

5. PARKS AND ECOLOGICAL RESOURCES

Board of Supervisors Environmental Vision:

“Parks, trails, and green space provide habitat and other ecological resources that promote the physical and mental well-being of residents through supporting healthy lifestyles and allowing for interaction with our natural environment... Ecological resources that include the soil, water, air, plants, animals, ecosystems and the services they provide are considered natural capital and green infrastructure. The public, or ecosystem, services provided by this green infrastructure are often more cost-effective than the engineered alternatives, and thus are managed as any other infrastructure or capital asset through deliberate inventory, planning, maintenance, enhancement, and restoration to ensure healthy, high functioning, and resilient ecosystems and environment. Maintaining healthy, natural ecosystems is a priority of Fairfax County.”

INTRODUCTION

Fairfax County contains roughly 226,655 acres of developable land. The county's ecological resources, owned by different entities, are dispersed across this acreage. This chapter will focus on the health of the county's natural ecosystems with an emphasis on the plant and tree components of green infrastructure described above in the Board's Environmental Vision (whereas Water and Wildlife Resources are addressed in other chapters). The topic of trails, as it relates to the environment, is generally covered by the Transportation chapter.

How Land is Used

As the county seeks to maintain healthy, natural ecosystems, the way land is used and developed is a critical aspect to consider. The following three classifications of land use account for nearly 80 percent of the land in the county:

- **Parks and recreation** (15.3 percent; 34,588 acres)^{1,2}
 - Most of this acreage is owned and managed by the Fairfax County Park Authority (FCPA) (23,854 acres in 2024³) and the Northern Virginia Regional Park Authority (NOVA Parks) (8,591 acres in 2024⁴).

¹ All hyperlinks in this chapter were accessed/checked on September 4, 2024.

² [2023 Land Use and Zoning Data, Acres of Land by Existing Land Use Category](#) (Planning District, Supervisor District & Human Services Region); Acreage does not include areas of roads (which generally increase each year as land is developed and therefore county acreage decreases), water, or small areas of land unable to be zoned or developed.

³ [FCPA acres as listed in the FY25 budget.](#)

⁴ [NOVA Parks acres as listed in the FY24 budget.](#)

Commented [KL1]: According to the (x1) source, in reference 2, the correct number is 226,624. 34,588 is correct for parks and is still 15.3 percent.

- **Vacant or natural** (5.5 percent; 12,437 acres)²
 - This land decreased by 1,365 acres between 2017-2023 due to growth pressures within the county as it is zoned for residential, industrial, or commercial uses and continues to be developed.
- **Residential** (59.2 percent; 134,245 acres)²
 - This significant percentage underscores the impact that private property can have on our environmental services and natural capital. Residential property in the county increased by 1,301 acres between 2017-2023.

While not all the acreage described above can be considered equally valuable as natural habitat, all areas—including active recreation areas, private open space, county and school properties, and residential areas—can each enhance the environment (e.g., by reducing stormwater runoff, adding trees) if properly managed and/or designed. Furthermore, the many economic, social, and health benefits that ecological resources provide cannot be overlooked.⁵

Organizations of Note

A wide variety of organizations and programs impact Fairfax County's ecological resources with a broad set of stakeholders including federal, state, local, non-profits, and private landowners. This chapter provides a reference list of organizations in the "Additional Information" section.

Ecological Resources on Non-Park Land

With most land in Fairfax County classified as "non-park" land (e.g., residential, government-owned, and commercial), the linkage between regulations, land use decisions, and the county's broader ecological resources is a critical consideration for the ecological health of the county.

Doug Tallamy, professor of Entomology and Wildlife Ecology at the University of Delaware and author of *Bringing Nature Home*, addresses the potential of private land to be an ecological resource: *"Lawn should not be our default landscaping practice. If we cut the 45.6 million acres of lawn [in the U.S.] in half, we could create the equivalent of a new national park that is 20 million acres in size. That alone would create the biggest natural area in the nation, bigger than most of our national parks combined."*⁶

A variety of ordinances and policies provide guidance for private property owners on topics which directly impact Fairfax County's ecological resources. This chapter provides a reference list in the "Additional Information" section.

CURRENT STATUS AND CONCERNS

As the county continues to develop land, it is important to actively preserve, protect, enhance, and expand its current park land and tree canopy, not only for the enjoyment

⁵ [Green Cities: Good Health \(washington.edu\)](https://www.washington.edu/green/cities/good-health/)

⁶ [High Country Gardens website.](https://www.highcountrygardens.com/)

of residents but also as a climate and resiliency strategy. County government plays an important role in preserving and protecting ecological resources, particularly on private land, through its site planning process. In all these efforts, it is important to consider the quantity, quality, and equity of the county's tree canopy to improve air and water quality as well as to help mitigate climate crisis impacts, such as heat island effects and increased stormwater runoff.

Tree Canopy

Fairfax County Trees Community of Practice

For the past several years, the Urban Forest Management Division (UFMD) has been hosting meetings twice a year to bring together Fairfax County staff, local non-profits, local advocates and others working on tree canopy related issues. These gatherings have taken place primarily on-online but also at times in person. The resulting relationships and connections have resulted in several successful partnerships and continue to help raise awareness of and engage the public on, the importance of tree preservation and planting.

Reporting on Tree Canopy Coverage

UFMD released a summary of results of the 2012-2021 tree cover analysis done by Casey Trees via a memo to the Board of Supervisors in May 2024. This analysis, using National Agriculture Imagery Program (NAIP) 0.6-meter land cover data, showed an **overall increase** in tree canopy from 52% to 55%, and an increase reported in every district in the county.

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Conversely, the [Chesapeake Tree Canopy Network did a tree canopy analysis](#) of Fairfax County using different data comparing 2014-2018 canopy coverage showed an **overall loss** of 737 acres of tree canopy and a total canopy coverage of 55.4%. Updated data based on 2021/2022 imagery are anticipated later in 2024.

While these two different data sets cannot be compared directly, the conflicting nature of these two different studies underscores the complexity of, and the need for ongoing, tree canopy analysis⁷.

⁷ *A Note About Reporting on Tree Canopy Coverage*

One note of concern about tree canopy reporting is the limitation of the current technology. Current imagery can be interpreted to measure canopy coverage (quantitative), but it cannot today report on canopy *quality*. For example, invasive vines (which threaten tree canopy) and invasive trees such as Callery pears and Tree of Heaven show up as tree canopy coverage the same as a native oak tree. As such, interpretation of current and future reports must be carefully considered. A high quantity of tree canopy may not reflect a high quality of tree canopy and we appreciate the mention that "staff remain cognizant that changes in forest composition, loss of mature trees, and increased abundance of invasive plants, are not fully accounted for in the study" in the May 2024 memo. The 2017 i-Tree Eco Urban Forest Assessment reported on field study data from 2009-2010 of 204 plots across the county. This on-the-ground sample data can help the county extrapolate quality; however, this data too must be kept current to be most useful.

Tree Canopy Concerns

EQAC commends the county for tree canopy being an important component of the Community-wide Energy and Climate Action Plan (CECAP) as well as Resilient Fairfax. One of CECAP’s sector goals proposes that Fairfax County expand the tree canopy to 60% with a minimum of 40% tree canopy coverage in every census tract by 2030 and a minimum of 50% tree canopy coverage in every census tract by 2050, prioritizing areas of highest socioeconomic need first⁸. Similarly, in Resilient Fairfax, the goals incorporated in “Adaptive Environments Implementation Roadmaps”⁹ include a focus on enhancing the county’s tree canopy. The following are three top concerns regarding tree canopy:

- *Healthy, equitable tree canopy*

Without regular data updates *and* analysis, the county lacks a critical tool needed to achieve a healthy, native tree canopy that, in the spirit of One Fairfax, is equitably distributed across the county to ensure all residents reap the benefits of tree cover. EQAC appreciates that Strategy IAP.2f of Resilient Fairfax calls for the county to “Continue to Collect Tree Canopy Data” – analysis of this data is equally important.

In 2021, staff in the Department of Public Works and Environmental Services (DPWES) put together an initial map¹⁰ (Figure 5-1) overlapping areas of existing tree canopy coverage with a vulnerability index¹¹ that help identify areas with the greatest need of increased tree canopy. The County should seek new tree canopy data and analysis as frequently as possible to ensure maps such as these can help drive decision making.

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⁸ Page 56: [CECAP implementation plan](#); county staff noted that where this plan says “block” it should be “tract”:

⁹ [Resilient Fairfax](#)

¹⁰ Tree canopy & vulnerability map of Fairfax County developed by DPWES staff Yeoanny Venetsanos and Juan Reyes, 2021.

¹¹ The vulnerability index combines several socioeconomic measures such as poverty, unemployment, etc. indicating possible social vulnerability. Although helpful for preliminary analysis, it should not be taken as a definitive measure.

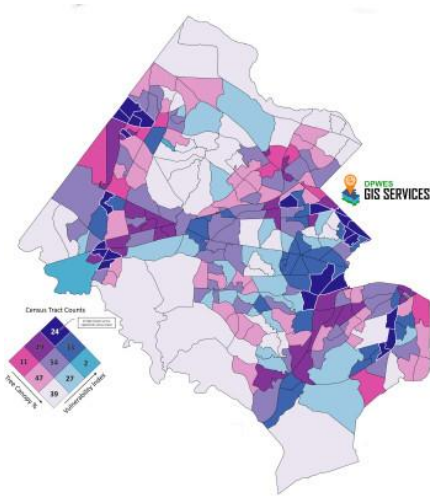


Figure 5-1: Tree Canopy and Vulnerability Index Mapping Areas of Greatest Tree Canopy Need.

- Source: [Tree canopy & vulnerability map of Fairfax County](#) developed by DPWES staff Yeoanny Venetsanos and Juan Reyes, 2021 available as a GIS map [here](#):
- **Authentic community connections**
Outreach and engagement with communities, in areas where additional tree canopy can provide the greatest impact, is critical to the long-term [success of tree plantings](#). We appreciate UFMD's partnership with Fairfax County's Office of Environmental and Energy Coordination (OEEC) to plant hundreds of trees in 2024 at school and county sites, with a focus on areas that are both urban heat islands and socioeconomically vulnerable. Authentic community connections, through an increase in staff and/or partnerships with community organizations, are integral to this kind of community tree planting effort with additional successful plantings within privately held communities.
- **Improving land development**
As properties continue to develop and re-develop, well-designed land use can contribute to a healthy ecology. This topic is addressed in the Land Use chapter in greater detail, but it is worth noting here that concepts such as [biophilic designs](#) (designs of buildings aiming to increase occupant connectivity to the natural environment) can significantly enhance an area's natural resources. The following are key areas for consideration:
 - While the county has a 10-year tree canopy requirement, without analysis of its effectiveness, it is not possible to know if we are achieving the tree canopy proposed in development plans. A graduate student at Virginia Tech is working with Casey Trees, using data from Fairfax County, to analyze development plans from 2012 versus current conditions on the ground to see

if the county has achieved the canopy coverage proposed. The results of this master's thesis is expected to be completed in 2025, and it is expected that the data and findings will be publicly available.

- In late 2022, UFMD's Forest Conservation Branch (comprised of thirteen foresters) was moved out of UFMD and into Land Development Services (LDS). This move has allowed UFMD to focus on urban forestry (and not development) which could help better to achieve the goals of new policies such as Resilient Fairfax and CECAP. We urge Fairfax County to monitor this change to be able to see what the outcomes have been.
- In late 2022, the [Mount Vernon Infill Development Task Force](#) put forth a slate of recommendations which could positively affect tree canopy. EQAC encourages the Board of Supervisors to provide directions for staff for implementation of those recommendations (e.g. more rigorous tree condition assessment, tree-related updates to the Public Facilities Manual).
- EQAC supports the [Tree Commission's July 11, 2024 memo to the Board](#) encouraging exploration of the additional authority provided via the state regarding tree canopy via HB459.
- Creating a resource which provides a comprehensive look at the county's natural resources could further inform the land development process. In that vein, EQAC appreciates Strategy AE.1a of Resilient Fairfax which calls for the county to "Develop a Consolidated Natural Resources Management Plan".

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FCPA Funding Model

The current funding structure for FCPA continues to create challenges in supporting the long-term health of FCPA's natural resources. One-off funding sources, such as funds from proffers, donations, [Environmental and Energy Program \(Fund 30015\)](#), and project-based bond funds, are critical under the current structure. However, project-based funding means that once a project, such as an ecological restoration, has been completed, the long-term maintenance and upkeep—managing for invasive plants, for instance—must be funded through different means. Underscoring the discrepancy in funding versus need, [FCPA's 2016 Needs Assessment](#) reported that an additional \$2,350 per acre of annual funding (for all 17,000 acres of natural area owned by FCPA--close to \$40M/year) would be needed to perform the necessary maintenance activities for the county's natural resources. Today's funding falls significantly short of that goal.

EQAC commends the continued allocations in the budget, beginning in FY23, in FCPA's Landscape Legacy and Sustainability Program. This recurring program funding is a good start and plays a critical part in maintaining the integrity of some of FCPA's key areas in the long-term. EQAC appreciates FCPA's focus on restoring areas with rare natural resources, such as Poplar Ford and Elklick, but also pro-actively identifying restoration projects in every district in the county to ensure more equitable investments in restorations.

Particularly challenging in the current funding structure is hiring people to lead longer-term initiatives. Disparate funding avenues lead to instability and lack the long-term security needed to effectively protect natural resources. While the current funding has

challenges and funding levels are not sufficient for maintaining FCPA's natural resources as documented above, these initial investments are a good start to begin to address the underfunding issue.

One topic EQAC will be watching in the coming year as it relates to FCPA and potential impacts to natural resources is the Board's exploration of a Recreational Facilities Authority.

Ecological Corridors

The county's [Comprehensive Plan](#) contains strong language in support of the Board's Environmental Vision, particularly in the [Environment](#) section. A key objective the county should continue to focus on is identifying, protecting, and enhancing an integrated network of ecologically valuable land and surface waters for present and future residents of Fairfax County such as designating Environmental Quality Corridors (EQCs).¹² While EQCs are a strong concept, it should be noted that a comprehensive, countywide GIS layer of approved and/or potential EQCs does not exist. As mentioned above, Strategy AE.1a of Resilient Fairfax (Develop a Consolidated Natural Resources Management Plan) would produce a resource to document EQCs and other ecologically important areas.

Ecological resources on private property are also worth noting here as well, as individual properties have the opportunity to be "habitat stepping stones" linking public lands as part of ecological corridors. Fairfax County may wish to consider how policy changes or incentives for private landowners may help further this goal.

One aspect that the county should consider is the equitable distribution of ecological corridors. A network of interconnected green spaces and increased tree canopy where it is lacking today would benefit residents and wildlife alike, such as in some of the county's more urban settings.

Relatedly, EQAC has engaged in, and will continue to engage in, Fairfax County's Plan Forward work to update the Policy Plan.

Natural Threats

The relationship between our excessive native white-tailed deer populations and non-native invasive plants is an important one to highlight in terms of how they degrade our ecological resources. When deer populations [rise above the carrying capacity](#) of an area, they can strip an area of native vegetation, including tree seedlings, up to a height of six feet, destroying the understory layer of the forest and preventing forest regeneration. Invasive plants, which deer do not generally eat, expand rapidly by their nature, putting further pressure on understory and forest regeneration.

- *Deer*

This topic is addressed in the Wildlife Management chapter in greater detail. Fairfax County is the only jurisdiction in Virginia with an active deer management program,

¹² [Objective 9 of the Environment section of the Comp. Plan discusses EQCs.](#)

with adjacent jurisdictions not having a program or relying on the public to manage deer populations.

- ***Non-native invasive plants***

The problem of invasive plants is systemic: many plants which would otherwise be classified as [noxious weeds](#) are permitted to be sold in the landscaping trade¹³. Landowners then purchase them, dispersing them throughout the county. Unmanaged natural lands are especially impacted as wind, birds, and other forces distribute invasive plant material far and wide, disregarding property lines. EQAC appreciates the General Assembly's passage of [HB 2096](#) which requires commercial landscapers to label invasive plants.

FCPA's [Invasive Management Area \(IMA\) program](#) leverages the power of volunteer site leaders to lead invasive plant removals on FCPA property, providing the county hundreds of thousands of dollars in value each year. The [Early Detection Rapid Response \(EDRR\)](#) program, as part of the IMA program, finds new populations of certain invasive species and aims to eradicate them before they cause serious ecological harm. The IMA program is the strongest of its kind in Northern Virginia, and yet it only focuses on a small subset of the 10 percent of land owned by FCPA.

Effectively addressing this threat requires collective action between public and private landowners. Specific needs include encouraging private landowners to address these problems on their land, facilitating improvements, and encouraging long-term management to ensure continued ecological benefits. Reston Association has set an example for others in their 2016 banning, through the covenant process, of the use of any plant on the [Virginia Department of Conservation and Recreation list of invasive plants](#).

EQAC commends the Board's FY25 budget investments in support of the IMA program, Operation Stream Shield (which helps fight invasives), and water chestnut management. EQAC also commends the Board's new Running Bamboo ordinance which went into effect on January 1, 2023, the budget for an additional FCPA staff to manage a bamboo eradication program on FCPA properties, and the one-off funding in consecutive years to fund actual bamboo removal on FCPA properties.

- ***Non-native insects and disease***

Additionally, non-native insects (e.g., Hemlock Woolly Adelgid, Emerald Ash Borer) and disease (e.g., Thousand Cankers Disease) are added or potential stressors to our native, ecological resources. Of emerging concern is the [Spotted Lanternfly](#) which was [found in Fairfax County in May 2022](#). The invasive Tree of Heaven is problematic both as the Spotted Lanternfly's preferred host and as a generally invasive tree. Fairfax County [UFMD's Forest Pest Management Branch](#) addresses the wide range of invasive forest pests that pose a threat to the county's urban forest.

¹³ [Virginia's law defining noxious weeds](#) includes an exception for any plant "commercially viable or such living plant is commercially propagated in Virginia".

RECOMMENDATIONS

The Scorecard for this Annual Report on the Environment (ARE) contains the following recommendations pertaining to this chapter. One has been successfully completed, three are making progress, and two are new for this year. Please see the Scorecard for details.

- 1. Improve the land development process by prioritizing trees.**
Recommendation 5PER-2021.2 | Status: Completed
- 2. Strengthen authority to address management of invasive species throughout the county.**
Recommendation: 5PER-2021.4 | Age: 3 years | Status: Making progress
- 3. Support additional staffing for Urban Forest Management Division (UFMD).**
Recommendation: 5PER-2022.1 | Age: 2 years | Status: Making progress
- 4. Seek more stable funding sources for Fairfax County Park Authority (FCPA) initiatives.**
Recommendation: 5PER-2021.3 | Age: 3 years | Status: Making progress
- 5. Ensure equitable investment in ecological restorations and corridors.**
Recommendation: 5PER-2024.1 | Status: New this year
- 6. Invest in authentic community connections to achieve a healthy, equitable tree canopy.**
Recommendation: 5PER-2024.2 | Status: New this year

This prior recommendation has been closed as requests for improving this process are being pursued via the Tree Commission.

ADDITIONAL INFORMATION

List of Organizations Impacting Ecological Resources

Various organizations and programs impact Fairfax County's ecological resources. This list is provided to demonstrate the distributed nature of our county's ecological resources and to provide context to the wide variety of entities involved in influencing their preservation:

Key County Organizations / Departments

- Fairfax County Park Authority (FCPA)
- NOVA Parks
- Urban Forest Management Division (UFMD)
- Office of Environmental and Energy Coordination (OEEC)

Other Governmental Agencies, Programs, and/or Properties

- Local
 - [Agricultural and Forestal Districts](#)
 - Fairfax County Public Schools (FCPS)

Commented [KL5]: What exactly is the purpose of listing all of these organizations. Is it critical to our mission of advising the Board? At the most, I'd select a couple of the most active for mention in the text. Ok for now, but think about it.

- Policy for Environmental Stewardship ([Policy #8542](#))
- [Get2Green](#) program
- [Fairfax County Wetlands Board](#)
- [Fairfax County Stormwater Management Program](#)
- Land Development Services (LDS)
 - [LDS administers the Public Facilities Manual](#) which covers several important environmental topics, including a section for Tree Conservation.
- [Northern Virginia Soil & Water Conservation District \(NVSWCD\)](#)
- State and Federal
 - [Gunston Hall](#) (553 acres on the Mason Neck Peninsula in Fairfax County)
 - National Park Service
 - As of June 2015, the National Park Service held 38 conservation easements covering 326 acres in Fairfax County.
 - [Virginia Department of Conservation and Recreation](#) (1,856 acres in Fairfax County)
 - [Virginia Department of Forestry \(VDOF\)](#)
 - [Virginia Department of Environmental Quality](#)
 - Virginia Department of Transportation (VDOT)
 - Virginia Outdoors Foundation (VOF)
 - VOF holds seven easements covering 127 acres in Fairfax County.
 - [US Bureau of Land Management](#) (800 acres in Fairfax County)
 - [US Fish and Wildlife Service](#) (2,350 acres in Fairfax County)

Non-Profits, Homeowner Associations (HOAs), and related initiatives

- [Earth Sangha](#)
- Fairfax Chapter of the Virginia Master Naturalist Program
- [Fairfax County Restoration Project \(FCRP\)](#)
- [Fairfax ReLeaf](#)
- [Metropolitan Washington Council of Governments \(MWCOG\)](#)
- [The Nature Conservancy \(TNC\)](#)
 - TNC owns the 233-acre Fraser Preserve on the Potomac River.
- [Northern Virginia Conservation Trust \(NVCT\)](#)
- [Plant NOVA Natives \(PNN\)](#)
- [Reston Association \(RA\)](#)
 - Beginning in 2017, RA published the Reston Annual State of the Environment Report (RASER) which evaluates the state and management of Reston's 1,300+ acres of open space, including 800 acres of woodlands, four lakes, four wetlands, three ponds, and 50 meadows.

Ordinances and Policies

[Various Fairfax County ordinances and policies](#) provide guidance for private property owners on topics including, but not limited to:

Commented [KL6]: I don't think we need to be serving as a legal reference. My advice would be to leave this out next year.

- Resource Protection Areas (RPAs) and Resource Management Areas (RMAs) located within the unincorporated areas of Fairfax County ([Chapter 118, Chesapeake Bay Preservation Ordinance](#))
- The conservation (i.e., preservation and planting) of trees during the land development process ([Chapter 122, Tree Conservation Ordinance](#))
 - While this ordinance sets standards such as ten-year tree canopy requirements, it should be noted that, by law, LDS *can* allow development plans to take precedence over the requirements. Deviations, in whole or part, from the tree preservation target may be requested under certain conditions. Similarly, where strict application of the requirements would result in unnecessary or unreasonable hardship to the developer¹⁴, exceptions to the tree canopy requirements can also be granted. In practice, it should be noted that the Urban Forest Management Division has been given the responsibility for the review and approval of any deviations to the tree preservation target and any modifications to the 10-year tree canopy requirement.
 - The [Tree Conservation section of the Public Facilities Manual](#) provides support for the ordinance mentioned above. It provides incentives for planting native tree species and disincentives for planting invasive tree species, to meet tree canopy requirements in all development projects.
- Mitigating the harmful effects of erosion and sediment during land-disturbing activities ([Chapter 104, Erosion and Sediment Control](#))
- Floodplains and Environmental Quality Corridors (EQCs) for the conservation of stream valleys as well as the broader health of our contiguous natural properties (the [Floodplain Ordinance](#) is codified as part of the zoning ordinance; EQC Policy¹⁵)
- Grass or lawn areas located within Fairfax County for property other than those zoned for or active in farming operation ([Chapter 119, Grass or Lawn Area](#))

¹⁴ [Chapter 122, Section 122-2-6. - Exemptions and Modifications](#)

¹⁵ [Objective 9 on p. 14](#)

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