

Narration for Natural Heritage Resource Inventory PowerPoint

Slide 1:

Arlington's natural environment is important to the health of our community. Residents closely relate to and value trees, forests, wildflowers, streams and the presence of wildlife. These elements are part of the fabric of our neighborhoods. As we continue grow and develop into the future, the preservation of wild places, the wise stewardship of our natural resources, and a commitment to environmental sustainability become even more important.

Slide 2:

The PUBLIC SPACES MASTER PLAN, adopted in 2005, discussed a number of issues relating to open space, including the protection of natural resources and natural lands. One of the Plan's priority recommendations called for Arlington County to "Create a natural resource inventory and to develop a management strategy for natural resource protection".

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Laying the groundwork for the development of a management strategy was the design of a project, known as a Natural Heritage Resource Inventory. Completion of this three-year project represents the first comprehensive effort to identify, document, catalog and classify Arlington County's remaining natural resources. In all, over 1,000 acres of property received some level of natural resource or biotic inventory. The primary objective of the Natural Heritage Resource Inventory, was to create a contemporary master database of natural resource features....providing the framework for the development of a management plan or strategy.

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This project represents a unique collaboration between Arlington County staff, and staff from other jurisdictional landowners within Arlington, and jurisdictional neighbors, including the National Park Service, Department of Defense, the Northern Virginia Regional Park Authority and the City of Alexandria.

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Field studies were conducted by County staff with the assistance of contract specialists, jurisdictional partners, and a cadre of trained volunteers. Project guidance, data sharing and consultation was also received by various organizations such as the Virginia Department of Conservation and Recreation, the Smithsonian Institution, the National Arboretum, and Fairfax County Park Authority.

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There were seven major project elements within the natural resource inventory: water resources, geology, native flora, tree resources, invasive plants, urban wildlife, and GIS. The GIS, or geographical information system element, represents an important and modern technology that will allow all of the natural elements of the project to be displayed in a series of map overlays, greatly enhancing the Counties ability to manage and protect those valuable remaining natural resources.

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The study area was a highly urbanized County, 26 square miles in size, lying directly across the Potomac River from the nations capital. With such a large study area, came a number of project challenges.

- The planning and coordination of multiple field studies occurring simultaneously.
- Issues relating to multiple land owners, including private properties, and jurisdictional boundaries.
- In order to conduct field studies on some governmental properties, scientific research permits were required, and permission was required to conduct studies on private properties.
- There were a large number of individual study sites within the County requiring frequent travel and some sites were not easily accessible by vehicle, such as along the shore of the Potomac River.
- And lastly, with the exception of surface stream data, little to no current information was available for Arlington's natural resources at the project's beginning.

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Features such as surface streams, ponds, springs and wetlands represent Arlington's water resources. The Arlington County Department of Environmental Services is responsible for watershed management, water quality standards, and compliance with all state and federal clean water regulations. During the course of the natural resource inventory, limited field studies were conducted and data collected in order to fill-in gaps in current knowledge. This information was provided to the Department of Environmental Services in both data and map form. New data included:

- The mapping of 14 previously undocumented surface streams or stream segments.
- The documentation, delineation and mapping of 6 undocumented wetlands.
- The documentation and mapping of a number of springs and wetland seeps..

- And the mapping of artificial or constructed wetlands on County property.

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First Order streams represent the highest value surface water in our local parks. These are the smallest stream segments that often occur on the higher slopes of valley heads...near the original source of water...often a series of surface springs. Downstream, they join into yet larger secondary streams that eventually drain directly into Four Mile Run or the Potomac River. These smaller first-order streams contain the Counties cleanest surface water, generally exhibit the least amount of storm water damage, and were found to provide the best remaining aquatic habitat for native wildlife.

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Wetlands are ecologically important and serve as reservoirs for both plants and wildlife. They also play an important role in storm water management and can cleanse pollutants from the water. The Black Willow – Red Maple Swamp, shown in the slide, and found in Pimmit Run Natural Area is unique to Arlington and considered to be of relatively recent origin – perhaps only 50-60 years old. The smaller map on the lower right shows the boundaries of the wetland in orange stripe pattern, and the undocumented and unnamed stream as a red line.

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There were once hundreds of freshwater springs and woodland seeps in Arlington, but because of development and urban growth over many years, both the number and quality of these natural features have been greatly reduced. Historically, these mini-wetlands were associated with a number of rare plants and wildlife species. A number of recently documented seeps in Arlington were found to provide a last sanctuary for a number of locally-rare plants.

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Artificial or constructed wetlands, found in Arlington, serve as BMP's, or a best management practice for stormwater management. They can occur as either dry ponds, that temporarily hold water during a rain event, or as a wet pond, which is designed with additional capacity to hold storm water during periods of heavy rainfall.

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But in addition to providing a stormwater capacity benefit, these ponds also serve as magnets for various species of aquatic wildlife. A balanced approach to managing these urban wetlands would include the following management elements: stormwater management, flood control, water quality enhancement, and wildlife management. One such pond, located in Cherry Valley Park, near Washington-Lee High School, was found

to provide attractive habitat for dragonflies and damselflies. During the recently completed wildlife survey, two state-rare dragonfly species were documented at one of the two ponds located in the park.

Slide 14:

Rocks, soil, and other geological features represent the foundation of our local natural environment. Geology is the force that defines topography, such as slopes, valleys, and ridges, and determines the path and course of natural streams. Through the process of erosion, rocks eventually break down to form parent soils. Soils, in turn, determine the forest type and diversity of species within natural plant communities. And plant communities largely define wildlife habitat. Unfortunately, much of the surface geology within Arlington County has been lost to urbanization.

In an effort to document the remaining high value geological resources, a contract geologist was hired to locate and identify significant geological features on County properties. In all, 23 parks or natural sites were inventoried and technical reports with maps were produced for each. In addition to showing the locations of significant geological features, each map also delineated areas of historical soil disturbance.

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Documented significant features included scenic waterfalls, historic quarries, scientifically important exposures, and unique outcrops. Unfortunately, even the famous “palisades” formation of cliffs along the Potomac River in north Arlington, have not escaped the hand of man. While still beautiful, the rocky cliffs are shorter and thinner than native Americans would have seen, after almost two hundred years of continuous quarrying for its valuable rock.

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Field studies relating to local flora represented a major portion of the Natural Heritage Resource Inventory. As part of the project, native plant inventories were conducted in over 32 public parks and natural sites.

Highlights of the flora inventory include:

- The documentation of over 600 native plant species
- Over 100 new County Records established....these are native plants that had not previously been documented from Arlington.
- Thirteen state-listed rare plants were documented and mapped on GIS
- Over 300 plants were pressed and mounted as voucher specimens
- Natural Plant Communities were classified, delineated and mapped in over 26 parks
- And several state and globally-rare native plant communities were classified, delineated and mapped

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The current list of local native flora is maintained in an excel data format that allows for both occurrence and distribution to be determined. An upcoming publication, titled THE NATIVE VASCULAR FLORA OF ARLINGTON COUNTY, VIRGINIA will list all remaining and historical species of plants native to Arlington. In addition to noting state-rare plant species, and providing other information, this report will provide a local ranking system from locally rare to locally abundant.

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Voucher preparation and historical research were important elements of the flora project. Review of historical plant collections, housed at the Smithsonian Institute and the George Mason University Herbarium have revealed the great historical diversity of native plant life in Arlington, and document the loss of several hundred species. The preparation of vouchers provides the necessary documentation of locally-rare plants and new County records. And provides an historical database for future botanists.

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Thirteen state-listed rare plant species were documented and mapped in Arlington during the flora survey. A majority of these rare plants occur along the thin undeveloped corridor adjacent to the Potomac River in North Arlington.

Slide 20:

Many of Arlington's locally-rare native plants are found in only one or two locations within the County. A number of species are represented by a single specimen or small remaining colony.

Slide 21:

GIS is a powerful tool that allows for several different data layers to be shown together on a single map. In this example, significant geological features are shown as pink squares, seeps and springs are shown in green, and locally-rare plants are displayed as orange push-pins.

Slide 22:

Natural Plant Communities, representing the highest quality natural lands remaining in Arlington, were classified, delineated and mapped in over 26 parks and natural sites. These sites were classified using criteria developed by the National Vegetation Classification System and modified by the Virginia Department of Conservation and Recreation. A majority of the natural communities remaining in Arlington occur as a

form of mature hardwood forest ranging in age from 85-200 years of age. No natural meadows or early successional forest remain. In order to qualify as a native plant community, a parcel was generally required to exhibit all of the natural structural components, such as canopy, sub-canopy, shrub layer, and herb layer.

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The two most ecologically significant natural communities remaining in Arlington are the Barcroft Magnolia Bog and the Roaches Run Waterfowl Sanctuary.

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Barcroft Bog is a unique collection of spring-fed wetlands within Barcroft Park in South Arlington. These wetlands were first described in the early 1900's by W.L. McAtee, one of the foremost naturalists of the period.

Slide 25:

The two most important wetlands found at the site include a remnant Acidic Seepage Swamp, ranked as state-rare in Virginia, and a series of small wetlands officially classified as Terrace Gravel Seepage Bogs. The collection of seepage bogs are considered both state and globally-rare wetland communities.

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These rare wetland communities have been mapped on GIS, and occur as a patchwork of small wetlands along the base of a steep wooded slope.

Slide 27:

Twenty-three separate springs, giving birth to the series of wetlands, have been mapped across the valley. On this map, wetlands are shown in shades of blue and green. The areas shown in purple represent the former extent of these wetlands based on an examination of soils. Unfortunately, a large portion of the historical wetlands have been lost to development over the years.

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The Barcroft Park Special Features GIS Map, illustrates the ecological significance of these wetlands and this park. Individual springs are shown as blue water drops, with pink squares documenting the location of locally rare plants. Green and red dots note the location of significant or champion trees. This portion of Barcroft Park contains more locally-rare plants in a single location, than any other park or natural area in the County.

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A state champion River Birch and county champion Poison Sumac represent both the historical and typical wetland vegetation at the site.

Slide 30:

The globally-rare seepage bogs, also known as Magnolia bogs, are classified on the basis of both vegetation and the presence of acidic springs. Illustrated in this slide are four of around two dozen indicator or signature plant species found to occur consistently within these rare wetlands.

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The series of woodland springs or seeps along the valley are rich in ferns, sedges, and native wetland grasses, with characteristic cobbles or rounded stones lying exposed on the surface.

Slide 32:

Seasonally flooded with rain water, the Acidic Seepage Swamp is a forested wetland dominated by Red Maple and Black Gum, with a thick growth of Skunk Cabbage in the early spring. The moss-covered raised hummocks provide a dry foothold for plants and illustrate the seasonal rise and fall of water within the basin.

Slide 33:

Another high value ecological resource in Arlington County is the Roaches Run Waterfowl Sanctuary. The tidal wetland is owned and managed by the National Park Service.

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Found in the most unlikely of locations, the Waterfowl Sanctuary is precariously nestled between Reagan National Airport, the Pentagon and the Crystal City skyline. Occupying what was historically the western bank of the Potomac River, the tidal lake was formed when the airport and adjacent G. W. Parkway were built on artificial fill – cutting off the wetlands from the Potomac River.

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Ecologically significant tidal wetlands at the site were found to closely correspond to areas that escaped development and soil disturbance in the past.

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Three different types of state-rare wetlands have been documented at the site – Spatterdock Mud Flats, Freshwater Tidal Marsh, and Tidal Hardwood Swamp.

Slide 37:

GIS Maps of the site illustrate the significance of the wetlands. The dense collection of pink squares represent the presence of both state and locally-rare plants. The red dots show the locations of state and county champion trees.

Slide 38:

The list of special features found at the site, clearly rate Roaches Run as an ecologically significant and high value natural resource. (long pause to allow reading)

Slide 39:

A visual tour of Roaches Run includes the 4th largest Bitternut Hickory in Virginia, and the State Champion Buttonbush.

Slide 40:

Looking across the floating Spadderdock, it's hard to imagine how these wetlands managed to survive the development that surrounds them.

Slide 41:

The marsh edge in late summer, displays a full pallet of wildflowers and flowering shrubs.

Slide 42:

Roaches Run provides the habitat for a number of plant species found no where else in the County.

Slide 43:

Dry tidal ditches, exposed mud flats and raised hummocky topography in the tidal hardwood swamp, show the great variation of daily tides within the lake. Many of the plants found in the tidal basin are adapted to this reliable, but changing environment.

Slide 44:

The collection of data relating to Arlington's tree resources were a major part of the natural resource inventory. Over 1,000 individual trees were measured across the County, and data collected allowed for the development of two new tree programs – the County Champion Tree Program and the Significant Tree Program. In addition, a number of trees found on private property were subsequently nominated as Notable or Specimen Trees.

Slide 45:

Arlington's Champion Tree Program recognizes and honors the largest specimen of each native tree and shrub species in the County. This program is all about size, only the largest can be the winner. Scoring is based on a standard measurement system developed by the American Forest Association and used by the State of Virginia for its Big Tree Program. If two or more trees score within 5 points of each other, they are considered to be Co-Champions. As testament to the old age of Arlington's trees, 29 trees or shrubs were found to be state champions, and two trees are reigning national champions.

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A brief tour of Arlington's champion trees would include – this Deodar Cedar, growing in the courtyard of Arlington House within Arlington National Cemetery. This non-native Asian species was transplanted to its current location as a potted plant in the 1870's. This tree was the state champion until lightning struck and removed the top 30 feet of the tree. It remains the second largest in the state.

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This large, old age Mockernut Hickory is the state Co-Champion and also grows on the grounds of Arlington House. The exceptionally large Common Hackberry is the 2nd largest of that species in the state and is growing in the backyard of a private residence in the Clarendon neighborhood, far from the nearest woodlot.

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The normally short-living Black Locust, discovered in a residential backyard, is the second largest in the state and probably exceeds 100 years old. The state champion American Spicebush, a common native shrub in Arlington's woodlands, is located at C.F. Smith Park and Historic Site in North Arlington.

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The large Chestnut Oak, found in Bluemont Park, the third largest in the state, dwarfs the surrounding forest in which it grows. The County Champion Tulip Poplar is the largest tree found in Arlington to date, and probably one of the few trees to survive the clear-cutting of forest during the construction of the civil war fort at C.F. Smith Park.

Slide 50:

The state champion Post Oak represents a touchstone to the past. This slow-growing species of oak may be the oldest tree in Arlington – dating back to the mid-late 1700's. Growing in a residential neighborhood, the sidewalk bends around the tree, deferring to its great size and age.

Slide 51:

The most unusual champion tree can be found once again at Arlington Cemetery. Growing upon a hill, overlooking countless gravestones below it, this state champion Yellowwood tree displays a natural growth, if viewed closely, appears to be a soldier wearing a World War Two helmet.

Slide 52:

The Significant Tree Program was also developed from data collected during the flora surveys. Trees and shrubs within this program have been judged to be ecologically significant based on size, old age or rarity of species. All significant trees grow on County property, and are documented within a report updated every two years. Each page within the report includes information about individual trees on the list, such as species, size, and GPS location. Health assessments, recognized threats, recommendations for protection, photos, and maps are also shown.

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For example, this Blackhaw Viburnum is considered a significant old-age native shrub. Identified as an at-risk natural resource, this shrub is growing in an active recreational park, less than 40' from a rental picnic shelter.

Slide 54:

Also at risk, based on location, is this impressive Scarlet Oak. Currently the 4th largest in the state of Virginia, this specimen is the only remaining natural feature within a heavily developed recreational lot. The tree is bounded on three sides by a roadway, parking lot and children's playground.

Slide 55:

A number of documented trees, that did not rise to the level of champion status or were found on private properties, were subsequently nominated and accepted as Notable Trees.

Slide 56:

The distribution of both champion and significant trees across Arlington can be shown by GIS, with champion trees in red, and significant trees in green. The smaller map of C.F. Smith Park shows a high value cluster of both champion and significant trees at that site.

Slide 57:

The gross distribution of non-native invasive plants was included in the flora inventory. Over 500 acres of open space, including 19 parks, were inventoried and mapped as part

of the project. An updated target list of invasive species was developed from collected data.

Slide 58:

While invasive plants represent the greatest current threat to our local native forests, the use of data collected within the natural resource inventory, in conjunction with GIS, will better enable the County to develop a set of strategic plans to protect our highest value plant communities.

Slide 59:

Urban wildlife are an integral part of Arlington's natural environment. Field studies to determine the occurrence and distribution of local wildlife was completed in the fall of 2008. Analysis of collected data was completed in January of 2009. Target groups of wildlife inventoried include mammals, reptiles, amphibians, birds, dragonflies and damselflies, and butterflies and moths. The inventory of insects was considered particularly important because they may serve as indicators of general environmental health.

Slide 60:

Inventory methodologies included: time constrained surveys, live-trapping, listening surveys, remote sensing, historical record research, and the review of available road kill data. The Wildlife of Arlington Report, currently in production, will provide the public with detailed information regarding both the current and past state of wildlife in the County.

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Unfortunately, the impact of urbanization has resulted in loss of wetlands and terrestrial habitat, and has greatly reduced the amount of natural lands available for wildlife use. Habitat fragmentation and population isolation threaten those remaining environmentally sensitive species. Within some categories of wildlife, 50-75% of historically present species have disappeared or remain undocumented.

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The Red Salamander, *Pseudotriton ruber*, is one example of locally rare wildlife. This once widespread species, is presently confined to a single small population, occupying an historic spring on private property.

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A number of other species, affected by habitat loss, show reduced distribution or decreased abundance. The Three-lined Salamander, once commonplace within

Arlington's streams, has only been documented from a single small tributary stream. Spotted Salamanders can now only be found in two spring-fed woodland ponds. Only one naturally reproducing population of the familiar American Toad has been documented in North Arlington. The population of Northern Copperhead, Arlington's only venomous snake, is rated as uncommon, but stable. Copperheads are restricted to a fairly large, but well defined section of North Arlington.

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While a large number of species were found to be rare or no longer present within the County, some are abundant and thrive in the urban environment. White-tailed deer, red fox and raccoon are three examples of locally abundant wildlife. Unfortunately, the presence of artificially high populations of wildlife, in areas with limited habitat, can lead to environmental damage and concerns relating to human health.

Slide 65:

From an historical perspective, Arlington County has undergone a dramatic environmental transition. At first the pace of change was slow, taking over two hundred years to move from a pristine wilderness along the Potomac River to a rural farming community. In the middle of the twentieth century, the pace accelerated, with spurts of growth and development transforming Arlington from a city-suburb to a highly urbanized community.

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This journey has not been without cost to the environment. A snapshot of Arlington's environment in the year 2010 shows a small, but highly populated urban community.

- 40% the land is impervious, heavily impacting the water quality and health of local streams
- While 18% of Arlington is considered general open space, only 4.4% remain as natural lands
- Disturbance to native soils has been widespread across the County, and the presence of exotic invasive plant species threaten remaining natural plant communities
- 50-75% of the wildlife historically present in Arlington are gone or remain undocumented.

Slide 67:

While Arlington can never be restored to that bountiful wilderness that native Americans knew and respected, we, as a community, can try to preserve and protect those few and precious natural resources that remain, for future generations. In recognition of this need, Arlington County staff has developed a Natural Resource Management Plan. The Plan

will offer a series of recommendations and suggested best management practices to insure environmental sustainability and wise stewardship of our local natural resources. The Plan should be available for public review and comment in the spring of 2010.