the first European settlers landed on the coast of what would become the Commonwealth of Virginia, the natural resources they encountered appeared to be inexhaustible. The rivers, lakes, and bays were clean and pure, the virgin forests seemed limitless, the fish and wildlife were abundant, and the air was clean.

In fact, it was almost 300 years before we realized that the natural treasures that made the New World so appealing were not limitless and had been carelessly used. The virgin forests were cut and not replanted; human, animal, and industrial wastes were dumped directly into rivers and streams; marshes and swamps were drained; expedient farming methods led to widespread soil erosion; and unbridled, commercial hunting and fishing led to the extinction, or near extinction, of many of our native fish and wildlife species.

Seeds of Change

By the mid-1800s, Americans were beginning to recognize the importance of wise and balanced use, or "conservation," of the natural resources that the country depended upon for its very existence. We were also realizing the need to protect for future generations at least a portion of the open spaces, unique landscapes, and natural wonders that originally defined this land and made it a wonderful place to live. During the late 1800s, two social movements developed which set the stage for the government to act upon this new consciousness.

The conservation movement was based on the premise that wise and balanced use of natural resources was necessary to ensure continued use and enjoyment by future generations.

National Park Movement

The federal government played a leading role in the movement by helping to conserve large, open spaces and unique landscapes, beginning with the designation of Yosemite Valley as the nation's first national park in 1864. The subsequent creation of the U.S. Forest Service in 1905 and the National Park Service in 1916 were the two most notable accomplishments of the early conservation era.

Over the years, the U.S. Forest Service and the National Park Service have greatly influenced resource conservation and the provision of outdoor recreation opportunities in Virginia.

Urban Park Movement

The urban park movement was 19th century America's response to increasing industrialization and the rapid expansion of urban populations. Landscape architects, typified by Frederick Law Olmsted, created a new legacy of public green spaces among the bricks and grime of the nation's crowded cities. Beginning with Olmsted's design for Central Park in New York City, the urban park movement spread rapidly across the country. By the early 1900s, most major cities had developed large public parks, and local governments took responsibility for establishing public open space.

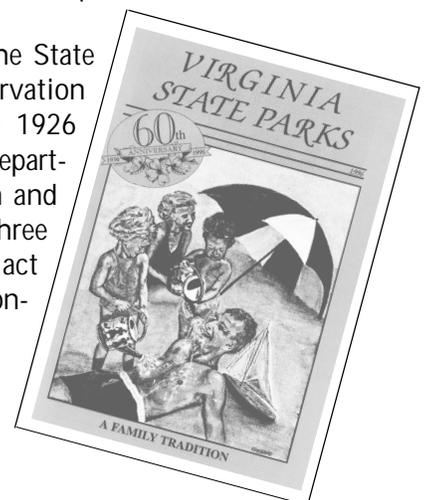
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In addition to establishing the federal government's role in natural resource conservation and protection, these actions stimulated states to take similar actions to develop park and conservation programs.

Virginia's Response

At the state level, public interest in parks and conservation was formally recognized by three actions:

- 1) creation of the Department of Game and Inland Fisheries in 1916;
- 2) establishment of a state forest system in 1919 (administered now by the Department of Forestry); and
- 3) formation of the State Commission of Conservation and Development in 1926 (known today as the Department of Conservation and Recreation). These three agencies continue to act as Virginia's primary conservation advocates.



In 1970, Virginians formalized the protection of natural and cultural resources by adopting Article XI of the Constitution of Virginia. Article XI is a strong statement of public commitment to protect air, water, and other natural resources of the Commonwealth for the benefit of the people. The objective is to ensure that all Virginians have the opportunity to live in, use, and enjoy a natural environment that can be passed on to future generations with satisfaction and pride.

and Assateague Island National Seashore. All of these lands are managed for outdoor recreation and ecosystem protection.

The **U.S. Forest Service** administers the George Washington and Jefferson National forests, which cover more than 1.7 million acres of public land. The properties are managed for a variety of uses, including timber production, recreation, and protection of wilderness and species diversity. Forest Service lands constitute half of the public outdoor recreation property in the state.

The **U.S. Fish and Wildlife Service** manages 15 wildlife refuges and a fish hatchery here, comprising more than 150,000 acres. The refuges are managed primarily to provide fish and wildlife habitat and to protect unique ecosystems. However, they also provide meaningful outdoor recreation opportunities for hiking, wildlife observation, environmental education, and other “non-consumptive” recreation activities.

The **Virginia Department of Conservation and Recreation** manages a system of 29 state parks and 26 natural area preserves. Together, these two systems protect over 70,000 acres. In addition to protecting significant natural and cultural resources, state parks offer a variety of outdoor recreation and

environmental education opportunities. The Natural Areas Preserve System is managed to protect the habitat of rare, threatened, or endangered plant and animal species, and rare or significant natural communities or geologic sites.

The **Virginia Department of Forestry** manages 13 state forests covering more than 50,000 acres. These lands are managed for multiple uses, including timber production, watershed protection, outdoor recreation, applied research, and fish and wildlife management.

The **Virginia Department of Game and Inland Fisheries** is responsible for managing all of the state’s wildlife and inland fisheries resources, including those threatened and endangered. The Department also acquires and develops lands and waters for public hunting, fishing, wildlife watching, and boating access. The department manages a statewide system of 31 wildlife management areas, covering over 190,000 acres. The department also provides technical help in managing fish and game resources on over 2,000,000 acres of state, federal, and privately owned land.

Constitution of Virginia

Article XI, Section I

“To the end that the people have clean air, pure water, and the use and enjoyment for recreation of adequate public land, waters, and other natural resources, it shall be the policy of the Commonwealth to conserve, develop, and utilize its natural resources, its public land, and its historical sites and buildings. Further, it shall be the Commonwealth’s policy to protect its atmosphere, lands, and waters from pollution, impairment, or destruction for the benefit, enjoyment, and general welfare of the people of the Commonwealth.”

Current Status of Public Lands and Open Space

Although the vast majority of land in Virginia is privately owned, that portion in public ownership—in the form of parks and open space—plays an important role in our lives. Through the combined efforts of local, state, and federal governments over the past 80 years, Virginia has developed a diverse and extensive public estate. This public estate consists of national parks, national forests, state parks and natural areas, state forests, wildlife management areas, public fishing lakes, greenways, scenic rivers, scenic byways, public beaches, and historic sites. The availability of these resources and facilities adds immeasurably to our quality of life.

What Constitutes the Public Estate in Virginia?

The **National Park Service** administers 18 sites in Virginia totaling almost 300,000 acres. Although most of the sites are historic, much of the acreage lies within Shenandoah National Park, the Blue Ridge Parkway,

Over 70% of all counties and virtually all of the cities in Virginia have full-time park and recreation departments. Local facilities offer access to community open spaces and, through seasonal programs, satisfy the demand for close-to-home recreation.

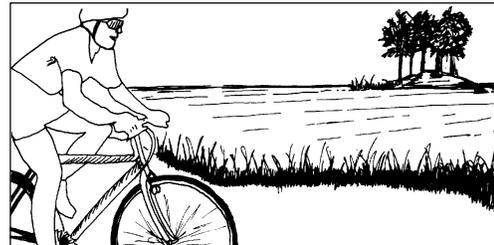
The Future of Virginia's Open Spaces

Despite the size and quality of Virginia's public estate, there are a number of trends which indicate that the future holds both challenges and opportunities with regard to open space and recreational resources. Virginia remains among the fastest growing states in the nation. By the year 2010, the population is projected to reach 7.5 million people, a more than 20 percent increase over 1990. More people bring increased demands for outdoor recreation and associated facilities and services.

Also, population growth in Virginia has not been evenly distributed. During the 1980s, 90% of the growth occurred in the "urban corridor," which stretches from northern Virginia through Richmond to Hampton Roads. Keeping pace with open space and recreational needs in this growth corridor is an ongoing challenge.

While there are many positive aspects of growth, the natural resources and unique features that give Virginia communities their character can be altered or destroyed by that growth without careful planning. Resources such as water, forests, and open spaces play a vital role in the earth's natural systems, biological diversity, and overall environmental health. And these same resources bring us pleasure and enhance our living environments while adding to the economic value of our communities. The challenge has been, and continues to be, to provide for outdoor public uses and ecosystem protection while allowing for economic growth and development.

In the long run, this can only be accomplished through development of a stewardship "ethic" among Virginia's citizenry. A stewardship ethic rooted in respect for all natural systems will motivate people to ensure the well-being of the state's natural resource base. Successful stewardship will ultimately be measured by our ability to find and maintain balance between economic prosperity and vital, healthy natural resources.



Additional Resources

Web Sites:

- u Virginia Department of Conservation and Recreation, for information on natural heritage, state parks, and Virginia's long-range outdoor recreation and open space plan; www.state.va.us/~dcr
 - u Virginia Department of Game & Inland Fisheries; www.dgif.state.va.us
 - u Virginia Native Plant Society, P.O. Box 844, Annandale, VA 22003, (703) 368-9803; www.hort.vt.edu/vnps/
 - u The Mining Company, ecology page; www.ecology.miningco/msub59.htm
 - u The Nature Conservancy; www.tncweeds.ucdavis.edu/links.html
- #### *Other Resources:*
- u Video, "Spring Wildflowers of the Mid-Atlantic Region," by Dr. Marion Lobstein; www.mnsinc.com/mblobst/

Fundamental Learnings Related to Open Spaces and Public Lands

- Ⓡ Land is the structure for terrestrial habitats around which soil, water, air, and living things interact.
- Ⓡ Land is both a public and private commodity, and is fixed in supply (i.e. there exists a finite amount).
- Ⓡ The rate and extent of changes to the landscape are governed by both natural and human influences.
- Ⓡ The effects of land use tend to be cumulative, and misuse from residential and commercial development, deforestation, overgrazing, overcropping, etc. can cause erosion, reduced ground water supply, flooding, and other problems.
- Ⓡ Conservation of land can help prevent environmental problems such as species loss and decline in water quality.

No Limits

An Activity About Invasive Species



Background

What do Japanese Honeysuckle and Starlings have in common? They're everywhere, they're everywhere - and that's the way it is with most introduced species. One-hundred pairs of Starlings were released in New York in 1890 and now it is one of the most abundant birds in North America. Similarly, Japanese Honeysuckle was introduced in Long Island, New York in 1862 and has spread throughout most of the Eastern United States. These two organisms are examples of what can happen when foreign species are introduced and released.

More than 4000 species of plants and 2300 species of animals have been introduced into the United States. About fifteen percent of these are considered harmful. These invaders are displacing native species (many of which are already threatened or endangered) and upsetting ecosystem balance. Once established, a foreign species can out-compete native species for food, space and other resources. Because they are foreign, there may be few if any natural controls to keep populations in check. Thus, they are a nuisance species and a management challenge for park and natural area personnel, who try to maintain the native plant population.

During the early 1900's people could order Johnson Grass seed from the Sears and Roebuck Catalog. It was planted all over the country as a "wonderful" cattle feed. Today it is an aggressive weed that is difficult to control. Kudzu was imported from Japan in 1876 and promoted for cattle feed and erosion control beginning in the 1920's. Multi-floral Rose has been planted for wildlife cover, wind-break and as a highway divider since the 1930's. Autumn Olive, introduced in the 1830's, was promoted as beneficial for wildlife and was often given away. These are all introduced species (originally from another country or region). Because there is no natural control for their populations, they have greatly multiplied, displacing native species and upsetting the balance in the natural environment. Some of Virginia's most aggressive invaders include the plants Phragmites, Purple Loosestrife, Multiflora Rose, Tree-of-Heaven, Eurasian Milfoil, Hydrilla, and Kudzu; and aquatic animals such as Eurasian Clam and the Flathead Catfish.

Preparation

- 1) Label five 3x5" cards for each of the following eight population control factors: Pest/Parasite, Disease, Herbivore/Carnivore, Reproductive Control, Growth Rate, Limited Resources, Competition, Special Requirements.
- 3) Label five 3x5" cards INVASIVE SPECIES. Shuffle the cards to mix the order.

Grade Levels: 3-6

Science SOLs: 3.4, 3.6, 3.9, 4.5, 4.8, 5.6, 6.9, 6.11

Materials Needed:

r 45 3x5" cards and marker, or
r computer-generated cards
r pictures or specimens of
invasive species (optional)

Objective:

Students will learn why some introduced plants and animals (invasive species) are able to take over and out-compete native organisms.

Setting: indoor or outdoor

Group Size: 10 - 30

Duration:

15 minutes for prep;
5 minutes for setup and
instructions;
15 minutes for play and discussion

Precaution:

If outdoors, keep students in a safe part of the trail. Be aware of noxious plants.

Vocabulary Words:

competition
disease
growth rate
herbivore, or carnivore
invasive species
limited resources
pest, or parasite
reproductive control
special requirements

Warm-up

Ask students if they have ever seen an animal or plant that appears to be “taking over.” Show pictures of several invasive species or pass around specimens of invasives such as Japanese Honeysuckle, Johnson Grass or Kudzu. Ask students what the terms “invasion” and “invasive” mean. Tell them that they are going to learn how foreign plants and animals can become “invaders.” Plants and animals that are naturally found in an area are called native species. Plants and animals introduced from other areas are called exotic species. Sometimes we introduce plants and animals from other areas that can out compete our native species. These organisms are called exotic, invasive species. Japanese Honey Suckle is an example of an exotic, invasive species. Native species can be invasive if the right conditions exist. Tear thumb is an example of a native, invasive species.

Procedure

Establish a safe play area with plenty of room for students to move around. Set out-of-bounds limits to keep students in a designated area.

Give the following instructions:

1. We're going to play a game that shows how invasive species can take over. Can you think of some factors that help keep plant and animal populations under control? Briefly discuss these factors with students:

- u Pests, parasites and diseases - kill, weaken or disable organisms.
- u Herbivores/carnivores - eat some of the organisms.
- u Reproductive controls- limit how many offspring the organisms will produce.
- u Growth rates - control how fast and large organisms grow.
- u Limited resources - increases competition for food, shelter, sunlight and other resources.
- u Competition - prevents organisms from out-growing and out-reproducing others.
- u Special requirements - keep organisms from living everywhere.

This activity illustrates how normal population control factors may not affect invasive species.

2. During this game all but a few of you will represent a native plant or animal found in Virginia. Can you name some of our native plants and animals. (Let students give a few examples such as deer, raccoon, opossum, bluebird, white oak, sassafras, etc.) The others will represent an invasive species. I'm going to give each of you a card that has one of these control factors written on it.

3. Some of you will get a card labeled “INVASIVE SPECIES.” Don't show your card to anyone at this time.

4. Explain that they will mill around in the play area, and then pair up with another student and compare cards. If both of you have a “control factor” card, then nothing happens. However, If one of you has an INVASIVE SPECIES card, then that person takes the other person's “control factor” card. The student who loses their card then gets another card and can return to the game. If you lose your card and all of the replacement cards are gone, you're out of the game. You've been displaced by an INVASIVE SPECIES. Remember to stay within the play area. You can not run away to avoid the INVASIVE SPECIES.

5. Pass out the cards. Be sure that one or more students gets an INVASIVE SPECIES card.

* Does everyone have a card?

6. Ask students to “mill around” this area for a minute. Give a signal. Students should look at each others' cards. If you lost your card, come get another one.

7. Give the students time to pair up, compare cards, and get another card before starting another round. The game will continue smoothly for the first few rounds until students learn who the **INVASIVE SPECIES** are. They will then try to avoid the “**INVASIVE SPECIES**”. Continue the game until all of the cards have been handed out and at least half of the students have succumbed to the **INVASIVE SPECIES**.

8. Collect the cards and review the activity with the following questions.

- u What were some of the population control factors used in this activity?

- u Why do you think invasive species are so successful?

- u What do you think it would take to control invasive species like Kudzu or Japanese Honey Suckle?

- u What can we do to keep invasive species from getting established?

Extension

After conducting the activity, have students study an area where an invasive species has taken control.

Ask students to describe the results, including:

- u Why do they think the invasive is successful?

- u What is its effect on other species?

- u What is its effect on diversity?

- u How can the invasive be controlled?

Evaluation

Use the questions and review questions to determine how effective the activity has been. Ask students to explain why they lost their cards to the **INVASIVE SPECIES**.