



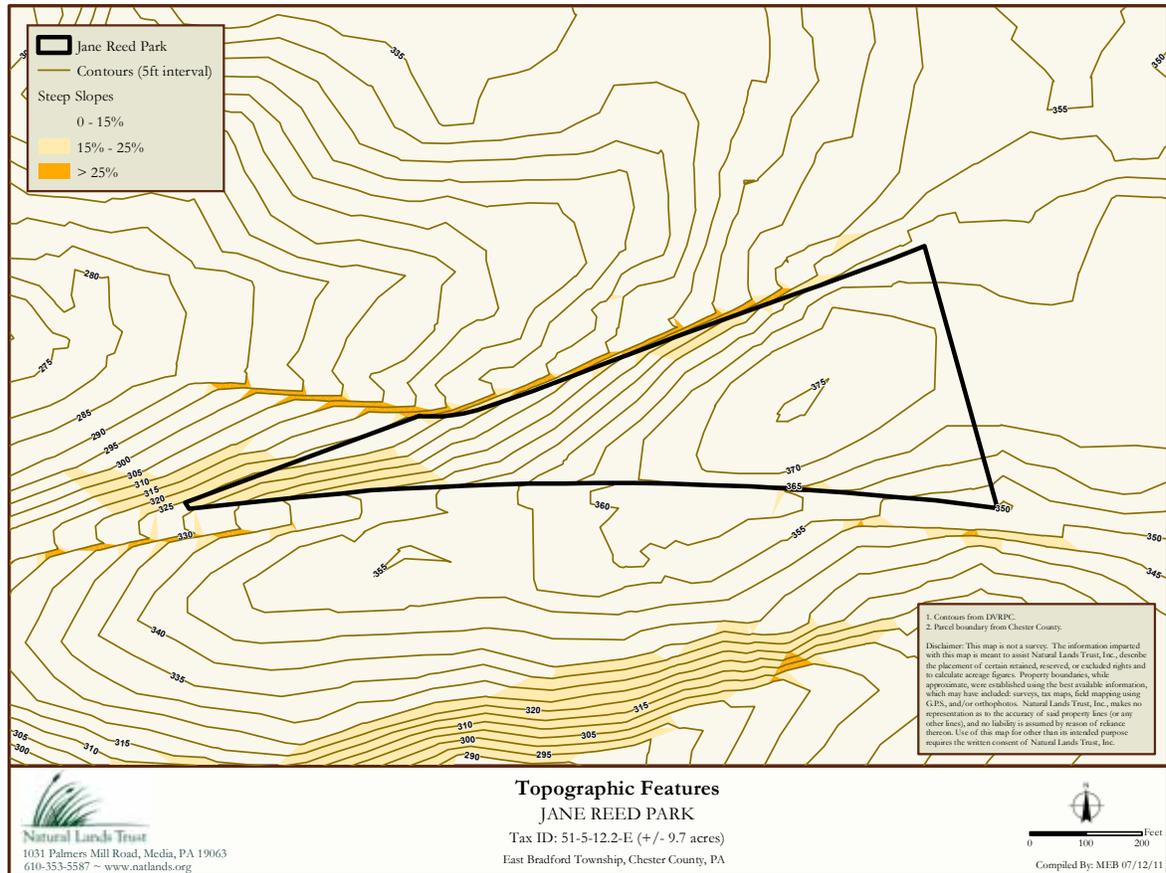
Jane Reed Park East Bradford Township

Natural Areas Stewardship Report

JANUARY 2012

East Bradford Township, Chester County (Tax parcel 51-5-12.2-E)
9.7 acres





General Description of Natural Areas

Jane Reed Park is a triangular parcel located between Frank Road (north) and Downingtown Pike or Route 322 (south) and immediately west of East Bradford Elementary School in East Bradford Township, south-central Chester County (see **2008 Aerial Photography**). The property was acquired by the Township in 1965 and is one of the oldest parks in East Bradford.

Jane Reed Park is located in a neighborhood of residential subdivisions and is part of a corridor of Township schools and parks that extends to the east-northeast and includes East Bradford Elementary School, Copeland School Park, the East Bradford

Municipal Building, and East Bradford Park. A small playground, picnic tables, a cement slab from an old picnic pavilion, and fitness equipment are located at the eastern edge of the Park in a lawn area that extends east onto the East Bradford Elementary School property. A parking lot is shared by the school and Park visitors. A mature upland forest with relatively high structural and species diversity covers the remainder of the Park which is accessed along a short unimproved loop trail. The property lies over Baltimore gneiss and slopes downward from a highpoint of 375 feet near the eastern boundary to about 325 feet along the northwestern boundary (see **Topographic Features map**).



Playground at eastern edge of Jane Reed Park

The North American Land Trust holds an easement on Jane Reed Park, although there are no restrictions under this easement as long as the Township continues to own the property. Baseline documentation for the easement was prepared in 2009.

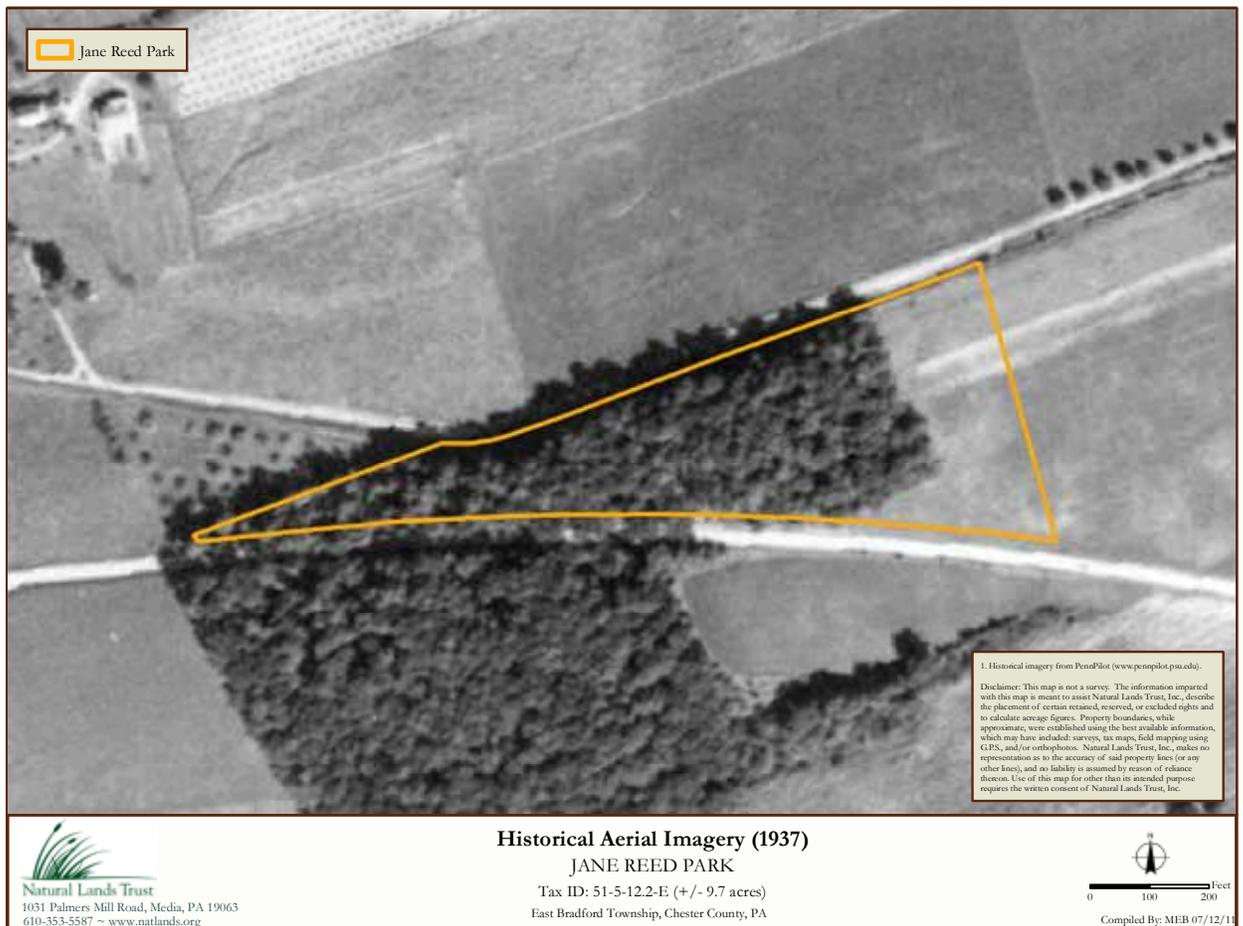
Historical aerial photography from 1937 shows the property has remained forested since at least the early part of the 20th century (see **Historical Aerial Imagery 1937**). An old trolley bed follows the Park boundary along Frank Road.

David Steckel and Andrea Stevens of Natural Lands Trust conducted a field inspection of the 9.7-acre park on July 20, 2011 and were accompanied by Mandie Cantlin, Assistant Township Manager. We accessed the Park from the East Bradford Elementary School parking area and walked the loop trail through the property. Photographs of the natural features in the Park were taken during this site visit.

Plant Resources

The forest in the Park is described below with invasive non-native species indicated in bold. A botanical survey of the Park (attached) was completed by Janet Ebert and Jack Holt in 2009 and provides a more comprehensive list of plant species on the property.

A **mature red oak-mixed hardwood / tuliptree-beech-maple forest** occurs across most of the Park and represents an intermediate form between two forest communities that are common in southeastern Pennsylvania. Dominant canopy species in this forest include red and white oaks (*Quercus rubra*, *Q. alba*), with tuliptree (*Liriodendron tulipifera*), particularly in the western extent of the Park, hickories (*Carya* spp.) and American beech (*Fagus grandifolia*). Understory species include red maple (*Acer rubrum*), black cherry (*Prunus serotina*),



bitternut hickory (*Carya cordiformis*), sassafras (*Sassafras albidum*), flowering dogwood (*Cornus florida*), ironwood (*Carpinus caroliniana*), bladdernut (*Staphylea trifolia*), and box-elder (*Acer negundo*). The invasive trees **Norway maple** (*Acer platanoides*) and **tree-of-heaven** (*Ailanthus altissima*) are occasional in the forest. The shrub layer includes black-haw (*Viburnum prunifolium*), maple-leaved viburnum (*Viburnum acerifolium*), hazelnut (*Corylus americana*), and several invasive species, including **shrub honeysuckle** (*Lonicera* sp.), **multiflora rose** (*Rosa multiflora*), **Japanese barberry** (*Berberis thunbergii*), **wineberry** (*Rubus phoenicolasius*), **winged euonymus** (*Euonymus alatus*), and **autumn-olive** (*Elaeagnus umbellata*). Vines in the forest that are often covering shrubs and climbing into understory and canopy trees—particularly along edges and in forest openings—include the native grape (*Vitis* sp.), **Japanese honeysuckle** (*Lonicera*

japonica), and **oriental bittersweet** (*Celastrus orbiculatus*).

Groundcover species noted during the time of our mid-summer site visit include bedstraw (*Galium* sp.), black cohosh (*Actaea racemosa*), sensitive fern (*Onoclea sensibilis*), Northern maidenhair (*Adiantum pedatum*), jack-in-the-pulpit (*Arisaema triphyllum*), hog-peanut (*Amphicarpa bracteata*), **gill-over-the-ground** (*Glechoma hederacea*), **garlic mustard** (*Alliaria petiolata*), and **Japanese stiltgrass** (*Microstegium vimineum*) in open areas and along the trail.

In the 2009 botanical survey of the Park, Janet Ebert and Jack Holt documented several herbaceous species in this forest that are “less common” in the Township, including perfoliate bellwort (*Uvularia perfoliata*), hairy Solomon’s seal (*Polygonatum pubescens*), and broad beech fern (*Phegopteris hexagonoptera*). The survey noted that “the park is



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

one of the best examples of rich upland woods on gneiss in the Township” and “for this reason, and for the presence of several uncommon and/or high Coefficient of Conservation species, the woods in Jane Reed Park should be considered an Exceptional Natural Area (ENA) in the Township.” The Botanical Survey of East Bradford Township (Ebert and Holt 2010) defines an Exceptional Natural Area as “an area composed of relatively intact, species rich, native plant dominated communities. ENAs are reservoirs of biodiversity.”

Water Resources

Jane Reed Park falls within the East Branch Brandywine Creek Watershed. No streams occur on the property. The only sign of periodic surface water on the property at the time of our site visit was a gully created by stormwater runoff from Route 322 (see **Stormwater Runoff** section below).

Current Use and Stewardship

The original intent of Jane Reed Park was to provide a park for the children at the neighboring school. The conservation priorities for the Park today have broadened to include providing opportunities for passive recreation (hiking, birdwatching) and environmental education in the community, and enhancing wildlife habitat. The entrance to the Park in a very visible location next to the East Bradford Elementary School provides a good opportunity to make the Park more inviting to township residents.

Stewardship Issues, Opportunities and Recommendations

The following stewardship issues and opportunities were observed during the site visit to Jane Reed Park on July 20, 2011. They are described in the context of two overall stewardship goals for the Park’s natural areas: (1) to provide a safe and enjoyable environment for passive recreation and educational opportunities; and (2) to protect and enhance plant communities that support resident and migratory wildlife. We have provided a summary of issues

and opportunities for the stewardship of the Park that are followed by general recommendations to address the issue or fulfill the opportunity. Following the recommendations in this report, we include a table showing stewardship priorities with an implementation schedule and a list of potential funding sources for stewardship projects in the Township.

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 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



Multiflora rose (foreground), grape, and oriental bittersweet along eastern edge of Park

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 forest edges at Jane Reed Park are most impacted by invasive plants because of the higher availability of light. Vines such as **oriental bittersweet** and grape are commonly seen climbing into canopy and understory trees particularly along the eastern forest-field edge of the Park. Aggressive vines can greatly raise a tree's vulnerability to blowdown through the increased weight (that elevates the tree's center of gravity) and by the vast increase in surface area (that acts to collect wind, ice, and snow). Vines can also smother tree seedlings and prevent them from reaching the canopy to replace trees felled by old age, windthrow, or pathogens.

Within the forest, **Norway maple** is occasional and is shading the forest floor beneath its canopy to an extent that prevents the growth of most other plant species. **Tree-of-heaven** also occurs in the forest as an invasive understory tree. Several invasive shrubs are encroaching into the forest from the edges and in gaps created by fallen trees. Herbaceous invasive species (e.g., **Japanese stiltgrass**, **garlic mustard**) are also common along the loop trail and in openings. These invasive species may be impacting some of the uncommon groundcover species identified in the 2009 botanical survey.

Since the diversity of native species in a system is vital to providing suitable habitat for resident and migratory wildlife, as well as providing an enjoyable environment for community residents, we suggest the following measures to control invasive plant species in Jane Reed Park. In general, it is best to address invasive plant control with a *top-down* (starting in the canopy and working down through understory, shrub, and groundcover layers), *least-first strategy* (starting in the least impacted areas). In Jane Reed Park, another focus of invasive plant control efforts should be in the area of the uncommon plants (perfoliate bellwort, hairy Solomon's seal, and broad beech fern) identified in the 2009 botanical survey.



Norway maple (trunk on right and leaves at top and lower left) competing with the native bladdernut (small leaves in center and bottom middle)



Autumn-olive in forest



Stalks of garlic mustard in forest

When considering invasive plant control, it is 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 Jane Reed 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 management recommendations for Jane Reed Park are listed in general order of priority. The “Invasive Vegetation Management” section of the Natural Lands Trust *Stewardship Handbook for Natural Lands in Southeastern Pennsylvania (2008)* also provides guidelines for monitoring and controlling invasive plants typical of the southeastern Pennsylvania landscape.

- Cut vines on canopy trees, starting in the interior more intact area of the forest and moving to the



Vines growing into a canopy tree

forest edges. **Oriental bittersweet** vines should be cut and the cut stump treated with a systemic herbicide, if possible. Care should be taken not to cut poison ivy or Virginia creeper vines on the property. These are native species that benefit wildlife and rarely become large enough to compromise canopy trees. Because grape vines are beneficial for native wildlife, only cut these vines when they are compromising the structural integrity of native trees. Cut stumps of grape vines can be left to resprout. Control **Japanese honeysuckle** in the forest using a foliar treatment of glyphosate herbicide. This is particularly effective on warm days in the late fall and winter months when the leaves of this species remain green and nearby native (non-target) species are dormant and will not be affected by the treatment.

- Manage **Norway maple** and **tree-of-heaven** with a basal bark application of triclopyr (e.g., Garlon 4) herbicide and basal oil. We recommend using a 20–30% mix of triclopyr in basal oil applied in a 12-inch 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 pose a potential hazard for visitors) without stimulating suckering or left as snags for wildlife habitat. Young **tree-of-heaven** (up to 1–2 feet) can be pulled by hand, as long as roots are not broken.
- Improve the integrity of the forest by managing invasive shrubs, such as **shrub honeysuckle**, **multiflora rose**, **autumn-olive**, and **Japanese barberry**. These invasive shrubs can be cut to the stump and a glyphosate herbicide applied to the cut stump. Alternatively, after cutting, the shrub can be left to resprout and the young foliage treated with a glyphosate herbicide. If herbicide is not used, these species can be excavated and pulled out, although soil disturbance should be kept to a minimum to prevent conditions favorable for future invasions.
- Manage **garlic mustard** on the forest floor by pulling, bagging, and removing plants from the

site before seed set in the spring. This is a good spring activity for volunteers of all ages and should be started as soon as possible to prevent further spread.

- In gaps where invasive shrubs and trees have been removed, replant with native species to improve wildlife value and protect exposed soils from erosion. Native tree and shrub species growing in the Park would be the most appropriate choices for planting (e.g., red and white oaks, flowering dogwood, sassafras, hazelnut, bladdernut, maple-leaved viburnum, black-haw). Additional native species that could be planted are listed in the “Native Plant Materials” section of the Natural Lands Trust *Stewardship Handbook for Natural Lands in Southeastern Pennsylvania* (2008). 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.

- Manage **Japanese stiltgrass** along the trail 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.

Any volunteer or contractor used for invasive plant control should be able to distinguish native species from invasive species (e.g., **Japanese stiltgrass** from native grasses, **oriental bittersweet** from native vines). Application of herbicides should only be undertaken by someone with a pesticide applicator’s license.

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



Gap in the forest with no advance regeneration

on seedlings, shrubs, and herbaceous plants. As 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.

Currently, deer overbrowsing is moderately impacting regeneration in the forest at Jane Reed Park. Shrub and groundcover layers are moderately browsed and non-native invasive shrubs are dominant in some areas (deer generally avoid non-native invasive shrubs). The traffic along Route 322—the heaviest travelled road in the Township—likely serves as a barrier to deer entering the Park from the south. High deer populations are not only a threat to forest sustainability, but also to human health. Deer are a host to black-legged ticks, the primary vector of Lyme Disease.

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 less than 10 acres of forest cover, Jane Reed Park can sustainably support only one deer for part of the year.

Our recommendation for addressing the impact of deer overbrowsing focuses on enhancing educational opportunities related to the need for deer management in the Township. Reducing the deer herd would not be an appropriate option at Jane Reed Park due to its small size and setting.

RECOMMENDATIONS

- The ongoing education of the public about the effects of overabundant deer will be critical to the success of an effective deer management program on other Township-owned land. One option to visually demonstrate 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. One or two exclosures (with accompanying interpretive signage to educate the public about the importance of reducing the deer population to maintain forest



Down dead wood along forest floor

health) could be installed in Jane Reed Park on relatively flat ground and within sight of the loop trail. The setup and monitoring of deer exclosures is a valuable educational exercise that could be undertaken by local schools and colleges.

Wildlife Enhancement

The mature forest at Jane Reed Park offers a good opportunity to manage and promote old growth forest features to enhance wildlife habitat and educational benefits. Old growth forests are characterized by high structural complexity and species diversity with all age classes represented, including very large trees, a heavy accumulation of down woody debris, and a large number of dead standing trees (snags) that provide cavity sites for forest birds. These characteristics provide habitats within a three-dimensional mosaic for a wide variety of wildlife species.

An additional wildlife enhancement opportunity would be to install nesting boxes for the Eastern Bluebird at the edge of the lawn area that is shared with the neighboring school.

RECOMMENDATIONS

- Enhance old growth forest features by leaving dead down wood in the forest to serve as the base of the forest food web and a nutrient reservoir for living trees. Dead standing trees (snags) could also be left if they are located in areas that are not heavily used by the public (see **Hazards** section below). 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 attached article *Critter Condos – Managing Dead Wood for Wildlife* for more information.
- Consider installing nesting boxes for the Eastern Bluebird at the edge of the lawn area in the Park. See attached article *Artificial Nesting Structures* for more information.

Stormwater Runoff

Stormwater runoff from Route 322 is draining into the Park and creating a deep and eroding gully. This drainage and erosion should be managed to reduce

the impact to the forest community and a potential hazard to Park visitors.

RECOMMENDATION

- Contact the Chester County Conservation District (Kennett Square, phone: 610-925-4920) and the Pennsylvania Department of Transportation to address the stormwater runoff issue from Route 322. Potential solutions could be (1) to modify the flow of the water into the property (diverting the water away from the property altogether or preventing it from entering in one concentrated stream), or (2) to install structures to dissipate the energy of the water as it enters the property to minimize overland flow and further erosion.



Erosion from stormwater running off Route 322

Hazards

There is a potential for hazard trees along the two roadside boundaries of Jane Reed Park and areas near the playground. As a landowner, the Township is responsible for preventing trees and branches from falling into the adjacent right of way on bordering roads through the monitoring and removal of hazard trees (trees that due to structural defects could fall in part or whole on a “target” such as a road, residence, or person). See the “Hazard Tree Monitoring Program” section of the *Natural Lands Trust Stewardship Handbook for Natural Lands in Southeastern Pennsylvania (2008)* for information about procedures for hazard tree monitoring.

RECOMMENDATION

- Monitor high use areas—such as the eastern boundary of the property near the playground and roadside boundaries—for hazard trees by foot once each year and following severe storms. Ideally, a certified arborist should be hired to complete this task and address any identified hazards through pruning or removal. Morris Arboretum in Philadelphia offers courses on identifying hazard trees.

Boundaries

Proper maintenance of property boundaries is an important stewardship priority on properties with public access for recreational uses. Open space parcels are often subject to unwarranted (and frequently unintentional) use by neighbors (e.g., dumping of yard waste) due to poorly marked boundaries.

RECOMMENDATION

- The boundaries of Jane Reed Park should be posted to prevent encroachment issues (e.g., dumping of yard waste) and to inform passing motorists along Frank Road and Route 322 about the location of the public open space. Signs could be small (3 ¾" x 3 ¾", 0.12 gauge aluminum diamond shape signs can be purchased through Voss Signs: www.vossigns.com) and should indicate Township ownership. Posting every 50–100 feet is adequate and particularly important where the property abuts private land. Neighbors should also be informed at the time of boundary posting that dumping is not permitted in Jane Reed Park.



Hazard tree next to playground

Public Access and Environmental Education

The mature forest in Jane Reed Park and its location within a corridor of other Township-owned properties provides a good opportunity to connect the neighborhood and school children to their natural surroundings and provide meaningful environmental educational experiences. The following suggestions offer approaches to enhancing educational opportunities and public access in the Park.

RECOMMENDATIONS

- Consider developing trail connections between Jane Reed Park and the larger corridor of Township schools and parks to the east-northeast of the Park (East Bradford Elementary School, Copeland School Park, the East Bradford Municipal Building, and East Bradford Park). These connections would enhance visitor experiences in this part of the Township.
- Consider installing a kiosk at the trail access point to display a trail map, photos of wildlife, and upcoming volunteer events.

- Install interpretive signs in key areas along the loop trail that describe natural features (e.g., old growth forest characteristics, wildlife habitat) or stewardship initiatives (e.g., deer exclosures, invasive plant management, native plantings).
- Label healthy examples of native trees along the loop trail with scientific and common names.
- Invite Township residents to participate in natural areas stewardship projects. Schedule “workdays” on environmentally friendly days such as Earth Day or Arbor Day. Volunteers, including a potential “Friends of Jane Reed Park” group and local scout troops, could be recruited to assist with several projects recommended in this report, including:
 - » Cutting vines from canopy trees
 - » Pulling **garlic mustard**
 - » Planting forest gaps with native species
 - » Installing deer exclosures
 - » Building, installing, and maintaining a kiosk
- Encourage local schools, environmental groups, and birding groups to schedule walks in the Park.



Yard waste near Frank Road boundary

Stewardship Priorities and Implementation Schedule

PRIORITY ¹	STEWARDSHIP RECOMMENDATIONS	SEASON	WHO COULD IMPLEMENT?
<i>Invasive Plants</i>			
1	Cut vines on canopy trees starting in forest interior	Anytime	Volunteers
1	Manage Norway maple and tree-of-heaven	Fall	Municipal staff ² or contractor
1	Manage invasive shrubs in forest	Fall	Municipal staff or contractor
1	Manage garlic mustard	Early Spring	Volunteers
2	Replant gaps in forest with native shrubs and trees	Spring or Fall	Volunteers
2	Manage Japanese stiltgrass	Late Summer to Early Fall	Municipal staff
<i>Forest Sustainability</i>			
3	Install deer exclosures	Winter	Volunteers
<i>Wildlife Enhancement</i>			
2	Enhance old growth forest features by leaving down wood and snags	Anytime	Municipal staff
1	Install nesting boxes for Bluebirds	Late Winter	Volunteers
<i>Stormwater Runoff</i>			
1	Address stormwater runoff from Route 322 in consultation with Conservation District and PA Department of Transportation	Anytime	Municipal Staff

Stewardship Priorities and Implementation Schedule (Continued)

PRIORITY ¹	STEWARDSHIP RECOMMENDATIONS	SEASON	WHO COULD IMPLEMENT?
Hazards			
1	Monitor roadside boundaries and high use areas for hazard trees	Late Winter-Early Spring	Municipal staff
Boundaries			
1	Post boundaries and inform neighbors of “no dumping” policy	Fall-Winter (posting); Anytime (neighbor outreach)	Municipal staff
Public Access and Environmental Education			
3	Develop trail connections between Jane Reed Park and larger corridor of Township schools and parks to the east-northeast	Anytime	Municipal staff
2	Install kiosk at trail access	Spring	Volunteers
3	Install interpretive signs in key areas along loop trail	Spring-Fall	Municipal staff
3	Label healthy examples of native trees	Spring-Fall	Municipal staff and volunteers
2	Invite residents to participate in stewardship projects	Spring-Fall	Municipal staff (oversees)
2	Encourage local groups to schedule nature walks	Spring-Fall	Municipal staff (oversees)

¹ 1 = high priority (implemented within 1-3 years); 2 = mid-priority (implemented within 3-5 years);
3 = low priority (implemented within 5-10 years)

² Must have PA Pesticide Applicator Certification to apply herbicides on public property

Potential Funding Sources for Stewardship Projects in East Bradford Township

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



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