Natural Lands Trust

New Daleville Park
Londonderry Township

Natural Areas Stewardship Report

JANUARY 2012

Londonderry Township, Chester County
~23 acres (Tax Parcels 46–2–322.1, 46–2–322)

Natural Lands Trust ~ Hildacy Farm ~ 1031 Palmers Mill Road ~ Media, PA 19063 ~ 610-353-5587 ~ www.natlands.org


Daleville Park (+/- 23.26 acres)
Parcel boundaries
Waterways
DALEVILLE JENNERSVILLE RD
46-2-322.1-E
12.58 acres
46-2-322-E
10.68 acres
1. Parcel boundaries and waterways from Chester County.
2. 2010 aerial photography from DVRPC.
Disclaimer: This map is not a survey. The information imparted with this map is meant to assist Natural Lands Trust, Inc., describe the placement of certain retained, reserved, or excluded rights and to calculate acreage figures. Property boundaries, while approximate, were established using the best available information, which may have included: surveys, tax maps, field mapping using G.P.S., and/or orthophotos. Natural Lands Trust, Inc., makes no representation as to the accuracy of said property lines (or any other lines), and no liability is assumed by reason of reliance thereon. Use of this map for other than its intended purpose requires the written consent of Natural Lands Trust, Inc.
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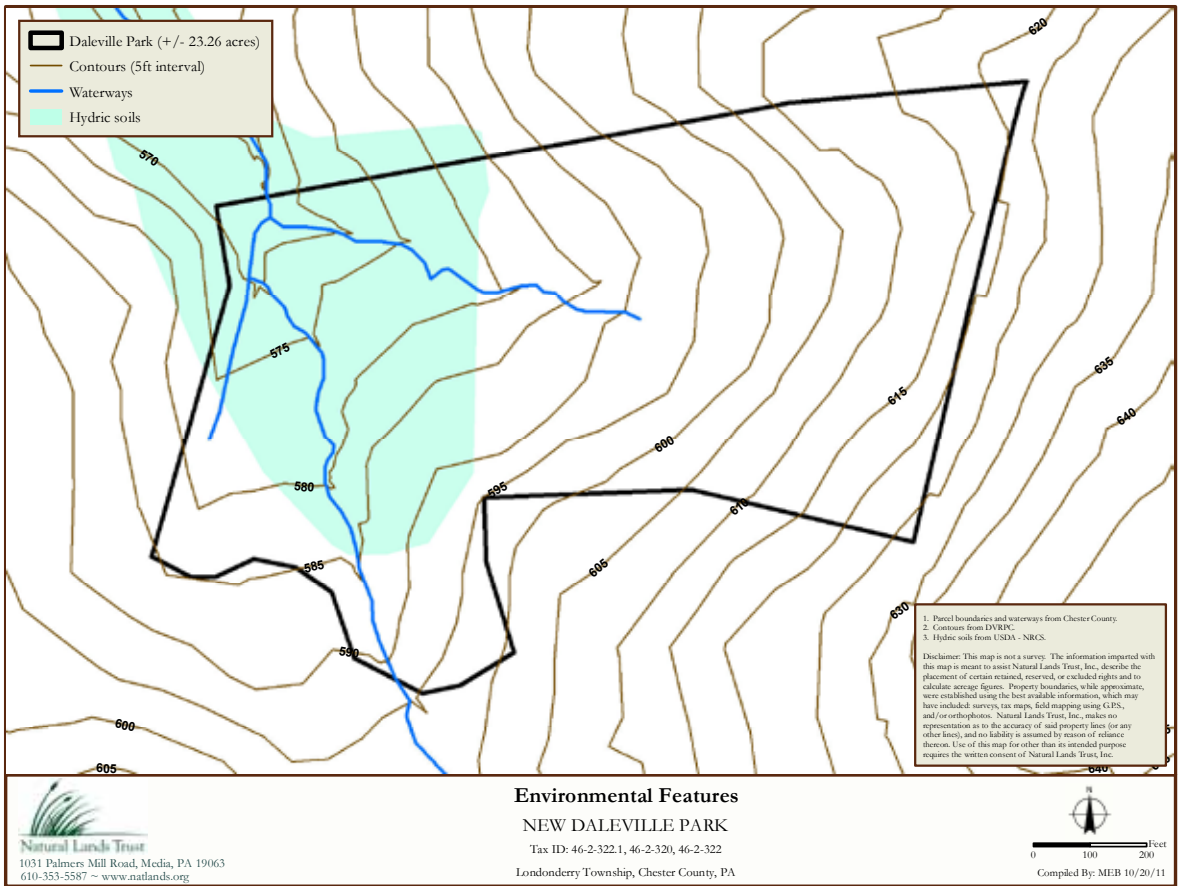
2010 Aerial Photography
NEW DALEVILLE PARK
Tax ID: 46-2-322.1, 46-2-320, 46-2-322
Londonderry Township, Chester County, PA
N
0 100 200 Feet
Compiled By: MEB 10/20/11


Daleville Park (+/- 23.26 acres)
Contours (5ft interval)
Waterways
Hydric soils
570
575
580
585
590
595
600
605
610
615
620
625
630
635
640
645
1. Parcel boundaries and waterways from Chester County.
2. Contours from DVRPC.
3. Hydric soils from USDA - NRCS.
Disclaimer: This map is not a survey. The information imparted with this map is meant to assist Natural Lands Trust, Inc., describe the placement of certain retained, reserved, or excluded rights and to calculate acreage figures. Property boundaries, while approximate, were established using the best available information, which may have included: surveys, tax maps, field mapping using G.P.S., and/or orthophotos. Natural Lands Trust, Inc., makes no representation as to the accuracy of said property lines (or any other lines), and no liability is assumed by reason of reliance thereon. Use of this map for other than its intended purpose requires the written consent of Natural Lands Trust, Inc.
Natural Lands Trust
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Environmental Features
NEW DALEVILLE PARK
Tax ID: 46-2-322.1, 46-2-320, 46-2-322
Londonderry Township, Chester County, PA
N
0 100 200 Feet
Compiled By: MEB 10/20/11

General Description of Natural Areas

New Daleville Park is located on the west side of Daleville-Jennersville Road (Route 796), northwest of its intersection with Street Road (Route 926) in Londonderry Township, southern Chester County (see **2010 Aerial Photography**). Residential subdivisions lie to the north, west, and south of the Park.

David Steckel and Andrea Stevens of Natural Lands Trust (NLT) conducted a field inspection of the approximately 23-acre parcel on October 10, 2011. We were accompanied by Barbara Stewart, member of the Londonderry Township Zoning Hearing Board, and Dick Brown, Chairman of the Londonderry Township Board of Supervisors. Photographs of the natural features in the park were taken at this time.

Londonderry Township acquired the two parcels that form the Park in 2010 to provide a natural space with passive recreational opportunities for Township residents. Walking trails meander through the forest and field in the Park and the Township is interested in eventually connecting these trails to surrounding properties.

A mature upland forest with numerous springs, a shrub swamp, wet meadow, and old fields characterize the scenic landscape of the New Daleville Park. The terrain slopes from higher elevations along Daleville-Jennersville Road down to the drainageway of a tributary of Doe Run in the western-northwestern part of the property. (see **Environmental Features map**). The diversity of natural habitats in the Park offer many passive recreational and environmental educational opportunities for Township residents.

Public trail in New Daleville Park

Confluence of two headwater streams

Spring

Water Resources

The Park lies in the headwaters of the Doe Run Watershed. Doe Run eventually intersects with Buck Run before flowing into the West Branch Brandywine Creek. The Buck Run basin is classified by the Pennsylvania Department of Environmental Protection as a Trout Stocking and Migratory Fishery (Doe Run is not listed in DEP's classification). The headwater tributaries of Doe Run that flow through the Park are fed by numerous springs that emerge in the forest. Hydric soils[1] extend into the property along these streams. Wetland shrub and meadow communities associated with the streams and hydric soils occur near the southwestern boundary of the Park.

Plant Resources

The general plant communities in New Daleville Park are described below with invasive non-native species highlighted in **bold** type.

1. Red oak – mixed hardwood forest

A mature red oak – mixed hardwood forest occupies much of the western half of the Park and has existed since at least the early part of the 1900's (see **Historical Aerial Photography 1937**). The forest canopy is dominated by red oak (*Quercus rubra*), white oak (*Quercus alba*), and tuliptree (*Liriodendron tulipifera*), with red maple (*Acer rubrum*), black gum (*Nyssa sylvatica*), ash (*Fraxinus* sp.), sassafras (*Sassafras albidum*), and **Norway maple**

Red oak-mixed hardwood / tuliptree-beech-maple forest

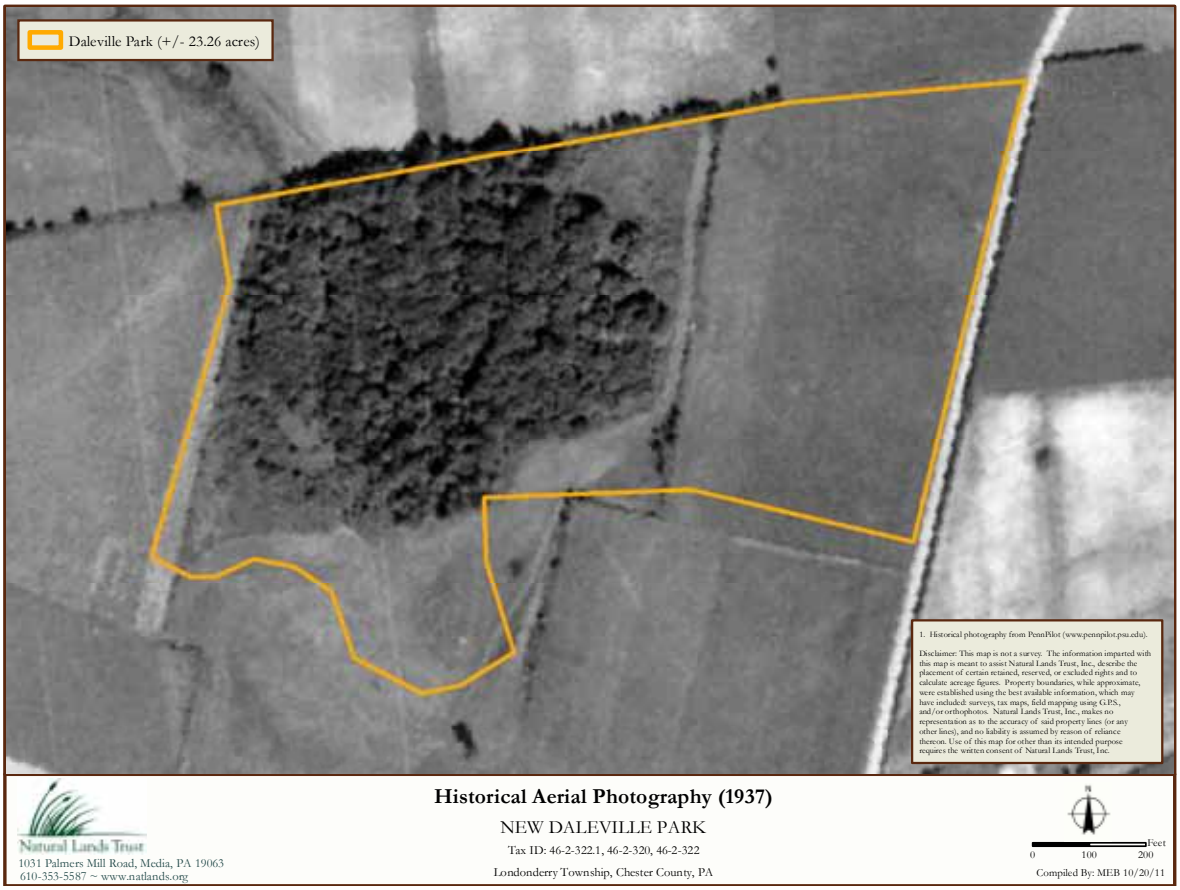
[1] Hydric soils are defined by the Natural Resources Conservation Service (NRCS) as "soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part."

(***Acer platanoides***) in the understory. The forest is structurally diverse with a shrub layer consisting of several native species, including spicebush (*Lindera benzoin*), more dominant near the southern boundary of the forest, southern arrow-wood (*Viburnum dentatum*), maple-leaved viburnum (*Viburnum acerifolium*), and black-haw (*Viburnum prunifolium*). **Shrub honeysuckle (*Lonicera* sp.)** is occasional in the shrub layer. The vines **oriental bittersweet (*Celastrus orbiculatus*)**, poison ivy (*Toxicodendron radicans*) and Virginia creeper (*Parthenocissus quinquefolia*) also occur. Groundcover species noted during our mid-October site visit include woodland goldenrod (*Solidago* sp.), Solomon's-seal (*Polygonatum pubescens*), horse-balm (*Collinsonia canadensis*), Indian cucumber-root (*Medeola virginiana*), along a headwater stream, white-snakeroot (*Ageratina altissima*), lady fern (*Athyrium felix-femina*), New York fern (*Thelypteris noveboracensis*), **garlic mustard (*Alliaria petiolata*)**, and **Japanese stiltgrass (*Microstegium vimineum*)**.

Areas where springs emerge and along the headwater streams in the forest include a shrub component of winterberry (*Ilex verticillata*), greenbrier (*Smilax* sp.), and **multiflora rose (*Rosa multiflora*)**. Herbaceous species in these wet areas include jewelweed (*Impatiens* sp.), duck-potato (*Sagittaria latifolia*), cinnamon fern (*Osmunda cinnamomea*), pokeweed (*Phytolacca americana*), Sphagnum mosses, sensitive fern (*Onoclea sensibilis*), wild ginger (*Asarum canadense*), and skunk-cabbage (*Symplocarpus foetidus*).

2. Terrestrial Meadow

A terrestrial (upland) meadow occupies most of the eastern half of the Park. This area was likely hayed prior to Township ownership and is now maintained by mowing. Dominant plant species include reed canary-grass (*Phalaris arundinacea*) in wet pockets, foxtails (*Setaria* spp.), various goldenrods and asters, common milkweed (*Asclepias syriaca*), **Canada thistle (*Cirsium arvense*)**, purpletop (*Tridens flavus*), and **mile-a-minute weed (*Persicaria perfoliata*)**. Woody



Red oak-mixed hardwood forest

Native viburnum species in the red oak-mixed hardwood forest

species along the forest-field edge include **multiflora rose** (under phased management by the Township), smooth sumac (*Rhus glabra*), osage-orange (*Maclura pomifera*), and **white mulberry** (***Morus alba***). The Township planted several species of trees (e.g., river birch, sweetgum) and shrubs (e.g., chokeberry) in this field in the spring of 2011.

3. Wet Meadow/Palustrine Shrubland

A wet meadow/palustrine shrubland complex occupies headwater areas in the southwestern corner of the Park. Dominant meadow species include various sedges (e.g., tussock sedge – *Carex stricta*), rushes, and grasses (e.g., reed canary-grass, foxtails), asters, goldenrods, milkweeds, New York ironweed (*Vernonia noveboracensis*), southern agrimony (*Agrimonia parviflora*), jewelweed, **Canada thistle**, and primroses (*Oenothera* spp.). Woody species are scattered throughout the meadow, with larger shrubland pockets occurring near the forest edge and along the headwater stream that bisects the area. Woody species include **autumn-olive** (***Elaeagnus umbellata***), American elder (*Sambucus canadensis*), blackberries (*Rubus* spp.), crabapple (*Malus* sp.), pin oak (*Quercus palustris*), **callery** (or "Bradford") **pear** (***Pyrus calleryana***), red maple, black cherry (*Prunus serotina*), willow (*Salix* sp.), and **multiflora rose. Mile-a-minute weed** and pokeweed also occur in these communities.

Current Use and Stewardship

The New Daleville Park was created to provide public open space for residents of Londonderry

Wet meadow

Township and to showcase and preserve the site's natural resources for the benefit of local and downstream communities. Conservation priorities for the Park include (1) improving native habitats, (2) maintaining the water quality of Doe Run, (3) enhancing environmental education opportunities, and (4) formalizing a trail system with links to surrounding properties.

Stewardship Issues, Opportunities and Recommendations

The following stewardship issues and opportunities were observed during our site visit to New Daleville Park on October 10, 2011. They are described in the context of the overall stewardship goal to protect and enhance the site's natural resources. We provide a description of the stewardship issues and opportunities for the site that are followed by general recommendations to address the issue or fulfill the opportunity. At the end of this report, we include a list of potential funding sources for recommended stewardship initiatives in the Park.

Invasive Plants

A ubiquitous problem encountered in the stewardship of natural lands in southeastern Pennsylvania—and increasingly recognized as a threat worldwide—is the presence of invasive plant species. An invasive species is one that rapidly spreads and outcompetes multiple native species, chiefly because of the absence of predators, pathogens, and herbivores that keep it in check in its native range. Most invasive plants

American elder

are particularly well adapted to colonize disturbed areas. In southeastern Pennsylvania, disturbance from human activities, particularly sprawl, coupled with the rich horticultural history of the southeastern counties, has afforded numerous invasive species the opportunity to become well established throughout the region. Even though the occasional immigration of new species into plant communities is a normal process, the current high rate of introduction—fueled by the planting of exotic (non-native) species for horticulture, wildlife management, and erosion control—is threatening the integrity of native plant communities and lowering native biodiversity. Not only do invasive plants alter the makeup of the plant communities on a site, but they also may affect soil chemistry and hydrology and are usually less beneficial to wildlife than the native plants they replace, contributing further to the loss of biodiversity.

The natural communities in New Daleville Park are not immune to this regional issue. Prominent invasive species seen on the site during our visit include **Norway maple, Japanese stiltgrass**, and **garlic mustard** in the mature forest, and **mile-a-minute weed, multifora rose, autumn-olive, callery pear** and **Canada thistle** in the meadows.

Since the diversity of native species in New Daleville Park is vital to providing suitable habitat for resident and migratory wildlife, protecting the park's natural heritage, and ensuring an enjoyable environment for community residents, we suggest several general strategies and specific measures to control invasive plant species on the site. In general, it is best to address invasive plant control with a *top-down* (starting in the forest canopy and working down through understory, shrub, and groundcover layers), *least-first strategy* (starting in the least impacted areas). We also suggest initially focusing invasive plant control in wetland areas (the wet meadow, along headwater stream corridors, and in areas where springs emerge) and in the mature red oak – mixed hardwood forest.

Mile-a-minute weed

When considering invasive plant management, it is important to keep in mind that *effective control of invasive plants, especially in the understory, shrub, and groundcover layers of the forest, will only be possible if implemented in conjunction with a deer management program* (see "Forest Sustainability" section below). It is also important to note that the extensive edge area and seed sources in the region and the prolific nature of these plants guarantee that even with complete eradication in New Daleville Park, invasive species can quickly reestablish themselves as a serious stewardship problem if not monitored and addressed on a regular basis.

RECOMMENDATIONS

The following invasive control recommendations for the Park are presented in general order of priority. The "Invasive Vegetation Management" section of Natural Lands Trust's *Stewardship Handbook for Natural Lands in Southeastern Pennsylvania (2008)* also provides general guidelines for monitoring and controlling invasive plants typical of the southeastern Pennsylvania landscape.

Any volunteer or contractor used for invasive plant control should be able to distinguish native species from invasive species (e.g., **Norway maple** from native maples). In sensitive wetland areas in the Park (the wet meadow, headwater streams, springs), only herbicides approved for aquatic use (e.g., Rodeo) should be applied.

- Manage **Norway maple** in the mature forest with a basal bark application of triclopyr ester (e.g., Garlon 4) herbicide and basal oil. We recommend using a 20–30% mix of triclopyr in basal oil applied in a band around the base of the trunk, avoiding runoff. Depending on the season, it may

take time for this treatment to work; for example, a winter application may result in leaf out in spring, followed by defoliation. Once the trees are dead, they can be cut down (if they create a potential hazard for visitors) without stimulating suckering or left as a snags for wildlife habitat.

- Manage invasive plants in the wet meadow as follows:

  1. Spot treat **autumn-olive** by cutting to the stump and applying a glyphosate herbicide to the cut stump. Alternatively, after cutting, the shrub can be left to resprout and the young foliage treated with a glyphosate herbicide suitable for wetland habitats.

  2. Treat **callery pear** using the method described above for **Norway maple**.

  The management of **multiflora rose** in the wet meadow can be a lower priority because this species is already being weakened by the rose rosette disease.

- Manage **multiflora rose** and **shrub honeysuckle** in the mature forest particularly in areas along the headwater streams and springs. These shrubs can be managed using the same methods described above for **autumn-olive**.

- In gaps where invasive shrubs have been removed, replant with native species to improve wildlife value and protect exposed slopes from erosion. It

Autumn-olive at edge of wet meadow

Callery pear

is best to stage the removal of invasive trees and shrubs over several years to spread out costs and to maintain nesting sites for resident and migratory birds until native replacements are established. Species of native trees and shrubs that would be suitable for planting in the Park include the following:

Wet Meadow and Headwater Streams

Buttonbush
Silky dogwood
Winterberry
Highbush blueberry
Willow

Mature Forest

Ironwood
Witch-hazel
Maple-leaved viburnum
Southern arrow-wood
Black-haw
Blackgum
Oaks (white, red, black)

The "Native Plant Materials" section of Natural Lands Trust's *Stewardship Handbook for Natural Lands in Southeastern Pennsylvania (2008)* also provides a list of additional native species that are appropriate for the natural areas in the Park. Natural Landscapes Nursery in West Grove (Jim Plyler, phone: 610-869-3788, website: www.naturallandscapesnursery.com) is a local wholesale supplier of native plant species.

Grove of tree-of-heaven on neighboring property

Japanese stiltgrass

New plantings should be monitored for deer browsing. If needed, protect newly planted trees from deer browse using tree shelters for plants less than 6 feet in height. For trees over 6 feet in height, tree wraps limit damage from buck rubbing. Newly planted shrubs should be protected with wire fencing.

- Work with the neighbor to the north to manage the thin hedgerow of **tree-of-heaven** along the Park's northeast boundary to prevent future invasion into the Park. This invasive species can be managed using the same approach recommended above for **Norway maple**.
- Monitor the establishment of invasive vines—particularly **oriental bittersweet—**along forest edges and within forest gaps and control as soon as possible to prevent impacts to canopy trees. **Oriental bittersweet** can be managed by pulling or cutting and treating the cut stump with a systemic herbicide.
- Control **garlic mustard** in the mature forest. This is best done in early spring when the plant is in flower. Plants should be pulled, bagged and removed from the site. This is a great activity for volunteers of all ages.
- Control **Japanese stiltgrass** in the mature forest—particularly near springs and along headwater streams—by hand-pulling or weed-whipping before flowering and seed set in August and September. This should be repeated for several years to deplete the seed bank of this persistent annual grass.

Forest Sustainability

Deer overabundance is a problem that affects most natural areas in our region. The habitat value of forests is greatest where there is an extensive unbroken canopy of mature trees with a diversity of native understory species that includes shrubs and herbaceous plants. Deer impact forest health by consuming seeds (particularly acorns) and browsing on seedlings, shrubs, and herbaceous plants. As deer population density increases, this activity can adversely affect populations of other wildlife species, especially songbirds, through a decrease in plant

species and structural diversity within the forest.

Deer management guidelines often rely on deer density to set management goals. For example, the recommended deer density to allow for adequate tree regeneration is 20 deer per forested square mile (one deer per 32 acres). However, to perpetuate a healthy native forest with a diversity of native shrubs and wildflowers, the recommended deer density is 10 deer per forested square mile (one deer per 64 acres). With about 12 acres (roughly half the Park) of forest cover in the New Daleville Park, the site can sustainably support one deer for part of the year at the recommended 10 deer per square mile density. However, deer density is falling out of favor due to the complications and expense of getting accurate, useful information. The best gauge of deer impact is the condition of forest vegetation. A healthy mature forest has structural diversity with well developed herb, shrub, understory, and canopy layers that create a dense curtain of foliage during the growing season.

Currently, the structural and species diversity of the mature forest in the Park indicate that deer overbrowsing is not significantly impacting forest health—particularly compared to other natural forests in our region. However, given the relatively small size of the forest and the fact that the Park has become an island of open space, it could easily attract and be quickly degraded by a few deer.

RECOMMENDATIONS

- Closely monitor the mature forest for deer browsing. Telltale evidence of browsing includes "pruned shrubs," a shrub layer tending toward a spicebush monoculture, a more open understory and the lack of tree seedlings in forest gaps, which should be dense patches of seedlings or young trees due to the abundance of sunlight.

Dense spicebush in the mature forest

- While the forest on the property is relatively healthy, consider working with a consulting forester or wildlife biologist to develop a deer management plan for the Park. The plan would include options for maintaining the deer population at or below its current level to protect forest resources. See the "Deer Management Options" section of Natural Lands Trust's *Stewardship Handbook for Natural lands in Southeastern Pennsylvania (2008)* for more information. Allowing the property to become a sanctuary for deer could result in a rapid increase in the population to a level that would decimate understory vegetation and lead to unfavorable relations with neighbors.
- Monitoring the effects of deer browsing and the education of the public about the effects of overabundant deer will be critical to the success of any future deer management program in the Township. One option to visually demonstrate and monitor the impact of deer browsing is the installation of small (10 meters square) exclosures. The growth of vegetation within these exclosures is often dramatically different than in surrounding areas with unrestricted access by deer. Ideally, exclosures (with accompanying interpretive signage to educate the public about the importance of reducing the deer population to maintain forest health) should be erected in forested areas on relatively flat ground and near public trails. The setup and monitoring of deer exclosures is a valuable educational exercise that could be undertaken by local schools and colleges.

Water Quality

Impacts to the headwater tributaries of Doe Run in the Park should be carefully managed to protect and enhance the on-site and downstream water resources and to realize the many wildlife benefits and ecosystem services these resources provide.

RECOMMENDATIONS

- Enhance the forested riparian buffer along the headwater streams in the Park by planting gaps in the forest within at least 75 feet of the stream corridors. Recommendations for native plant species that would be suitable for planting in these areas are listed under the "Invasive Plants" section above.
- Maintain a native shrub border along the streams flowing through the wet meadow/palustrine shrubland area.

Native Meadow Reclamation

The terrestrial meadow in the Park provides a good opportunity to establish and showcase a native meadow community, especially given its high visibility along Route 796. Native meadows are characterized by a diverse structure and composition of short and tall grasses and native wildflowers that provide feeding and nesting habitat for declining grassland birds (e.g., Eastern Meadowlark, Bobolink) and small mammals, as well as nectar sources for numerous butterflies and other insects. There is a growing consensus that a large open landscape with diverse cover types in patches of various sizes, including warm- and cool-season[2] grasslands and wildflower-dominated meadows, is the preferred habitat for grassland birds. Agriculture (row crops, pasture, hay fields) without hedgerows can be a compatible land use within a mosaic of native grasslands and meadows intended to provide wildlife habitat.

Native meadow species are naturally adapted to the soils and climate of our region and can, if necessary, survive in drought conditions without irrigation. Once established, native meadows require just one mowing each year to limit encroachment by woody species. Occasional spot herbicide treatments are also necessary to manage invasive species such as **Canada thistle**.

[2] Warm-season grasses flower and put on most of their growth during the warmer summer months, and grow in clumps, allowing for patches of bare soil that provide wildlife travel corridors and nesting grounds; cool-season grasses flourish in the cooler spring and fall seasons.

RECOMMENDATIONS

- Encourage native meadow species and enhance wildlife habitat value in the terrestrial meadow by mowing on a once-yearly schedule in March. Mowing at this time of year minimizes impact on the nesting and foraging activities of native wildlife (birds, small mammals, butterflies) and often allows for easy equipment access if the ground is still frozen. An additional mowing in July would provide more growing space for warm-season grasses in the early years of a native meadow conversion.
- Monitor the newly-managed meadow for several years and catalog changes in species composition. If, after that time, most of the species are native, continue to mow annually and add wildflower plugs to enhance native species composition, if desired. If most of the species are invasive or otherwise undesirable, consider eliminating the existing vegetation using herbicides and replanting with native meadow species. Under this second alternative, the meadow can be seeded with desirable species using a no-till drill once the existing vegetation is eliminated. For more information about establishing native meadows, see the "Meadow Management" section of Natural Lands Trust's *Stewardship Handbook for Natural Lands in Southeastern Pennsylvania (2008)*.
- Mow a path around the outside edge of the meadow to help limit future woody and invasive encroachment particularly along the forest-field boundary.

Tuliptrees and snag

Wildlife Enhancement

Additional opportunities for enhancing wildlife habitat in New Daleville Park are described below.

RECOMMENDATIONS

- Leave dead down wood within the mature forest as it serves as the base of the forest food web and a nutrient reservoir for living trees. Dead standing trees (snags) should also be left if they are located in areas that are not heavily used by the public. Snags benefit wildlife by providing cavities and loose bark for nesting and shelter, perching sites, and decaying wood for numerous insects that provide food for woodpeckers and nuthatches. See the attached article *Critter Condos – Managing Dead Wood for Wildlife* for more information.
- Consider installing nesting boxes for American Kestrels in the open areas in the Park, in addition to the Bluebird nesting boxes already in place. Kestrels readily adopt nest boxes to raise their young and reduce competition for cavities with the introduced European starling. See the following two attached articles for more information: (1) *Artificial Nesting Structures* published by the Natural Resources Conservation Service and the Wildlife Habitat Council, and (2) *Managing Habitat for American Kestrels*, Pennsylvania Wildlife Fact Sheet No. 13.

Rare Plant Species

According to a Pennsylvania Natural Diversity Inventory (PNDI) Environmental Review of the

Down wood in mature forest

site and the surrounding area (see attached letter), there are plant Species of Special Concern within a two-mile radius of the site. Given these nearby occurrences, we recommend a more detailed botanical survey be conducted in the New Daleville Park.

Hazards

There is a potential for hazard trees (trees that due to structural defects could fall in part or whole on a "target" such as a road, adjacent residential property, or person) in the Park. This issue is best addressed through a hazard tree monitoring program that regularly inspects for potential hazard trees and addresses them by pruning or removal, as needed. In addition, there is barbed-wire fencing that remains on the property from past uses and presents a potential hazard for Park visitors.

RECOMMENDATIONS

- Monitor potential hazard tree areas along trails (places such as benches or interpretive signs where people may linger) and the northern boundary (particularly near the border of residential properties) by foot once each year and following severe storms and address potential hazard trees (prune or remove) as needed. Ideally, a certified arborist should be hired to complete this task. See the "Hazard Tree Monitoring Program" section of Natural Lands Trust's *Stewardship Handbook for Natural Lands in Southeastern Pennsylvania (2008)* for information about procedures for hazard tree monitoring. In addition, Morris Arboretum in Philadelphia offers courses on identifying hazard trees.

Old barbed-wire fencing

- Remove old barbed-wire fencing and posts in the Park.

Boundaries and Aesthetics

Open space parcels are often subject to unwarranted (and frequently unintentional) use (encroachment of landscaped area, dumping yard waste, wood cutting) by neighbors due to poorly marked boundaries. It appears that neighbors along the northern boundary have been dumping yard waste and expanding their landscaping into the Park.

RECOMMENDATION

- The boundaries of the Park should be surveyed and posted to prevent encroachment issues by neighbors. Signs could be small (3 ¾" x 3 ¾", 0.12 gauge aluminum diamond shape signs can be purchased through Voss Signs: www.vosssigns.com) and should indicate Township ownership. Posting every 50–100 feet is adequate and particularly important where the Park abuts private land.

Environmental Education and Volunteers

The suburban location of New Daleville Park offers a unique opportunity to educate the public about the many benefits of a healthy ecosystem. Targeting neighbors, the local school district, and community organizations in outreach and volunteer opportunities may encourage landowners to address stewardship issues on their own properties and educators to use the Park for field trips. Facilitating responsible use of the Park will have the added benefit of discouraging unwarranted use.

RECOMMENDATIONS

- More permanent interpretive signs could be installed in areas where the ongoing restoration of native habitats (e.g., invasive plant treatment and replanting, deer exclosures) is visible to the public. It is important to keep the public informed of changes that are occurring in the natural habitats in the Park and how restoration will benefit both wildlife and people. Signs could also educate the public about the Park's diverse natural habitats (e.g., headwater streams, meadows, the mature forest) and the importance and benefits of using native species in the Park and in residential landscaping.
- Consider installing a small native plant demonstration garden in a visible location near a trail head.
- Encourage local schools, environmental groups, birding, and butterfly groups to schedule nature walks in the Park.
- Invite neighbors, community residents, and local scout troops to participate in natural areas stewardship projects. Establish a "Friends of New Daleville Park" volunteer group to assist with projects recommended in this report, including:
  - » Planting gaps along headwater streams and monitoring newly planted trees and shrubs
  - » Installing deer exclosures
  - » Planting a native plant demonstration garden
  - » Monitoring and cutting invasive vines from trees
  - » Pulling garlic mustard
  - » Maintaining trails
  - » Monitoring Park boundaries

  Schedule "workdays" on environmentally friendly "holidays" such as Earth Day or Arbor Day.

Potential Funding Sources for Stewardship Projects in Londonderry Township

POTENTIAL FUNDER	PROGRAM
PA Department of Conservation and Natural Resources (DCNR) *Contacts:* Carolyn Wallis 215-560-1182 Fran Rubert 215-560-1183	*Community Conservation Partnership Program*
	PA Recreational Trails Program
PA Department of Environmental Protection (DEP)	*Environmental Education Grants Program*
	Growing Greener Watershed Grants
	Nonpoint Source Implementation Program (Section 319)
PECO *Contact:* Holly Harper, Green Region Program Administrator 610-353-5587	*Green Region Open Space Program*
Local Corporations	*Corporate Charitable Giving Programs*
	Employee Volunteer Programs
E. Kneale Dockstader Foundation	

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