



CHAPTER **11**
*Virginia Natural
Heritage Program*



Antioch Pines Natural Area Preserve | Virginia Department of Conservation and Recreation

The Virginia Natural Heritage Program's mission is to conserve Virginia's biodiversity through inventory, data management and sharing, land protection, and stewardship.

The Virginia Department of Conservation and Recreation's Natural Heritage Program plays a central role in the Commonwealth's overall land conservation efforts as it is charged with protecting biodiversity by focusing on the most significant natural communities and rare and imperiled species. Working closely with other state, federal and local agencies, nonprofit conservation organizations and private citizens, the Natural Heritage Program collects and shares information on the state's biodiversity for the protection of sites that support significant natural communities and rare species.

DCR manages the state's growing Natural Area Preserve System, which supports many populations of rare species and some of the best examples of the state's diverse natural communities. Natural area preserves (Appendix 11 map) improve scientific understanding for conservation decisions, enhance public education on ecology and the environment, provide unique outdoor recreation experiences, and contribute to a sense of place by preserving the natural backdrop that has given rise to Virginia's rich cultural history.

Land Conservation Highlights

- Developing and managing Virginia's Natural Area Preserve System, which comprises 63 dedicated natural areas totaling 56,648 acres (as of April 2018). Figure 11.1 shows natural area preserves that offer public facilities.
- Identifying and maintaining information on approximately 700 globally significant conservation sites that total more than 1 million acres. Most are not adequately protected to ensure the long-term viability of the natural heritage resources they support and thus are important targets for conservation.
- Developing and maintaining the conservation lands database, which is used to map and track information on all lands protected for conservation throughout Virginia.
- Managing the [Natural Heritage Data Explorer](#), an interactive data and mapping service that provides citizens, conservation organizations, businesses and government agencies which information about the locations of priority conservation areas, sensitive habitats and conserved lands across the state.

Figure 11.1 Natural Area Preserves with Public Facilities

PDC	natural area preserve	county	birding and wildlife watching	boardwalk	canoe / kayak landing	hiking	observation deck	parking	self-guided trails	toilets
Central Shenandoah	Goshen Pass	Rockbridge	•			•		•		
Roanoke Valley-Alleghany	Poor Mountain	Roanoke	•			•		•	•	
Northern Virginia & Rappahannock-Rapidan	Bull Run Mountains***	Fauquier and Prince William	•			•		•		
George Washington	Crow's Nest	Stafford	•		•	•	•	•	•	•
Northern Neck	Bethel Beach	Mathews	•					•		
Northern Neck	Bush Mill Stream	Northumberland	•			•	•	•	•	
Northern Neck	Dameron Marsh	Northumberland	•		•		•	•		
Northern Neck	Hickory Hollow*	Lancaster	•			•		•	•	
Middle Peninsula	Hughlett Point	Northumberland	•			•	•	•	•	
Middle Peninsula	New Point Comfort**	Mathews	•				•	•		
Richmond	Cumberland Marsh**	New Kent	•			•	•	•	•	
Accomack-Northampton	Cape Charles	Northampton	•	•			•	•		
Accomack-Northampton	Magothy Bay	Northampton	•			•		•	•	
Accomack-Northampton	Mutton Hunk Fen	Accomack	•			•		•	•	
Accomack-Northampton	Savage Neck Dunes	Northampton	•			•	•	•	•	
Crater	Chub Sandhill	Sussex	•			•		•		
New River Valley	Buffalo Mountain	Floyd	•			•		•		•
West Piedmont	Grassy Hill	Franklin	•			•		•	•	
Cumberland Plateau	Pinnacle	Russell	•			•		•	•	•
Cumberland Plateau	Cleveland Barrens	Russell	•			•		•	•	
Cumberland Plateau & Mount Rogers	The Channels	Russell and Washington	•			•		•		

* Owned by Northern Neck Audubon Society

** Owned by The Nature Conservancy

*** Owned by Virginia Outdoors Foundation



Bush Mill Stream Natural Area Preserve | Zach Bradford/Virginia Department of Conservation and Recreation

- Working closely with land trusts to ensure the best possible protection of natural heritage resources on private lands protected with conservation easements.
- Partnering with other government entities and conservation organizations to protect the most biologically significant lands in Virginia.

Virginia ConservationVision is a suite of broadly applicable tools for guiding strategic conservation decisions. ConservationVision is maintained using GIS (Geographic Information System) analyses to model and map land conservation priorities in Virginia based on a variety of datasets from private, local, state and federal agencies. The models facilitate conservation by helping target conservation efforts and by guiding comprehensive planning. They are available on Natural Heritage Data Explorer, LandScope Virginia and LandScope Chesapeake and DCR's website.

Outdoor Recreation Highlights

- The 2017 Virginia Outdoors Demand Survey found that the most popular activity is visiting natural areas, up from fourth in 2011, fifth in 2006 and 11th in 2001.
- Strategic public access to natural area preserves can provide unique opportunities for outdoor recreation and increased appreciation for Virginia's rarest and most special landscapes, without jeopardizing the often fragile natural communities and rare species populations on preserves.
- Supporting some of the most spectacular scenery in Virginia, all 45 state-owned natural area preserves, as well as several owned by private organizations and local governments, are open to the public. Not all have parking areas and trails, so it is recommended people call before visiting.
- The Natural Area Preserve System provides 85 miles of hiking trails.
- With more than 100 miles of frontage on rivers and tidal waters, many natural area preserves are well suited for exploring by canoe or kayak.

Recommendations

- DCR, other natural resource agencies and academic institutions should expand biological inventory efforts across the state to understand better the distribution, status and population trends of natural heritage resources.
- DCR should promote use of online natural area and land conservation information such as Natural Heritage Data Explorer and LandScope Virginia.
- The Commonwealth should continue its effort under Gov. Ralph Northam to develop and implement a comprehensive land conservation plan and expand the funding source for land conservation, including lands that support natural heritage resources, and ensure representation on protected lands for all of the state's natural community types and rare species.
- DCR should support and utilize Virginia Commonwealth University's [Interactive Stream Assessment Resource \(INSTAR\)](#) to better understand and conserve the Commonwealth's healthy waters.
- The Commonwealth should continue to implement the Virginia Department of Game and Inland Fisheries' Virginia Wildlife Action Plan.
- The Commonwealth should increase assistance to localities in their planning efforts for the protection of natural areas as a part of their recreational offerings.
- State and local land conservation organizations should strengthen natural-heritage resource protection through conservation easements.
- DCR should expand the Natural Area Preserve System to strengthen protection of natural communities and rare species, to increase public access, to increase the ability to manage the preserves in light of expanding pressures from invasive species and a changing climate and to better implement specific management actions, such as prescribed fire.
- DCR should increase awareness of the environmental significance of Virginia's karst regions (limestone areas with underground streams, sinkholes and caves) through the Virginia Cave Board, the Natural Heritage Karst Program and the Virginia Cave and Karst Trail.
- DCR should increase its capacity to assist public and private land managers and owners with the management and restoration of natural heritage resources on their properties.



Crow's Nest Natural Area Preserve | Gary P. Fleming/ Virginia Department of Conservation and Recreation

- DCR should secure the resources necessary to meet the stewardship needs of an expanded system of lands supporting natural heritage resources. For example, improve resource management, increase public access opportunities and improve site security.
- Local and state natural resource agencies should enhance efforts to determine the distribution and status of invasive exotic species and to devise effective measures for their control, particularly where they threaten rare species or significant natural communities.

Program Overview

DCR's Natural Heritage Program is divided into five interdependent units listed here in logical order of their workflow – inventory, information management, environmental review, natural area and karst protection and natural area stewardship.

The Natural Heritage Program inventory scientists conduct the only comprehensive statewide inventory that documents the location and ecological status of natural communities and rare plant and animal species. This ongoing inventory is conducted by staff ecologists, botanists, zoologists, contract staff, volunteers and cooperators. These staff members assist private and public land managers with local and regional natural area surveys. Inventory ecologists continue to refine the state's natural community classification system with descriptions for Virginia's 82 ecological groups and 308 community types, including state and globally

rare limestone barrens, shale barrens, sea-level fens and tidal freshwater marshes, as well as outstanding examples of more common types such as Central Appalachian dry-mesic chestnut oak-northern red oak forests and coastal plain/piedmont floodplain swamps.

Since 1986, Natural Heritage Program scientists have discovered some 39 species new to science and more than 340 species not previously reported in Virginia. The rapid pace of changes in Virginia's landscape necessitates more comprehensive inventory of natural heritage resources.

Protecting and managing natural heritage resources requires cataloging and storing large amounts of data for a variety of users. DCR's natural heritage information management staff uses an assortment of GIS and database platforms to manage collected data. NatureServe's Biotics 5 is the backbone of this system and is used by natural heritage programs throughout the Western Hemisphere. Data maintained by DCR is used internally, as well as by other land and resource managers and citizens in order to set protection and management priorities and provide a scientific basis for land planning. Some examples of the data maintained are: detailed information on the location and condition of rare species populations, significant natural communities and caves; critical areas of Virginia's landscape, called conservation sites that should be considered for protection around the viable examples of these rare populations and boundaries; and other details for lands already protected in Virginia.

Natural heritage project review staff plays a key role in providing natural heritage resource information for land conservation and land planning decision makers. Project review staff also responds to requests from the public for information about rare species and natural communities and provides outreach to localities in their planning efforts. As Virginia's population grows, the importance of DCR's efforts to provide scientific data and readily interpreted information in a timely and cost-effective manner will be increasingly essential.

Key to natural area protection is careful conservation planning that ultimately leads to land protection. Natural area protection can involve nonbinding agreements, conservation easements or fee-simple acquisition of land to secure habitat for the rarest and most threatened examples of natural heritage. Protection methods are chosen based on the specific conservation goals for each natural area. Virginia's caves and associated karst landscapes receive special attention through DCR's karst protection program. Staff works closely with agencies, organizations and citizens to identify biologically significant caves, trace complex relationships between surface and underground water systems and educate planners and the public about the importance of these highly sensitive areas.

Natural area stewardship involves maintaining and enhancing natural heritage resources on natural area preserves managed by DCR. Key components of natural areas stewardship include development of site-specific management plans, prescribed burning, invasive-species control, habitat restoration, research and monitoring, public-access management, and site security. Stewardship staff members also provide expertise and assistance in natural-areas management to federal, state and local agencies, as well as to private landowners and land managers, and are involved in statewide efforts to better understand and control invasive species.

Natural Heritage Key Facts

- Virginia has more than 1,500 rare plant and animal species and 308 terrestrial vegetation community types.
- Five plants, six vertebrates and many invertebrates are found only in Virginia.
- At least 12 species of vertebrates and six species of freshwater mussels have been extirpated from Virginia.
- Due to habitat alteration from dam construction, water withdrawal, sedimentation, pollution and introduction of nonnative species, 75 percent of Virginia's freshwater mussels are at risk.

Virginia's Natural Heritage at a Glance:

- Founded in 1986, the Virginia Natural Heritage Program has three times been recognized as the most outstanding natural heritage program in the Western Hemisphere.
- Virginia supports more than 30,000 plant and animal species.
- Virginia ranks fourth among eastern states for the number of federally endangered and threatened species.
- Approximately 10 percent of Virginia's 1,500 rare species are protected under federal or state law.
- Virginia is rich in karst resources with more than 4,000 known caves. Karst springs support the base flow of most major rivers west of the Blue Ridge and are critical to the protection of water quality and quantity. More than 122 cave organisms tracked by the Virginia Natural Heritage Program are globally rare, and many live in only one or two caves.
- Southwest Virginia is the country's leading hotspot of aquatic diversity, but many of the freshwater mussels and fishes found there are at risk of extinction.
- A changing climate is bringing significant new stresses in the form of changing temperatures, rainfall patterns and sea levels to Virginia's native natural communities and species.
- Invasive exotic species are now the second greatest threat, after habitat loss, to biological diversity. More than 1,000 nonnative species have been reported in Virginia, many of which are invasive and outcompete native species.