



May 16, 2022

Honorable Katie Cristol, Chair  
Arlington County Board  
Ellen M. Bozman Government Center  
2100 Clarendon Blvd, Suite 300  
Arlington, VA 22201

Re: Endorsing report on stewardship of Arlington's natural capital and the urgent need for funding enhancements

Dear Chair Cristol:

The Forestry and Natural Resources Commission would like to take this opportunity to send you a report (attached) on the stewardship of Arlington's natural capital and the urgent need for funding enhancements—along with the FNRC's strong support for the recommendations in the report.

As the report (written by FNRC Commissioner David Howell) describes, Arlington County's natural resources are vitally important to the County and its residents. The County's tree canopy and natural vegetation, and parks and other open spaces—indeed the entire urban ecosystem—are not only essential for our quality of life, they also bring enormous economic and health benefits.

However, to maintain that natural capital, "Arlington must address the serious need for funding enhancements," the report argues. "The inertia of past budgets is no longer acceptable."

The report identifies four areas that are currently under-resourced, where increases in funding are especially needed:

**Collecting and Analyzing Data on the County's Natural Resources.** Most important is a periodic tree canopy survey, but data must also be collected on forest health, stream and riparian health, urban wildlife, environmental quality, and other ecologically relevant assets. Without such data, the County cannot maintain and protect our crucial natural resources in the face of development, climate change and other threats, nor can it evaluate the effectiveness of its stewardship strategies.

**Removing Invasive Species.** Existing efforts to reclaim parks and other open spaces from severe infestations of invasive plants has made these natural areas "healthier, more biodiverse, more ecologically functional, and more pleasant to enjoy," as the report documents. But the existing relatively small program hasn't received a budget increase in a decade—and falls far short of the need. The program must be expanded.

**Implementing Deer Management Program.** The County's recent survey shows that the local deer population is several times higher than the carrying capacity for our natural areas, causing severe and lasting damage to our parks and natural areas. The County should commit resources in the FY2023 budget to begin a deer management program.


**Increasing Staffing for Forestry and Natural Resources.** The County is currently developing a new Forestry and Natural Resource Plan, which will bring important new opportunities and challenges to the Department of Parks as it works to implement the ideas and programs identified in the Plan. Yet staff are already stretched under their current workload. The County, therefore, should increase the number of positions in the Urban Forestry Program.

Overall, the County must do more to value and invest in our area's natural capital. As the report also describes: "Those are rational investments that promote wellness, sustainability, and economic strength for the community."

The FNRC strongly endorses these recommendations.

Thank you for the opportunity to share our views.

Sincerely,



Phil Klingelhofer, Chair  
Forestry and Natural Resources Commission

Cc: Members, Arlington County Board  
Mark Schwartz, Arlington County Manager  
Jane Rudolph, Director, Department of Parks and Recreation

## **Strategic Investment and Stewardship Resourcing for Arlington's Natural Capital**

David Howell  
February 14, 2022

As Arlington begins CY 2022 and considers a budget for FY 2023, it is a particularly good time to look at how our landscape has changed during the Covid years, and how to balance and ensure the viability of ongoing priorities in the future. The impact of Covid-19 on health, social interaction, education, business, and tax revenue has been the central story, of course. But through virtual virtuosity, Arlington has accumulated many significant achievements. In the past two years, we have seen the approval of a dozen major development projects; approval of several park projects; the opening of two cutting-edge community/recreation facilities; approval of the new gold standard in sector plans (Pentagon City); implementation of two new Comprehensive Plan elements (the Public Spaces Master Plan and the Community Energy Plan); implementation of the Equity Resolution; implementation of the Biophilic Cities Resolution and partner status in the Biophilic Cities Network; and initiation of our first Forestry and Natural Resources Plan.

Those accomplishments are worthy of high praise in any situation, and are historic, given the circumstances. And they all have in common a reflection of the rapidly emerging recognition of the value of nature to our urban county. Unfortunately, the past two years have also been a cause for disruption and adaptation in fiscal matters. Arlington has managed that well, but the necessary adjustments have hindered our ability to mature our funding priorities in line with our evolving awareness and concerns about the welfare and future of Arlington's natural capital.

Central to our interests as a Tree City USA recipient, of course, is the quality and coverage of tree canopy in the county. But our concerns extend from trees—the cornerstone of our local ecosystem—to a wider range of natural assets, from biodiversity to ecological balance to environmental quality. Together, all of our natural resources are valuable assets for the county. These assets function biologically and environmentally as our urban ecological system. Individually and collectively these assets form our natural capital, a concept increasingly central to illuminating the relationship between the physical world and human culture. The components that make up our natural capital are interdependent. Their future viability depends on our stewardship, and that stewardship must be viewed as an integrated and cohesive mission.

In support of a fiscal strategy commensurate with the value of our natural capital, Arlington must address the serious need for funding enhancements in several key areas. Each area is currently under-resourced, both in relation to the value of their current functions as well as in view of emerging capacity requirements for future challenges and opportunities. The inertia of past budgets is no longer acceptable. Recalibration of what constitute adequate funding levels will help create a stewardship synergy across many county programs, and will serve as a basis for wise and lasting investment. The four program areas are:

- An ongoing data collection and analysis program.
- A sustainable monitoring and mitigation program for invasive species.
- A deer management program resource base.
- A review and resource enhancement for forestry and natural resource staffing.

The following is a brief description and rationale for each of recommended enhancement.

### **Data Collection and Analysis Program**

Arlington policymakers and program managers have an ongoing and growing need for timely and high-quality data, analytical capability, and expert information sources. This is a fundamental management requirement to inform decision-making and to guide program implementation across a wide range of

natural capital stewardship activity. A data program to monitor our natural capital is a valuable tool and prudent investment. Without current and valid data, we will be insufficiently informed about the condition of our natural resources, the impacts of development, climate change and other threats, and the effectiveness of county stewardship strategies and techniques.

The data program scope would include as a central feature a periodic tree canopy survey. The last survey was conducted in 2016 and, given the rapid pace of change in Arlington, is already of limited use. In the area of biodiversity and the health of our habitat, the county conducted a number of wildlife surveys over several years, publishing *Wildlife in Arlington: A Natural Heritage Resource Inventory Technical Report* in 2011. No further official surveys have been undertaken in the past ten years. Arlington conducts stream surveys, almost entirely with volunteers, in a limited number of parks, and those results are monitored by county staff. Other environmental and ecological monitoring is done, but much of it is sporadic, and there is not now a comprehensive approach to assessing the content, health, and characteristics of our natural capital. Awareness of our natural capital assets is based on an assortment of individual and occasional data collection efforts that is often not current or broad enough to interpret change or develop an ecosystem-level awareness of significant trends.

Arlington needs a comprehensive data collection program to monitor and report on the state of our natural capital assets, including tree canopy and forest health, stream and riparian health, urban wildlife, environmental quality, and other ecologically relevant assets. As noted, some of these exist in some form already. This program would provide a coordinated, interdepartmental, ongoing approach to regular information gathering activities, as well as a series of regular analyses and reports on these topics, including comprehensive “state of our nature” reports on a periodic basis. The optimum interval for data collection varies by the phenomenon measured. Annual variations, the immediacy of threats, and rates of change all affect the time schedule that is most informative for each natural resource component. This program design will provide valuable data for management and planning purposes on consistent and ongoing basis.

To resource this proposed program, funding should be provided at an annual level that will support a scheduled array of data collection activities for that year, as part of an ongoing, cyclical schedule. Doing so will ensure adequate funding for a rotating sequence of regular monitoring and periodic studies, while stabilizing the expenditures for any single budget year. An appropriate funding level for this program should be developed based on the proposed data program design, a review of current costs of existing data collection functions, and benchmark analysis from other jurisdictions. An initial annual funding level of \$300,000 would enable the most urgent priorities to begin, while seeding the steps for fuller program development.

### **Invasive and Threatening Species Response Program**

Enhanced funding is urgently needed to support monitoring and mitigation of noxious and invasive plant species throughout the county. The current program has been increasingly successful in demonstrating the potential effectiveness against these damaging and predatory plants, as well as the possibilities for restoration of natural areas to ecologically healthy habitat. However, the program has been flatlined for a decade at \$100,000 annually. And since the annual rate of inflation has averaged over 2%, it would take \$127,000 to provide the same impact this year as the funding level in 2012. Continued funding at a higher level is now needed to address additional affected land and to sustain the results of past efforts.

The program prioritizes saving the best natural areas first, and so has attacked invasive species in some of our premier parks and natural conservation areas with a blended chemical, mechanical, and biological approach. That involves a ten-year rolling treatment plan, conducted by contractors and volunteers. The initial years involves “active management” to eradicate, remove, and destroy invasive plants. When that effort is determined effective and invasive plants represent less than 10% of the vegetation, the area shifts to a “long-term maintenance” mode. Currently, 176 acres are in active management mode, and 115 acres are in maintenance mode, which together constitute less than 20% of the public lands that have some

current impact from this problem. We need to continue to expand the coverage to new areas, while also moving areas under active management into the maintenance category. That is how the ten-year rolling program is designed. At that point a lower level of attention can be sustainable. However, reducing the maintenance phase treatment too much or too fast will likely impact the improved condition of those areas, and may require additional treatment to address recidivism.

The ten-year rolling plan is well-designed and effective. But it is obvious that it must be cumulative to have an enduring impact. Dropping restored areas will waste previously expended resources, and failing to expand to areas not yet addressed provides a safe haven for acres of invasive plants that will continue to spread with roots and/or seeds, undercutting program accomplishments in nearby public and private areas. The implication is that a flat budget—even adjusting for inflation—cannot sustain this program. Active management averages \$1,000 to \$5,000 per acre for the initial several years, while maintenance is roughly \$100 to \$200 per acre. Clearly, the future success of the program hinges on avoiding competition between new acres entering the program, acres in maintenance, and acreage sufficiently restored to be sustainably natural with only annual check-ups.

Arlington County has received significant, free help with this program from resident volunteers. In the past five years, trained volunteers have contributed over 25,000 hours of work specifically on invasive plant management and natural habitat restoration. The accepted valuation of trained volunteer hours in Virginia is just over \$29 per hour. At about \$725,000, the value of that work exceeds by \$225,000 the level of county funds expended for the invasive plant program during the same period. Without increased funding, even these donated efforts are not likely to be adequate to uphold the results of past investments or to advance the program's progress so far.

The growing number of acres reclaimed from severe invasive plant infestation make these natural areas healthier, more biodiverse, more ecologically functional, and more pleasant to enjoy. A prudent and investment-minded approach for this program budget would increase funding incrementally by \$40,000 per year for the next five years. At that time, an evaluation of program strategy, methods, and results should be undertaken to inform future program and budget decisions.

### **Deer Management Program Implementation**

Arlington has recently funded a survey of White-tailed Deer present in the county. The survey report estimates that at around 290 individuals, the local deer population is several times higher than the carrying capacity for our natural areas. Partly as a result of this overpopulation, deer often browse and cause damage to private property as well. In response to the survey data and analysis, the county is now planning to seek contract expertise on options for reducing and managing the deer population. Most other jurisdictions in the area already have such programs, including the National Park Service, Montgomery County, and Fairfax County.

Our parks and natural areas suffer when there are too many deer, and those impacts can be long-lasting if our understory vegetation is consumed before becoming large enough to replace our older trees. It is a very real possibility that without intervention we could lose much of our urban forest within a generation. Storms, development, and tree disease are typical causes of mature-tree attrition, and many residents are aware of these impacts. A healthy understory is the natural succession mechanism that maintains our forests. The impact of a diminished supply of replacement trees can cascade throughout our urban ecology, with dire consequences for other vegetation, wildlife, stream viability, stormwater management, and other environmental concerns. The regeneration of trees is the cornerstone of our natural capital and is fundamental to the future of all of our natural resources.

Arlington should commit some resources in the FY2023 budget to implement whatever solution may be adopted to begin a deer management program in Arlington. Damage to our tree-canopy potential is already an active threat, and implementation of a safe and humane program will take some time.

Committing now to initial funding will allow Arlington to avoid further delays and additional damage. The appropriate amount should be benchmarked against other nearby jurisdictions.

### **County Forestry and Natural Resources Staffing**

Arlington's urban forestry program and natural resources program fall within the Department of Parks and Recreation. Forestry currently has 15 staff positions, while Natural Resources has three. It is widely recognized within DPR and among informed residents that program managers and staff are highly knowledgeable, dedicated, and very hard-working employees. Their missions are broad in scope and highly varied in function, and range from direct, hands-on operations to advising and consulting with other DPR units and other departments on plans and projects, to educating the public, and overseeing volunteer projects. As noted elsewhere, the activities of these units are central to the stewardship of our natural assets on public land as well as private property.

The county is currently undertaking development of a Forestry and Natural Resource Plan. Plan approval is anticipated within FY 2022 or early in FY 2023. A draft will be made available for public engagement in the coming months, before approval of the FY 2023 budget. The final plan will be comprehensive, innovative, and well-integrated with several other Comprehensive Plan components. It will provide a vision and recommendations for stewardship of our natural resources, and guide efforts to conserve those assets while promoting appreciation and enjoyment of those places and spaces.

Approval and implementation of the new Forestry and Natural Resources Plan will bring new opportunities and challenges to DPR and to the county. It may contain recommendations to enhance existing functions, begin new functions, develop new opportunities for residents, and promote programs and practices that enhance the value of our natural capital. All of this is worthwhile, and some recommendations will be considered urgent. Yet staff are already stretched under their current workload. As the FNRP will certainly recommend expansion of some program activities and most likely will include new functions, the capacity to execute some portions of the plan will be called into question.

The FY 2023 budget should anticipate the staffing implications for the two DPR program areas that will be central to implementation of the approved FNRP. A staff increase of three positions for each unit (for a total of six new DPR positions) is necessary as an initial step, given the normal time delay for recruiting, hiring, onboarding, and training. For the same reason, the FY 2023 cost of this initial step will be closer to half of the annualized position costs. In addition, a staff review should be conducted after the FNRP is approved, to reassess resource requirements and the number and type of positions needed for implementation. This would include an analysis of plan content to determine: increase in workload; new knowledge, skills, and abilities required; position type and level; training implications; and any impacts on organizational structure. Early attention to plan content and an assessment of human resource needs will ensure a smoother and more cost-effective execution of plan recommendations going forward.

### **Recognizing the Value of our Natural Capital**

It can be easy to take for granted or undervalue natural space—and all natural capital—in an urban jurisdiction where change has historically compromised those very assets, and as growing infrastructure and municipal service costs demand fiscal attention. Arlington is fortunate that early local leaders prioritized preservation of many park areas before the major growth spurts associated with mass transit and increasing density. In recent years, urban nature has emerged as an important theme in planning, economics, and public policy. Likewise, acknowledgment of the expansive and vital benefits of nature to individual residents—biophilia—has fueled reevaluation of what parks and natural areas mean to all urban entities. (See the recent World Bank Policy Brief *Urban Nature and Biodiversity in Cities*, September 2021, and the *Biophilic Cities Journal* at [biophiliccities.org](http://biophiliccities.org) for background on this paradigm shift in urban planning.) The concept of natural capital, supported by a wide variety of environmental and biophilic research, helps bring attention to the benefits of urban nature and provides decision-makers with

multiple reasons to invest in their natural spaces. Those are rational investments that promote wellness, sustainability, and economic strength for the community.

There are many ways to recognize the value of our natural lands and public spaces. In the past two years, residents have taken to the outdoors in large numbers, spending more time in more county parks per week than typical for previous years. County-owned public spaces total about 1,266 acres, including APS properties, according to the Public Spaces Master Plan. The monetary value of these places—without any structures and improvements—is estimated at over \$5 billion, based on an average land value of \$4 million per acre that is generally accepted for Arlington. This is barebones land value—space only—and does not include the value of spaces in terms of use by the public, or role in the environment, or enhanced value to properties adjacent or nearby. All of these are relevant, significant, and measurable. A county report on the 2016 Tree Canopy Survey documented 755,400 trees, with a total value of \$1.41 billion, including structural value, carbon storage, environmental service benefits, and cost avoidance. A paper prepared by Elizabeth Gearin and William Ross in 2015, *Valuing Arlington's Community Parks and Open Spaces*, demonstrates that depending on methodological techniques, our parks enhance property value and provide other measurable benefits valued at \$155M to \$196M. (See the Park and Recreation Commission web page.) The consulting firm Terrapin Bright Green published a report titled *The Economics of Biophilia: Why Designing With Nature Makes Financial Sense* in 2012, which surveys studies that document personal and economic benefits of urban nature. (see [terrapinbrightgreen.com](http://terrapinbrightgreen.com))

## **Conclusion**

Arlington has historically recognized the significant contributions of our parks and natural resources. A review of recent plans and resolutions—as itemized in the first paragraph of this paper—demonstrates vision and commitment to stewardship of our county lands. Public opinion has been transitioning rapidly in support of this important investment as Covid and climate change have raised awareness of the need for nature, and the fragility of our urban spaces. However, funding prioritization for these areas lags behind, failing to achieve or maintain adequate amounts in the annual budget as a general rule, and being timid to address some newer policies and priorities that have been adopted in recent years.

The proposed resourcing recommendations presented here, if considered in the FY 2023 and future budgets, will allow the county to gain momentum against current challenges and more fully realize the many benefits that our natural capital can provide. Whether or not all recommendations can be accommodated in this year's budget is a separate issue from the ongoing and growing need to invest in the care of our urban nature. Provision of the recommended resources should constitute a “new normal” for ongoing stewardship. Their immediate availability will help address current needs, as well as help inform and support implementation of the new Forestry and Natural Resources Plan.