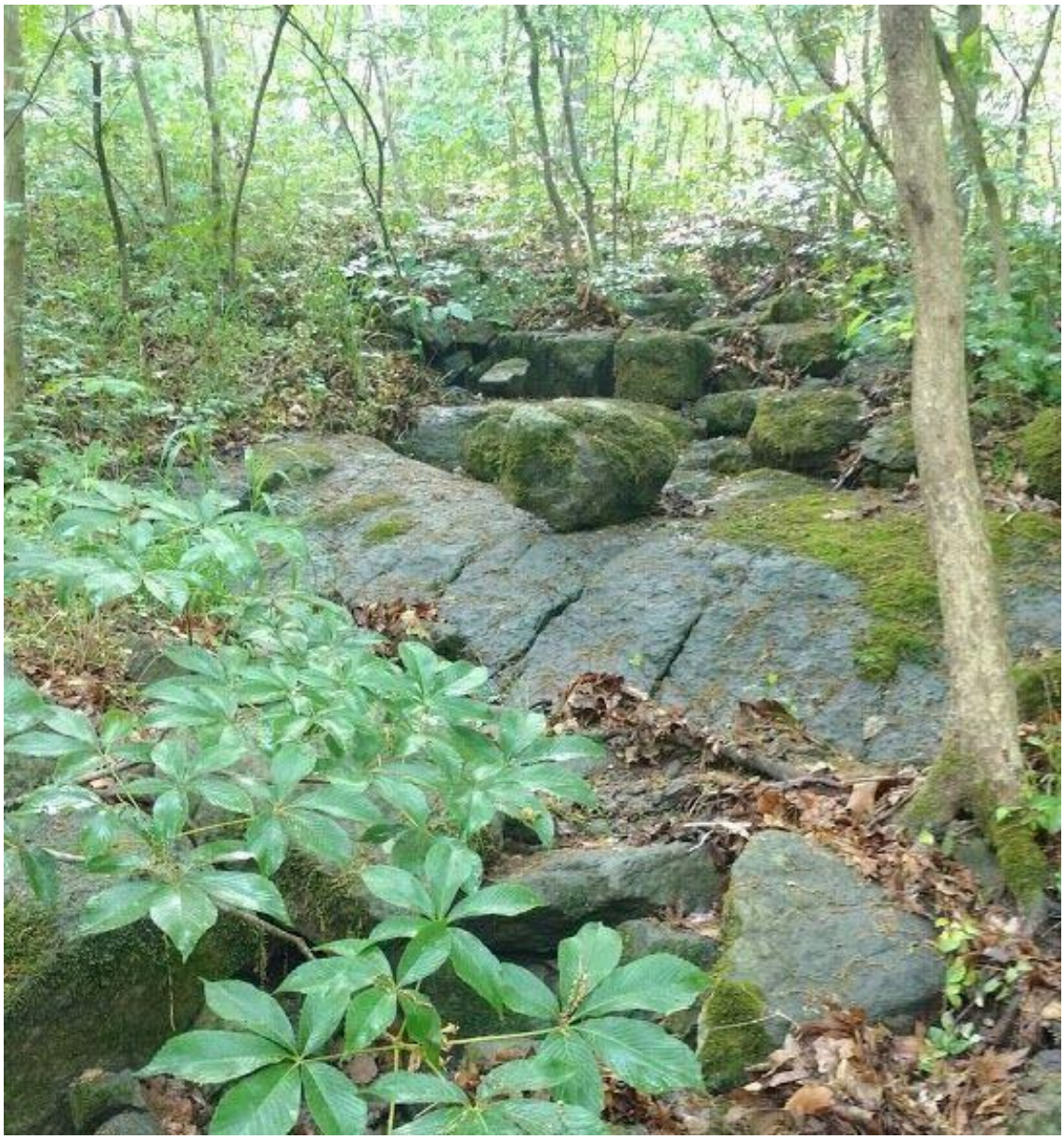
# Natural Resources Management Plan
# City of Durham, Department of Parks and Recreation
# January 2018



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## 1. Executive Summary and Plan Goals

Protection and restoration of natural resources is one component of the City of Durham's mission for its parks system. Regardless of the original intent of the land acquisition, the accumulation of park lands in the City over the years means that parks are one of the larger systems of public lands in the City. The public is coming increasingly to expect that all public lands—and parks are no exception—be managed with sustainability and conservation as integral management goals. Conservation practices offer healthy landscapes for people, plants, and animals; and conservation practices are also cost-saving practices for maintenance.

Management of natural areas in the City's parks both enhances the City's green infrastructure and is a part of preserving what remains of the original ecosystem of the region. Often the City's parks and trails are located in areas with good quality natural resources and include hundreds of feet of streams. This park Natural Resources Management Plan is intended to direct the management of environmental resources within the City's parks to meet two core goals: (1) to protect and restore those natural resources and (2) to enhance the quality of the natural experience for visitors to the parks.

In order to meet those goals, objectives of the Plan include the following:

- Protect and restore existing valuable natural areas
- Emphasize plant conservation and use of native plant species in park and trail development and management
- Enhance water quality in parks and trail corridors as possible
- Reduce maintenance costs by promoting low-maintenance plant areas
- Encourage citizen participation in natural resource management in park sites and along trails with education, programming, and volunteer opportunities

Many of the natural resources in Durham parks have been altered from their natural conditions by prior use and development. Indeed, some parks are deliberately built on pre-used sites as a way of reclaiming that site. In other parks with a history of less intense use, natural resources could possibly restore themselves on their own, without active management. However, because of such factors as the fragmentation of habitat, fire suppression practices, patterns of use, and the deliberate or unwitting introduction of invasive alien plant species, many biological communities can no longer restore themselves without active land management practices. Fortunately, land management techniques can be used to revitalize natural resources in parks. To achieve these goals, the Department of Parks and Recreation would work in partnership with other City

departments that share the same objectives, primarily Public Works/Storm Water Services, Water Management, and General Services/Urban Forestry.

It is important to acknowledge also not only the physical components of natural resource management but also the cultural components that influence it. Physical and cultural changes sometimes combine in different ways at different times—for instance, wetlands that were once considered worthless lands are now recognized as valuable habitat and water cleaning systems. While it is always risky to try to predict future changes, some emerging trends could include an enhanced interest in resource topics largely ignored at the present time, such as work on amphibians and reptiles; an increased interest in preserving vistas and viewsheds; an increased recognition of differences in social and cultural responses to different natural landscapes; and an increased recognition of the need to minimize the negative environmental impact of vehicles on natural resources.

And given this cultural component of natural resource management, involvement of the public through programming, education, and volunteer opportunities is critical for the success of any shift in the management emphasis of public spaces – thus that topic's inclusion as one of our objectives.

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The City's parks department manages 68 parks containing almost 2000 acres of land, in sites as different as C. M. Herndon Park (20 acres with 4 athletic fields, 1 practice field, a playground, and parking and restroom facilities) from West Point on the Eno Park (400 acres with several historic buildings, scattered gravel parking lots, and many natural surface trails). It also manages 29 miles of greenway trail, located in 20 foot wide built-out urban corridors to 1000 foot wide mostly-vegetated corridors along streams. DPR also manages recreational access to the City's two reservoir lakes.

## 2. System Management Objectives

**Objective 1: Protect and restore existing valuable natural areas**

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| Policy 1.1 | Identify and map natural resource sites in parks and along trails that are valuable enough and large enough to be maintained and/or restored. | Example: natural resource inventory of larger parks completed in 2006. GIS Analyst Hired 2017. |
| Policy 1.2 | Identify areas that are possible locations for restoration of natural resources. | Example: Work with Parks Foundation on native plant restoration areas. |
| Policy 1.3 | Create buffers between natural resource areas and active recreation areas. | |
| Policy 1.4 | Support public acquisition of parcels critical to the integrity of an ecosystem when that coincides with the Parks Department's mission. | Example: DPR partnership with County and Water Management for acquisition of Southview parcel in eastern Durham. Working with Community on Strayhorn Springs acquisition as part of Beltline Trail. |
| Policy 1.5 | Coordinate plans for the parks and trails natural areas with other City and regional plans as possible. | Example: purchase of Coley Rd. park site as part of the implementation of the Eastern Durham Open Space Plan |

**Objective 2: Emphasize plant conservation and use of native plant species in park development and management**

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| Policy 2.1 | Avoid park or trail development that jeopardizes the integrity of sensitive plant or animal communities | Example: design of Bethesda Park that does not put development into stream buffer areas. Designed R Kelly Bryant Bridge Trail to avoid stream buffer areas. |

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| Policy 2.2 | Require both new and re-developed landscaping in parks and along trails to incorporate native plant species. | Example: a significant portion of re-vegetation along the Third Fork Creek Trail is with native grass species. Native grasses added to Indian Trail Playground and American Tobacco Trail. |
| Policy 2.3 | Naturalize under or un-utilized park areas (such as unused common turf areas) by replanting trees and native plants | Example: Planting trees in previously mowed area of Piney Wood Park. Exploring revegetating a events field at West Point on Eno Park. |
| Policy 2.4 | Create a program to remove exotic invasive plants | Example: working with volunteers in West Point on the Eno on removal of wisteria near the river. Maintenance Unit removed invasive vines at Ellerbe Creek at Walltown. |

**Objective 3: Enhance water quality in parks as possible**

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| Policy 3.1 | Create vegetated buffers between streams and active recreation areas. | Example: existing projects with Storm Water in Northgate, Forest Hills, and Long Meadow Parks |
| Policy 3.2 | Develop on-site vegetated drainage improvements in parks and along trails to capture and clean stormwater runoff. | Example: retention basins in Northgate Park, Cook Rd. Park |
| Policy 3.3 | Pursue infrastructure solutions to using recycled water in park irrigation. | Example: cistern collecting roof runoff for irrigation of athletic field |
| Policy 3.4 | Manage recreational use of Lake Michie and Little River Lake according to practices developed by Water Management for minimizing lake contamination. | Example: no private boats allowed in Little River Lake to minimize chance of hydrilla contamination |

**Objective 4: Reduce maintenance costs by promoting low-maintenance plant areas**

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| Policy 4.1 | Encourage landscaping with native plants that require minimal pruning and watering. | Example: using the palette of acceptable plants developed by Planning. Landscape crew trained in xeriscape and native grass planting. |
| Policy 4.2 | Reduce mowed turf grass areas in those parks and trail corridors where the reduction will not negatively impact park users. | Example: Planting trees in previously mowed area of Piney Wood Park, reducing mowing along stream in Wrightwood Park |
| Policy 4.3 | Expand the use of plant mulch and compost from materials collected from parks during clean-ups. | Example: Decomposed EWF used as weed control mulch. |

**Objective 5: Encourage citizen participation in natural resource management in park sites with education, programming, and volunteer opportunities**

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| Policy 5.1 | Create partnerships with non-profit and community service organizations, universities and colleges, the school system, other governmental agencies, and non-traditional partners for conservation outcomes. | Example: 2017 partnership with TLC to obtain land adjacent to Eno River for park; Park Planning Staff are asked to be guest critics and lecturers by universities with park or environmental design focus (NC State, Guilford College) |
| Policy 5.2 | Engage youth in conservation activities by programming and volunteer opportunities. | Example: EE staff developed the “Teens in Nature” program to showcase environmental careers |
| Policy 5.3 | Include resource management outcomes into the existing Adopt-a-Park and Adopt-a-Trail programs for volunteers. | |

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| Policy 5.4 | Work with other City agencies to create programs showcasing conservation opportunities and explaining conservation techniques. | Example: Worked with Stormwater Services to explain the sensitivities of the floodplain while doing community outreach for Indian Trail Playground Project. |

## 3. Site Management Inventory Data

Each of the City's park sites and trail corridors will have a site inventory completed. Sites will be prioritized as (1) parks larger than 20 acres, (2) sites between 5 acres and 20 acres, (3) existing trails, and (4) sites smaller than 5 acres. Sites with an existing natural resource inventory from 2006 will be updated after other parks and trails have had an initial inventory completed. Sites in which management is shared with Water Management (Lake Michie and Little River Lake and surrounding facilities) will be prioritized in category 1.

Each site resource inventory will provide the following information; inventory may be kept on Sharepoint file, in hard copy, or both.

1. Park name, address, park acreage – Trail name, trail heads, trail length
2. Date, name of field assessor
3. Land Use Percentages (must add up to 100%)
    a. Natural forest
    b. Landscaped (trees, shrubs, flowers, etc.)
    c. Turf: commons areas
    d. Turf: athletic and ball field areas
    e. Impervious / built surfaces (buildings, parking lots, trail surface, sidewalks, playgrounds, courts, etc.
4. Natural Forest Percentages (must add up to 100%)
    a. Mature mixed pine and hardwood (older than 50 years)
    b. Mature hardwood
    c. Mature pine
    d. Young mixed pine and hardwood (younger than 50 years)
    e. Young hardwood
    f. Young pine
    g. Other (describe)
5. Landscaping
    a. Dominant wild shrub species
    b. Dominant planted shrub species
    c. Dominant wild herbaceous species
    d. Dominant planted herbaceous species
    e. List dominant tree species in the overstory
    f. List dominant tree species in the understory
    g. Any trees with a dbh of greater than 18"?
6. Exotic and/or invasive plant species
    List type(s) and location(s)
7. Water
    a. Stream in the park or along the trail ( yes/no ) --- if "yes, answer the following:

i. Approximate length of the stream within the park or along the trail
ii. Name of the stream or (if unnamed tributary), what stream does it flow into? What watershed basin is the park or trail in?
iii. Are the banks stable and well-vegetated?
iv. Is the stream buffer routinely being mowed?
v. Is there a sewer line parallel to the stream that is routinely mowed?
vi. Is there evidence of erosion on the stream bank or in the stream bed?

b. Stormwater
i. Are there stormwater drainage swales in the park or along the trail?
ii. Are there stormwater outfalls draining directly into the stream at any point?
iii. Are there any areas in the park or trail corridor that would be appropriate for BMP's without disrupting other park functions?

c. Ponds / Lakes
i. Is there a pond or lake in the park?
ii. Is the pond/lake buffer routinely being mowed?
iii. Is there indication of nutrient overload in the pond/lake (i.e., heavy algae)?
iv. Is a source of the nutrient overload identifiable?

8. Human Impacts
a. Are there areas in the park where overuse has resulted in degradation of the vegetation community?
b. What activity has caused this degradation?
c. Is ongoing erosion occurring as a result of this activity?

9. Wetlands
a. Are there vegetated wetland areas in the park or trail corridor?
b. Are they in good condition?

10. Other natural resource considerations:
a. Is there evidence of wildlife habitation in the park or trail corridor? If so, what kind?
b. Is there evidence of any rare/endangered species? If yes, are they protected or vulnerable?
c. Are there current threats to the site's natural resources (e.g., dumping, spreading invasives, encroachments, etc.)?

## 4. Site Action Plan

Information from the park or trail inventory will be used to develop an action plan for each site. That information will provide the basis for future decision making on the park, will serve as baseline data against which to measure the success or failure of changes made in the site management, and can be used for public outreach and education.

The action plan for each site will consist of the following:

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| 1 | Site inventory | |
| 2 | Base map (to scale) showing important elements of the inventory | |
| 3 | Any notes from consultations with other City departments or other agencies | |
| 4 | Actions will be suggested in this priority: | |
| | | (1) Protection of existing valuable resources |
| | | (2) Restoration of valuable resources, within existing staff/funding abilities |
| | | (3) Increase of natural resource areas by planting or reduction of high intensity maintenance regimen |
| 5 | Plans for addressing any immediate and significant threats to natural resources at a site | Plan recommendations should be habitat based and species based – as site specific as possible |
| 6 | Ways to utilize any existing opportunities (e.g. other construction on the site, active volunteer group, funding from a different department, etc.) | |
| 7 | Plans for monitoring of action items completed | Specific measureable outcomes |
| 8 | Public education plan | Before any work has begun and as outcomes are accomplished |

## 5. Performance Measures

| Indicator | FY 2011-12 | FY 2012-13 | FY 2013-14 | % actual change | Target % change |
|---|---|---|---|---|---|
| Number of parks with natural resource inventory completed<br>(1) = parks > 20 acres<br>(2) = parks 5 – 20 acres<br>(3) = trails<br>(4) = parks < 5 acres | | | | | |
| Number of parks with natural resource inventory older than 5 years that has been updated | | | | | |
| Site plans for specific parks developed for conservation planning | | | | | |
| Square feet of underutiltized park area naturalized or re-purposed as community garden | | | | | |
| Number of trees planted in park locations | | | | | |
| Linear feet of stream within park that has a vegetated buffer of at least 20 feet | | | | | |
| Parks with on-site water retention features | | | | | |
| Parks that capture and use recycle water in some way | | | | | |
| Volunteer projects involving resource management or conservation education | | | | | |
| Youth programs involving resource management or conservation education | | | | | |

## 6. Costs

There are numerous variables that make establishing a "cost per acre" for a natural resource plan or project quite difficult. The cost will depend upon, for instance

Management plans and activities – reforestation vs. control of invasive species vs. simple monitoring.

Type and quality of resource areas – wetlands vs. forests vs. severity of issues being addressed in the actions taken

Support from different sources – grant funding vs. cooperation by several City departments vs. volunteer efforts vs. actual regulations governing new development

Unknown circumstances – public use of a site, education and outreach programming needed, potential lost revenues if areas are closed

However, all data have shown that the cost to maintain natural areas is far less than the cost of maintaining active parks and recreation facilities. The cost to maintain one acre of quality turf grass (as on an athletic field) typically ranges from $1,000 to $2,000 per year. A natural resource area, in good condition, is as self-regulating and low maintenance as human impact will allow it to be.

A natural resource management program in Charlotte-Mecklenburg, just as an example, notes that it spends $72 per acre per year in management activities. Staff also notes, however, that it ideally should be spending $150 per acre per year to increase technical assistance and increase monitoring and evaluation.

After several years of implementation of a Natural Resources Management Plan in the Durham parks system, better cost impact numbers will become available.

## 7. Supplemental Information

Information on each park site, including property information, existing inventory information, and site specific plan, is compiled in a separate document from this plan. Staff anticipates that the guiding principles of the plan will remain constant, while information on the sites may change with new information on a regular basis.

Staff is currently working with the City's GIS staff to create base maps of areas within parks to begin the update of the inventory process. This natural resource management plan will be integrated with the park maintenance plan so that work on each park and trail site will contain complementary action items and goals.