

SECTION III - OBJECTIVES, ISSUES AND OPPORTUNITIES:

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3.1 OBJECTIVE: MAINTAIN AND IMPROVE ECOLOGICAL FUNCTION AND QUALITY OF “BEST” AND “GOOD” ECOLOGICAL INTEGRITY AREAS IN THE PARK.

While ecological stewardship of all park lands is an ideal goal, the focal point for conservation planning should be the areas with the highest ecological integrity. These remnants of mature natural areas are a fraction of the total area in natural cover and contain the most irreplaceable ecological resources. Management and restoration efforts should focus first on maintaining ecological health within these areas, and then on expanding outward into surrounding areas that have lower existing biodiversity, and greater ecological challenges. Projects beyond the high integrity areas should be sited and designed with the goal of enhancing the size and connectivity of high integrity areas

The existing high-quality ecological areas in Settlers’ Cabin Park are mapped and described in section 2.7, “Ecological Integrity Mapping.” Most of these areas are forests, although some wetland areas are included too. Many of them were never tilled or fully cleared, although they may have been logged. These areas are reservoirs of biodiversity, and they are difficult to restore if lost. They are worth protecting and even improving for the ecological and natural value they provide to the rest of the park as well as surrounding communities. Like many of the large parks in Allegheny County, Settlers’ Cabin Park is surrounded by a highly fragmented and developed suburban landscape with a history of significant resource extraction. Efforts to maintain the remaining areas with good ecological integrity will continue to provide a myriad of benefits to the natural landscape and to humans alike.



Solomon's Seal (*Polygonatum biflorum*), one of many plants found in Settlers Cabin Park High Integrity Areas.

Issues:

- Invasive plants
 - The most severe and widespread ecological issue facing the native plant communities of Settlers' Cabin Park is infestation by invasive weeds. In general, the “best” ecological integrity areas have minimal infestation, the “good” areas have pioneer populations, and all other areas have moderate to severe infestations of invasive plant species. This reflects the recent land use history of these areas. The “best” and “good” integrity areas have long-standing natural communities that recovered from 19th century impacts before the introduction of many non-native species, and current conditions with shaded canopy cover and mature native communities provide some deterrence to establishment of many non-natives. Areas that have been more recently and intensively disturbed now host young forest communities that regenerated in the last few decades, when non-native invasive seed source had become pervasive, and invasive species such as oriental bittersweet and bush honeysuckles established alongside pioneer natives in open, hospitable conditions.
- Canopy Gaps in Mature Forests
 - When forest canopy gaps form in mature forests with good ecological integrity, they can serve as entry points for invasive species that can then spread into the surrounding intact areas. Furthermore, aggressive vines can cause canopy gaps to expand by pulling down adjacent trees. Settlers' Cabin Park does not have a large problem with forest canopy gaps in its mature forests, but there are a few areas that could benefit from restoration



Dense honeysuckle and autumn olive, two highly invasive species in EU 5 of Management Zone 1

- Deer Over-Browse
 - Settlers' Cabin Park is less severely impacted by deer over-browsing than some other county parks. At this time, we recommend that existing deer control programs should continue, and native vegetation should be periodically assessed to determine whether browsing has increased to a level that requires more vigorous protection. The list of Conservative Plant Species in Settler's Cabin Park in Section 2.8 is a good reference for species to consider, as these species are difficult to restore if they are lost.



An example of a deer enclosure to prevent deer overbrowse

- Balancing recreational use with conservation
 - More intense recreational uses like mountain biking and horseback riding can severely damage sensitive botanical areas, especially when trails through such areas are not adequately designed and regulated. More intensive use also brings greater problems with the transportation of invasive species. Trails at Settlers' Cabin Park currently see relatively light use compared to many other county parks, but upcoming new residential developments may bring more users to the park.
- Forest pests and pathogens
 - The ecological assessment noted several forest pest and pathogen issues in Settlers' Cabin Park . The most visually and ecologically significant impact is the park-wide loss of ash trees as a component of the forest and recreational areas resulting from emerald ash borer infestation. In some cases, the loss of these trees has created canopy gaps that facilitate the establishment of invasive species

within areas with otherwise good ecological integrity. While no serious pest or pathogen issues are currently causing tree mortality in the mature forests, it is important to be prepared for rapid response to any new forest pest or pathogen.

- Right-of-Way Maintenance
 - Power line rights-of-way, highlighted in the following map, cut swaths through mature forests in Settlers Cabin Park and invite invasive species as well as an in-road for ATV activity from outside the park.
- Public appreciation and support
 - Settler's Cabin Park has a less active and organized community of park users than some other county parks. While there are fewer competing uses to coordinate during conservation planning, there is also a lower potential volunteer base.

Opportunities:

Invasive Species Management Guidelines

- The top priority is to maintain the quality of existing areas with high ecological integrity through early detection and removal of invasive species before they become problematic. Restoration is much more difficult, time-consuming, and expensive if invasive species become pervasive in an area.
- Develop capacity among park Rangers, maintenance staff, or other personnel who traverse park trails regularly to recognize invasive species, and take simple efforts to remove pioneer infestations. Focus efforts on high-quality areas, and on pioneer populations of invasive species that are new to the park or region. Trail edges and forest edges are particularly likely to experience seed introductions and may need special focus within high-quality areas.
- Volunteer groups interested in conservation may also be a source of capacity for invasive species management, with appropriate training..
- In areas of lower ecological integrity where invasive species have already become well established, management efforts should be prioritized when invasive species interfere with local uses (such as tangles of oriental bittersweet closing trail access), and when proximity to areas of high ecological integrity threatens those areas.
- Do not allow mountain biking, horseback riding, or ATV use in the most sensitive ecological areas, as these activities increase the rate of

introduction of invasive plant seeds.

- Use best management practices for cleaning equipment used in the park to prevent introduction of invasive plant seeds or materials through tire treads, front end loaders, etc.
- Be cautious in sourcing any fill, leaf compost, or topsoil used in the park, to prevent introduction of invasive propagules.
- Installing interpretive signage about the natural history of the mature forest areas – such as requests not to pick flowers or other native vegetation and to refrain from damaging recreational activities – may help with public cooperation in conservation-oriented management.
- Because invasive plants will continue to be a reality, this will be an ongoing management concern that will require regular attention indefinitely.

Canopy Gap Forest Resoration in “Good” and “Best” Ecological Integrity Areas

- Forest restoration efforts in small-scale canopy gaps within mature forests of otherwise good quality can help to steer regeneration back towards native species, rather than allowing the gap to destabilize and degrade the surrounding natural community. See recommendations in section 4.1.1 for more information.

Trail Management Recommendations



An example of a canopy gap at Settlers Cabin Park

- In

general, less trail development is better in areas of high ecological integrity. Close problematic and/or redundant trails in these areas.

- If possible, limiting trail use to foot traffic is a best practice for high integrity areas. Mountain bikes, horses, and ATVs all spread propagules of invasive plants at a greater rate than foot traffic alone.
- Prioritize implementation of best management practices on existing trails through areas of high ecological integrity.
- Monitor and treat forest pests and pathogens when possible, particularly those that could create wide-scale impacts if not treated early (oak wilt, Asian long-horned beetle, etc.), and those that impact any rare or sensitive tree species.

Public Outreach Recommendations

- Install interpretive signage about the natural history of the high ecological integrity areas – such as requests not to pick flowers or other native vegetation and to refrain from damaging recreational activities – may help with public cooperation in conservation-oriented management.
- Increase outreach and education programming to the local community and to educational institutions about the history, ecology, and biodiversity of Settlers Cabin Park.



An example of interpretive signage used at the Indian Hill meadow in Boyce Park

3.2 OBJECTIVE: ECOLOGICAL MANAGEMENT OF UTILITY RIGHTS-OF-WAY

Utility rights-of-way exist in most Allegheny County Parks. Optimal ecological management aims to keep these corridors as compatible as possible with the native ecological character of the surrounding landscapes, and to minimize the potential for these corridors to cause ecological problems such as the introduction of invasive plant species and forest pathogens, soil erosion, and loss of native habitat.

Issues & Challenges

- Utility rights-of-way typically require the clearance of woody vegetation, creating a linear fragmenting feature within forested landscapes.
- Rights-of-way can be corridors for invasive species, both because they are high-light, disturbed habitats that many of these species thrive in, and because maintenance equipment can introduce invasive plant propagules. Sometimes non-native seed mixes are used that even include aggressive or invasive species.
- Rights-of-way can be planted with non-native species that provide little habitat value for native wildlife.
- Equipment used to prune trees in rights-of-way is often moved between many jobs over a large geographic area without sterilization between sites, and can introduce forest pathogens.
- Soil exposure and erosion can occur on steep slopes if vegetation is not properly managed.



Utility Right-of-Way in Management Zone 1, West of the Pond

Opportunities: Utility Right-Of-Way Best Management Practices

- Engage proactively with utility companies, regulators, and others planning for new and existing utility corridors, to minimize ecological impacts on park lands.
- If new ROW corridors are considered, prioritize avoidance of “best” and “good” ecological integrity areas.
- For existing ROW corridors, best management practices should be employed in the following areas:
 - Clean Equipment between sites to avoid transport of invasive species seed/materials.
 - Prevent soil exposure and erosion with management to minimize vegetation removal, and ensure and maintain vegetation establishment, especially on steep slopes.
 - Prune trees during dormant season (November through mid-April) rather than growing season to reduce transport of fungal diseases such as oak wilt (PSU extension).
 - In cases where vegetation will be planted, species should be native to Allegheny County or adjacent counties. The Pennsylvania Bureau of Forestry (BOF) has found that while native warm-season grasses are excellent at erosion prevention due to their dense root systems, it is difficult to get utility companies to use practices that can ensure their establishment on steep slopes. The BOF has developed an alternative species mix including native and non-aggressive non-native species for these sites.
 - Monitor ROWs for the establishment of pioneer populations of invasive species; detect and treat early to prevent general infestation of the park.
 - If herbicides are used, ensure that they are not environmentally persistent or detrimental to surrounding native vegetation.
 - More information can be found in the following resource documents:
 - PA Bureau of Forestry Native Seed Mix for Rights-of-Way
 - PA Bureau of Forestry Seed Mix for Rights-of-Way >15% Slope
 - PA Bureau of Forestry Planting and Seeding Guidelines: <http://www.docs.dcnr.pa.gov/cs/groups/public/documents/>

3.3 OBJECTIVE: ENHANCE USER EXPERIENCE IN UNDERDEVELOPED AREAS OF THE PARK SUCH AS FORESTS AND MEADOWS

The trail network at Settlers Cabin Park experiences less heavy use than some other parks in the county, and does not have problems with excessive trail proliferation or overdevelopment. However, as new housing developments are completed in the near future, park use may expand. Now is an ideal time to assess the trail system capacity for heavier use, and address any potential conflicts with natural features or ill-sited trails. There is currently little in the way of interpretive materials for the natural landscape, and many opportunities exist for such outreach to enhance the user experience and communicate conservation values to the community.

Issues:

- Lack of a central “trail head” where visitors can arrive and get information on trail use.
- Some trails through heavily invaded, early successional areas have become impassible due to overgrowth of shrubs, vines, and thorny species.
- The mined strip of the park creates a terrain feature that is difficult to route trails throughout the park.

Opportunities:

- Conduct a comprehensive evaluation and assessment of the trail system to identify needed improvements for the entire trail system and for individual trails, especially in light of potential future increase in trail use.
- Establish one or more “trail head” areas that provide convenient access to the entire trail system and where visitors can obtain trail information, rules, maps, etc.
- Retire and close problematic trails.
- Install interpretive signage to help raise awareness about the park’s natural features and efforts to maintain/improve them, such as forest communities, spring wildflower diversity and ecology, invasive species, and any new meadows or forest restoration projects that are established.
- Collaboration between park staff and active community volunteers and user groups to improve and maintain the trails in a comprehensive manner.

3.4 OBJECTIVE: ENHANCING THE ECOLOGICAL VALUE AND VISUAL APPEAL OF CURRENTLY MOWED AREAS

Reducing or eliminating mowing and establishing meadows or reforestation is a relatively simple and highly effective way to enhance the park landscape's ability to provide ecosystem services, and can have high visual appeal if done properly. Meadows provide year-long food resources and shelter for small mammals, and birds. Wildflowers also attract hummingbirds, butterflies, and other beneficial insects.

Meadows can serve a highly important ecosystem service by providing sources of food and breeding habitat for native pollinating insects, especially in a suburban setting where mowed lawns and ornamental landscaping can lack this function. Scientists

across the globe are raising alarms about collapsing populations of native pollinator insects. While this is a global issue that will require global solutions, much can be done on the local level by restoring manicured, highly simplified suburban landscapes into more diverse native plant communities.



Finished Meadow at Indian Hill in Boyce Park (Completed 2015)

Perennial meadows are a useful and beautiful alternative to the mowed lawn. A landscape of perennial grasses and wildflowers provides a myriad of ecological benefits with very little maintenance required once established. After the plants are established, watering is virtually unnecessary, and mowing requirements are reduced to once per year at most.

Besides benefits to wildlife, the root system within a meadow slows down and infiltrates stormwater much more effectively than mowed lawn, allowing it to seep into the ground rather than gush into storm drains as a pulse of runoff. And since they require no fertilizers or insecticides, meadows cut down on the amount of excess nutrients that pollute the ecosystem.

Perennial meadows can also be more visually rewarding. In stark contrast to a static lawn, meadows constantly change throughout the seasons. Blades of tall warm-season grasses catch the sunlight as they rhythmically dance in the

breeze, while colorful wildflowers produce eye-pleasing colors and textures. This landscape amenity can reduce stress and offer community environmental learning.

In addition to the ecological, visual and education benefits to establishing meadows, significant cost savings and environmental benefits can be realized through reducing or eliminating mowing. Reducing mowing will lead to savings on mower maintenance and replacement costs, fuel costs, staff costs spent on mowing, fertilizer and chemical costs and more. Reducing mowing could also significantly reduce emissions and the overall carbon footprint of park management activities.

Issues & Challenges:

- Public perception of meadow areas
 - In the past, many citizens, park users, and even park staff may have negative perceptions of discontinuing regular mowing of areas that are traditionally mowed lawn. While some efforts have been well received, there have been several small controversies over some of the “field restoration” efforts across the county park system where mowing was discontinued in particular.
 - The public perception of the Indian Hill Meadow (planted in 2016 in response to a recommendation made in the *Boyce Ecological Assessment and Action Plan*) was a resounding success. Thousands of people enthusiastically enjoyed it by visiting in person or through social media ACPF and Allegheny County Parks are planning to plant meadows in all nine parks buoyed by this reaction.
- Mowing Ingrained in Park Workflow
 - Settlers Cabin Park contains acres of lawn that receive regular mowing during the growing season. Because of the volume of work involved in regular mowing of these areas, mowing is an ingrained and primary component of the seasonal flow of work within the park. Establishing meadows over time will gradually reduce the amount of staff time needed for mowing that could then be re- allocated to other maintenance activities.

Opportunities:

- Reducing frequency of mowing and re-seeding mowed areas with native meadow mix, especially emphasizing pollinator-friendly species and visual appeal.
- Expanding and amplifying educational and interpretive efforts by park rangers and naturalists regarding meadow habitat, especially as it relates

to pollinators and other wildlife.

- Measure cost and carbon emissions savings realized from reduced mowing, share results widely.
- Maintain seasonal mowing and train park staff on herbicide treatment and other control strategies to prevent invasive plant infestations.

3.5 OBJECTIVE: REDUCING EROSION, FLOODING AND OTHER DOWNSTREAM ENVIRONMENTAL IMPACTS RESULTING FROM STORMWATER RUNOFF WITHIN SETTLERS CABIN PARK.

Issues:

- High-velocity runoff during rain events from impervious surfaces such as parking lots, sidewalks, roads, rooftops, ball fields, mowed areas (to a degree).
- Un-maintained or inadequately designed stormwater infrastructure (Roads, ditches, culverts, storm drains, trails, etc.)

Opportunities:

- Convert paved areas to more permeable surfaces, appropriately-sized parking lots, add stormwater.
- Capture components to all buildings to capture rooftop runoff (green roofs, rain gardens, soakage trenches, etc.).
- Conduct a broad-scale tree planting program across the park to increase canopy cover and enhance stormwater mitigation potential.
- Upgrade drainage infrastructure to reduce culvert erosion issues. Incorporate green infrastructure components to slow, store, and filter stormwater.



Bioswale and its signage along Hawthorne Road in Millvale, PA.



WPC Staff, Allegheny County Parks Staff and Volunteers help plant landscape trees in Boyce Park in the Fall of 2016.