

CELERY FARM NATURAL AREA

MANAGEMENT AND STEWARDSHIP PLAN

Funded by
The Fyke Nature Association
for the
Borough of Allendale



February 1, 2018



CELERY FARM NATURAL AREA MANAGEMENT AND STEWARDSHIP PLAN

funded by

The Fyke Nature Association

for the

Borough of Allendale, County of Bergen

Prepared February 1, 2018



19 BOONTON AVENUE
BOONTON, NJ 07005
PH: (973)541-1010
FAX: (973)541-1131
TLC-NJ.ORG



CELERY FARM NATURAL AREA MANAGEMENT AND STEWARDSHIP PLAN

funded by

The Fyke Nature Association

for the

Borough of Allendale, County of Bergen

Produced by:

The Land Conservancy of New Jersey's Partners for Greener Communities Team:
"Partnering with Communities to Preserve Natural Treasures"

David Epstein, President

Barbara Heskins Davis, PP, AICP, Vice President Programs

Dennis Briede, Stewardship Manager

Kenneth Fung, GIS Manager

Lisa Leone, Planning Intern

For further information please contact:



19 BOONTON AVENUE
BOONTON, NJ 07005
PH: (973)541-1010
FAX: (973)541-1131
TLC-NJ.ORG



The Fyke Nature Association
fykenature.org
Celery Farm Marsh Warden
% Borough of Allendale
500 West Crescent Avenue
Allendale, NJ 07401



**Fyke Nature Association
Post Office Box 141
Ramsey, NJ 07446**

January 2018

For decades, the Fyke Nature Association has been instrumental in helping the Borough of Allendale maintain the Celery Farm Natural Area and to make the preserve a local treasure.

In recent years, we have noticed a troubling increase in invasive species and damage to the 107-acre preserve's understory. We also realized that we hadn't had an environmental survey of the Celery Farm done in over a decade. We decided we needed an updated environmental survey in order to develop a cohesive strategy to maintain the preserve, to combat the increase in invasive species, and to encourage more volunteer participation.

To that end, we hired the Land Conservancy of New Jersey in July 2016 to do an independent, impartial assessment of the Celery Farm Natural Area. For the past 18 months, the conservancy has performed their evaluation. The survey's recommendations reflect the conservancy's vision for what the Celery Farm can become in a best-case scenario. The Celery Farm does not exist in a vacuum, however, and some recommendations are just not practical for a small group of volunteers such as ourselves. We'll do the best we can, and -- as the report suggests -- enlist others to volunteer.

We thank the Land Conservancy for its thorough assessment, presented here.

Mike Limatola,
President of Fyke Nature Association, Warden of the Celery Farm Natural Area

TABLE OF CONTENTS

Executive Summary	1
Vision.....	2
Site Description and History	3
Site Conditions.....	5
Recommendations.....	6
Deer Herbivory Management	6
Education and Community Engagement	8
Invasive Plant Removal	9
Action Plan.....	10
Appendix.....	12
References.....	30

Cover Photograph

Lake Appert at Celery Farm Natural Area

ACKNOWLEDGEMENTS

The Land Conservancy of New Jersey wishes to acknowledge the following individuals the Borough of Allendale for their help in providing information, guidance, and materials for the *Management and Stewardship Plan for the Celery Farm Natural Area*. Their contributions have been instrumental in the development of this report.

Michael Limatola, Marsh Warden, Celery Farm (Board President, Fyke Nature Association)
Jim Wright, Deputy Marsh Warden, Celery Farm

EXECUTIVE SUMMARY

The Borough of Allendale owns and manages the 107 acre Celery Farm Natural Area in the Borough of Allendale. As one of the largest freshwater wetlands in Bergen County, the Celery Farm provides outstanding wildlife habitat and wonderful recreational opportunities. Unfortunately, an overabundance of deer is upsetting the natural balance of the Celery Farm, causing a loss of native plants and wildlife habitat. Left unchecked, the overpopulation of deer now threatens the future viability of this unique oasis.

From its beginnings as a glacial lake, the Celery Farm is where the Lenni Lenape tribe hunted, settlers mined for peat, and residents farmed. Permanently protected as a nature preserve, today it provides habitat for a diversity of different wildlife species and trails for visitors to explore. Fifty-three bird species breed here, and over 250 have been recorded.¹ Footpaths are interwoven throughout and three observation platforms provide space for visitors and naturalists to enjoy the preserve. Volunteers maintain the grounds, trails, and facilities at the Celery Farm.

Due to this unique history of change and disturbance, many of the plants currently growing in the Celery Farm are not native to the area. Increasingly, these non-native plant species have been encroaching onto the property and damaging its ability to provide the essential habitat for the wildlife that draws the public to the site. The advancement of these invasive plants is being accelerated by an overabundance of deer, which overeat the native plants, allowing the non-native invasive plants to flourish. The proliferation of invasive species is choking out the native plants, diminishing the food available for wildlife. With this reduction in native species, butterflies, moths, beetles, spiders and other insects have been substantially reduced, and are further disappearing due to loss of food and habitat. This decline in population and diversity is upsetting the natural balance of the wetland-forest ecosystem, resulting in a corresponding shift in abundance of native birds and mammals. Diligent work by the volunteer stewards of the Fyke Nature Association has served to maintain the site, but the property may soon be overrun by invasive plant species, putting the Celery Farm at risk of permanent loss of native species, including breeding birds and associated plant and wildlife.

The *Management and Stewardship Plan for the Celery Farm Natural Area* provides a stepwise approach to address the property management concerns for the preserve. The *Management Plan* recommends a multi-pronged approach for the Celery Farm including:

- Education
- Public Engagement
- Stewardship

Installation of deer exclosure fences in strategic areas of the Celery Farm, removal of the invasive plants species, and reseedling with native plants will restore the property and ensure resiliency of the Celery Farm into the future. Education and outreach to neighbors and visitors will provide resources to help the public understand and support the importance of protecting the property from deer. Engagement of volunteers will result in hands-on help for planting and maintenance of the grounds. As these recommendations are implemented, the Celery Farm will begin to regenerate and function as a natural, balanced ecosystem once again.

VISION

The Celery Farm Natural Area is a nature sanctuary for plants and wildlife. Its wetlands and forest provide habitat for a wide array of species including several endangered and threatened species, including red-shouldered hawks which have nested near the property since 2002. Naturalists have recorded 53 species of birds breeding at the preserve and over 250 species have been observed at the Celery Farm.

The Fyke Nature Association was founded in 1952 to help save undeveloped tracts of land in Bergen County as nature preserves. The Association has supported the Borough of Allendale's efforts to keep this freshwater wetlands and its habitat in its natural state.²

The Celery Farm also provides recreational opportunities for the community. The network of trails and viewing areas are heavily used for observing nature and walking. When Lake Appert freezes in winter, it is a haven for skaters. The Celery Farm hosts a number of programs, including bird and butterfly walks, and nature watches. Birdwatchers come to the preserve to study the native species, and take photographs of the variety of birds that can be found there. It is named by New Jersey Audubon as one of the state's Important Birding Areas.³ The Pauline Oxnard Butterfly Garden at the Celery Farm attracts a wide variety of butterfly species.

The vision of Allendale's volunteer marsh wardens and the Fyke Nature Association is to maintain the Celery Farm as a suburban oasis for wildlife that is sustainable into the future while allowing and encouraging public use and enjoyment of this unique resource.

SITE DESCRIPTION AND HISTORY

The Celery Farm Natural Area is a 107-acre preserve that is owned by the Borough of Allendale. The preserve provides a refuge for a variety of wildlife species, from herons and ducks and other bird species, to foxes, muskrats, and dozens of flowers and plants. The Celery Farm contains mixed habitats of woodlands, meadows, marsh and swampy areas, but is mostly wooded and surrounds Lake Appert, a natural spring-fed waterbody covering just under twenty acres. Several trails and paths meander throughout the preserve and around the lake, providing access to residents and visitors. The Celery Farm has three raised wildlife platforms for nature observation. The Celery Farm Natural Area is the first municipally owned wetland in the United States.⁴

In addition to Lake Appert, there are two ponds on the property, Phair's Pond and Blue Heron Pond. The Pauline Oxnard Butterfly Garden is located on the preserve. Previously farmed, the Celery Farm also includes several features from its agrarian past, including one dam and an extensive ditching system.

The Celery Farm was carved out by glaciers and when the ice melted, a small lake was formed and vegetation took root. The Wolf Clan of the Lenni Lenape Indians was among the first to hunt on this site. The property's first owner, John Fell, was a Revolutionary War hero and known locally as a Founding Father. John Zabriskie, a later property owner, drained the bog to mine the peat, which had become a popular fuel. Henry Appert bought the property in 1888 and drained it once again to convert it to fields. Onions were grown first, and later, celery. Hence the name "Celery Farm" was born. It remained a farm until the mid-1950s when it was purchased by the McBride family. The adjacent Bajor Farm grew vegetables as well. In the 1970s local naturalist Stiles Thomas worked with Mayor Ed FitzPatrick to preserve the Celery Farm. Part of the adjacent Bajor Farm was also preserved and incorporated into what is now known as the Celery Farm Natural Area. With funding from the New Jersey Department of Environmental Protection (NJDEP) Green Acres program and the New Jersey Conservation Foundation (NJCF), the original 60 acres were preserved. The Passaic River Coalition (PRC) was instrumental in adding several tracts of forest in the 1980s. The preserve now totals 107 acres. Historic and current aerial views of the Celery Farm are included in *Figure 1*, *Figure 2*, and *Figure 3* in **Appendix A. Aerial Photographs and Trails Mapping**.

Public access is permitted for passive (resource-based) recreation activities, including walking, nature study, photography, and bird-watching. The main entrance to the preserve is located off Franklin Turnpike, where there is a small parking lot. There is an additional entrance at the north end of the preserve, located on Green Way, a small residential street. (**Map 1. The Celery Farm**)

The Celery Farm contains approximately 1.25 miles of trails. The main trail in the preserve circles Lake Appert, with several additional spur trails stretching and looping through the property. These trails traverse the various types of habitats located within the preserve. Along the trails, three observation towers have been constructed for wildlife viewing (*Figure 4* in **Appendix A**). The Celery Farm Natural Area is open to the public from dawn to dusk throughout the year.

Map 1: The Celery Farm Natural Area

Allendale Borough, Bergen County

P Parkings

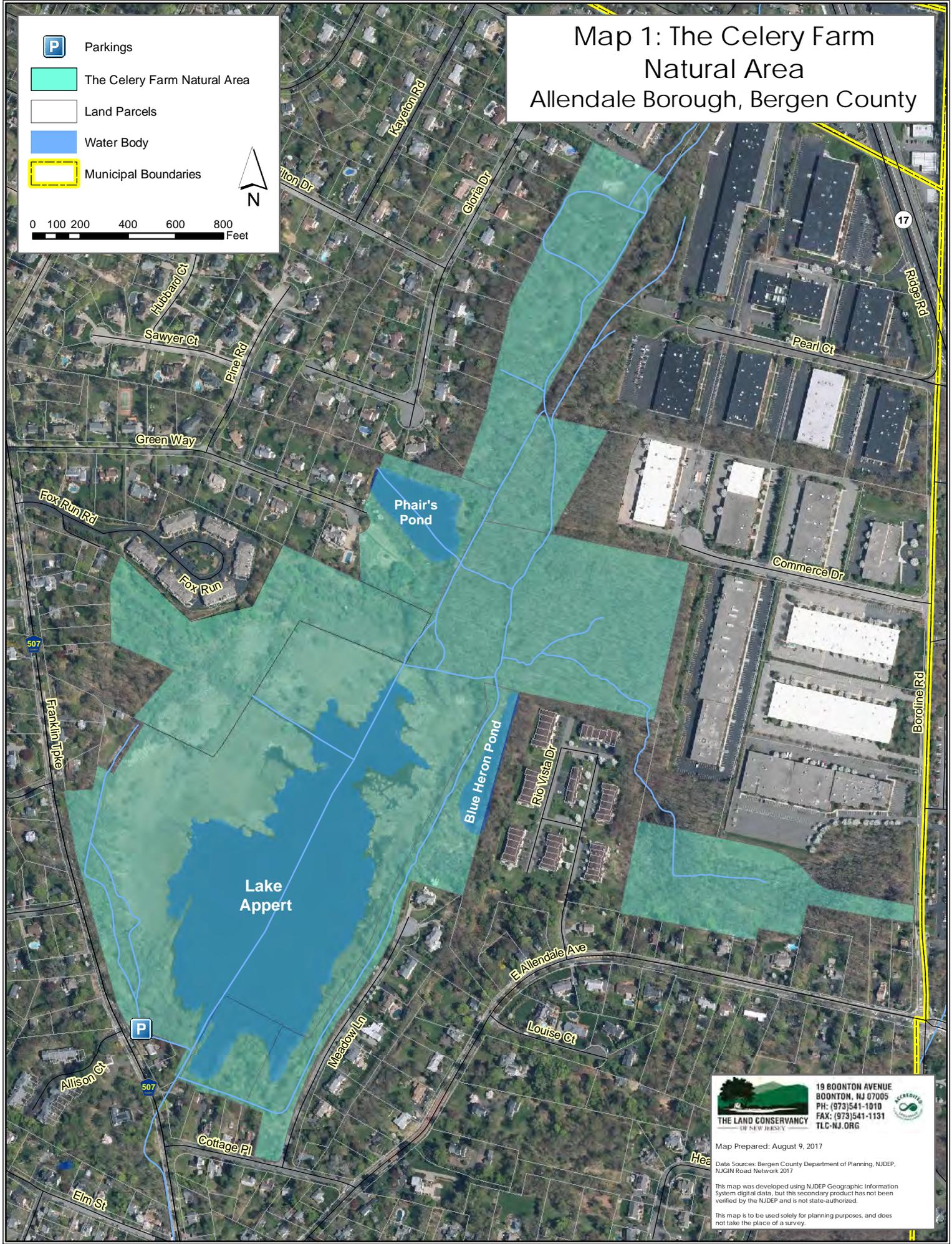
The Celery Farm Natural Area

Land Parcels

Water Body

Municipal Boundaries

0 100 200 400 600 800 Feet



19 BOONTON AVENUE
BOONTON, NJ 07005
PH: (973)541-1010
FAX: (973)541-1131
TLC-NJ.ORG

Map Prepared: August 9, 2017

Data Sources: Bergen County Department of Planning, NJDEP, NJGIN Road Network 2017

This map was developed using NJDEP Geographic Information System digital data, but this secondary product has not been verified by the NJDEP and is not state-authorized.

This map is to be used solely for planning purposes, and does not take the place of a survey.

SITE CONDITIONS

As one walks along the paths, the overabundance of white-tailed deer entering and living inside the Celery Farm is apparent. A healthy forest will have wildflowers, shrubs and small trees of different heights. When entering a healthy forest, the understory proliferates and a diverse canopy layer of various sized plants covers the forest floor. Over time, the deer population at the Celery Farm has over-browsed many of the shrubs and small trees, to the point of their near non-existence. When the smaller shoots of the trees and shrubs achieve a certain height at the preserve, they are browsed (eaten) by the deer. The lifespan of the shrubs and understory has been truncated, as they are no longer able to replace their branches. With the diminished viability of the shrubs and small trees, the understory disappears. As this occurs, the sparse understory is replaced by non-native shrubs and invasive perennial plants. These non-native plants are not eaten by the deer due to their different chemical compounds. These compounding factors increase the survivability of the invasive plants, resulting in their domination of the preserve's understory.

It is a culmination of factors that has resulted in the dramatic reduction of native plants and habitat at the Celery Farm. The overabundance of deer, including the feeding of the deer by local residents, the location of the Celery Farm in a suburban residential neighborhood, and the meadow/marsh habitat, has culminated in the loss of the forest understory and invasion of non-native plants which do not support the bird and wildlife habitat once common on this property. The lack of dense forest layers has opened areas for rapid and dense infiltration of invasive species, and the forest floor is thickly packed with invasive plants. The deer have over grazed much of the understory, leaving the preserve with only a middle story and upper canopy.

Non-native plants overtaking the landscape include garlic mustard, phragmites, porcelain berry, and multiflora rose. At the Pauline Oxnard Butterfly Garden, porcelain berry has choked out and overgrown much of the area. Towards the back of the preserve, multiflora rose is climbing up the canopy overtaking several mature trees. Phragmites has established itself along the waterfront at Lake Appert creating an impenetrable wall, choking out the native plants.

Appendix B of the *Management Plan* documents the native and non-native plant species seen at the Celery Farm during site visits held during the Fall 2016 and Spring 2017 on September 28, 2016, November 5, 2016, and May 11, 2017.

Emerald Ash Borer: The Celery Farm is home to a limited number of white ash trees. Emerald ash borer has been spotted in several places in the state, primarily in the western regions. At this time, no action needs to be taken at the Celery Farm and the volunteer stewards continue to monitor the ash trees for sign of infestation.

Flooding: Runoff and flooding due to a blocked culvert and the spillway at Franklin Turnpike is a challenge at the Celery Farm, as noted by the marsh wardens who monitor the site. The Celery Farm trails and land were flooded with water two feet deep when the culvert was clogged during the severe storms over the past decade. Siltation along the spillway, ditches and culvert aggravates the flooding. Cleaning the culvert and lowering the spillway will alleviate these conditions.

RECOMMENDATIONS

Deer Herbivory Management

The rapid establishment and encroachment of non-native, invasive plant species and the overpopulation of deer are major problems for the integrity and sustainability of the preserve. An effective treatment is to erect a series of deer resistant fences around strategic locations where there is an opportunity for regeneration of the understory. Native plant populations will have a better chance to grow, multiply, and become sustainable into the future within the deer-exclosure areas. The Celery Farm is a nature preserve where many residents walk the trails for exercise and enjoyment. The erection of deer exclosure fences will not interfere with that activity.

In 2004, the New Jersey Chapter of The Nature Conservancy completed a study on the ecological impact and management of white-tailed deer in New Jersey. They found the following:

“Land managers assume that 10 to 20 deer per square mile are optimal densities for the reestablishment and maintenance of native biodiversity. However, a site with a history of severe deer browse (e.g. few existing shrubs, tree seedlings, herbs) may require much lower deer densities to begin the recovery process. Once recovery is underway (or at less impacted sites) a higher deer density can co-occur with many elements of biodiversity. In general, it is more desirable to set objectives based on desired outcomes (tree regeneration, diverse and abundant herb layer, etc.) rather than absolute deer density goals.” (page 5)⁵

For a site such as the Celery Farm, game cameras may provide information on deer density (which may be difficult to estimate) but it is clear that the site is supporting a much higher residential deer population than what is typically recommended. Undertaking a census of the deer population will aid in the development of a strategic approach to erection of a deer exclosure fence.

Once the fences are erected, a targeted program of removing invasive species can be initiated and sustained. This can be accomplished by hand-pulling, mechanical removal, and/or selective chemical application. Once these plants are removed, native plants can be planted inside the fence. Inside the fencing, there will be no deer and very little competition with invasive plants, and the native species will have a better chance of becoming re-established. In addition, the seed bank that is remaining in the soil from the native perennials will start to grow to add to the native understory that was planted. Successful restoration of the native plants will be nearly impossible to achieve without fencing to exclude the deer.

It is recommended that the initial deer exclosure fence be erected in the Barbara’s Bog section of the Celery Farm. This area of the nature preserve is more remote and currently has the highest density of deer, and a large population of wildflowers and native spicebush. Existing trees could be used in place of fence posts, decreasing the visibility of the fencing. Adding a pedestrian access gate will offer the opportunity for public education as the area is re-established with native plants. See **Appendix C** and **Map 2. Proposed Deer Exclosure Fences** for further details on the fencing location and design.

An adjunct to strategically placed fencing is undertaking a deer reduction program. Hunting with bow and arrow will temporarily reduce the deer in the preserve, although they will slowly move back in from the surrounding over-populated areas, once the hunting ceases.

Education of the public is a critical aspect of the site restoration program. Hosting educational programs and hikes, preparing mailings and providing informational brochures to the surrounding neighbors, will provide resources and materials to help increase the understanding and awareness of the users of the preserve as to why the management program has been undertaken. It will quickly become clear to the neighbors and the visitors to the Celery Farm that with the deer removed from the property, the invasive plants will be noticeably reduced. The native plants quickly regenerate, and the Celery Farm and its wildlife will once again flourish.

Education and Community Engagement

A core strength of the Celery Farm is the preserve's location in Allendale Borough in Bergen County. Surrounded by homes and visited throughout the four seasons by neighbors and local residents, the preserve is a resource known for its beauty, its birding, and as a wildlife sanctuary. Taking care of the preserve, and educating the public about why aggressively addressing the rapid encroachment of non-native plants due to the devastating effect of the over-browsing of the deer, is critical to the success of the future management of the Celery Farm. Members of the Fyke Nature Association will help local municipal officials, community stakeholders, and the public better understand and identify these resource concerns, develop stewardship strategies to address them, organize partnership opportunities and projects, and seek out funding for implementation.

Stewardship engagement projects and educational programs could include:

- Establishment of a steering committee for management and educational programming.
- Advertise and maintain a calendar for an ongoing community education and volunteer programs.
- Host community hikes and hands-on educational programs for visitors and local residents.
- Continuing to engage local boy and girl scout troops on management projects, including establishment of interpretive trails and signage, benches, bird houses, and bat houses.
- Participation in the construction and installation of the deer exclosure fences.
- Establish a monthly volunteer program to remove and manage invasive plant species.
- Share the *Management Plan*, its recommendations, and accomplishments on both the Borough of Allendale's and the Fyke Nature Association's websites and Facebook pages.
- Establish and maintain an instagram and twitter account, posting photographs of the preserve and restoration program.
- Share successes with the public through multiple social media platforms.
- Install signage explaining the stewardship program and identifying where public access is welcome and where it should be restricted during the restoration initiative.
- Design educational signage to educate the public about the management program at the preserve.
- Check the integrity of the fencing, especially after severe weather events.
- Partner with local and regional environmental conservation organizations, including the Borough's Environmental Commission, to meet at the preserve on an annual basis to review progress and recommend new activities as the preserve rebounds.
- Maintain digital mapping using easily usable smart phone applications (such as Avenza and Trails) to locate, identify, and maintain restoration areas.
- Explore the development of interpretive/educational nature walks through the preserve, to educate the public about the preserve and its management program.
- Promote planting of native species.
- Monitor the survivability of the trees and replant, as necessary, to ensure an approximate surviving density of 150 mature trees per acre.
- Maintain the tree protection for four to five years to prevent deer browse and buck rubs that would negatively impact the health of the trees.

Invasive Plant Removal

Table 1 provides a detailed list of the invasive species found at the Celery Farm and the recommended method of removal for each. **Appendix D** further details recommendations for the removal and continued control of invasive plant species, and **Appendix E. Native Plant Recommendation** provides site specific recommendations for the Celery Farm.

Table 1. Recommended Management for Invasive Plants found at the Celery Farm

COMMON/LATIN NAME	CELERY FARM	METHOD OF CONTROL
PORCELAINBERRY <i>Ampelopsis brevipedunculata</i>	Many open areas especially near the butterfly garden	Worst invasive. Repeated spraying before it sets seeds. Tough to remove
JAPANESE KNOTWEED <i>Polygonum cuspidatum</i>	Many along the main trail	2nd worst invasive. Cut and repeat spraying may reduce its spread
AUTUMN OLIVE <i>Elaeagnus umbellata</i>	Scattered along main trail	Cut and spray to stop the spread
BURNING BUSH <i>Euonymalatus alatus</i>	Mostly at entrance	Cut and spray to stop the spread
JAPANESE BARBERRY <i>Berberis thunbergii</i>	Many along main trail	Cut and spray to stop spread
COMMON MUGWORT <i>Artemisia vulgaris</i>	Few in preserve	Spray or hand pull before August
MORROWS HONEYSUCKLE <i>Lonicera morrowii</i>	Scattered	Cut and spray to stop spread
MULTIFLORA ROSE <i>Rosa multiflora</i>	Scattered mostly along trails	Cut and spray to stop the spread
JAPANESE WISTERIA <i>Wisteria florabunda</i>	Scattered near main trail	Can get out of control. Cut and repeated spraying. Can take down trees
ASIATIC BITTERSWEET <i>Celastrus orbiculatus</i>	Scattered on trees	Cut and spray. Vines will eventually take down trees
JAPANESE STILTGRASS <i>Microstigium vimineum</i>	Many along the main trail Concentrations near small meadow near holly	Pull and bag in meadow in early summer
PHRAGMITES <i>Phragmites australis</i>	Many along main trail Concentrated along edges of pond	Cut and spray near observation towers and along Parnells Path
GARLIC MUSTARD <i>Alliaria petiolata</i>	Many along the main trail Concentrations across bridge to Blue Heron Pond	Pull basal leaves. Pull plants in spring when buds are forming
PURPLE LOOSESTRIFE <i>Lythrum salicaria</i>	Some noticed along edge of marsh	Keep under control using beetles from Rutgers lab
JAPANESE CRABAPPLE <i>Pyrus sp.</i>	Along main trail	Cut and spray any young ones seen
NORWAY MAPLE <i>Acer platanoides</i>	Scattered at edges	Cut and spray any young ones seen. Larger ones tough to remove
PACHYSANDRIA <i>Pachysandra terminalis</i>	Right side of trail	Okay to leave. Not a major threat. Keep it confined
MYRTLE (periwinkle) <i>Vinca minor</i>	Right side of main trail	Okay to leave. Not a major threat. Keep it confined

ACTION PLAN

The Action Plan suggests specific actions in order to implement the *Celery Farm Management Plan*. The activities listed in the short term (within one year) are the most urgent and will enhance management of the Celery Farm immediately. Activities are further designated over the next three years. Ongoing activities will continue throughout the program, with regular review if not continual attention.

Short-Term Activities

- The Borough should:
 - ✓ Complete a census of the local deer population.
 - ✓ Establish an on-site monitoring program, including the use of game cameras, to track the movement and number of deer on the property.
 - ✓ Create a photo log and video library of the deer population, and use as the basis for the public education campaign for raising awareness about deer herbivory at the Celery Farm.
 - ✓ Institute a public engagement campaign regarding the enclosure fencing and invasive plant removal program.
 - ✓ Identify areas where deer enclosure fencing is to be placed.
 - ✓ Apply to NJDEP Green Acres for stewardship funding to support the restoration program.
 - ✓ Apply for a Franklin Parker grant through the New Jersey Conservation Foundation for seed money to begin the restoration program at the Celery Farm.
- The Fyke Nature Association should:
 - ✓ Continue the promotion and grow the membership of the Friends of the Celery Farm for hands-on stewardship projects.
 - ✓ Reach out to the Mahwah Environmental Volunteers Organization (MEVO) for assistance with stewardship projects at the Celery Farm.
 - ✓ Hire a fencing company to erect the fence(s) and gates.

Mid and Long-Term Activities

- Set up a fence patrol schedule to make sure trees have not fallen on the fence.
- Establish a community based volunteer group for outreach, education, and hands on work days.
- Start removing invasive plants, shrubs and trees from inside fences.
- Start removing invasive plants outside fences, paths and at the entrance.
- Maintain ongoing program of removing invasive plants inside the fence and along the fence edges/entrances.
- Designate areas to plant native perennials, trees and shrubs inside the fence.
- Initiate planting of native perennials, shrubs and trees inside the fence.
- Establish volunteer steering committee with the Borough for implementation of the stewardship program.
- Host four-season educational programs at the preserve.
- Establish social media presence and post on a regular basis.
- Update website.

Ongoing Activities

- Identify plants that are the most successful and replant as needed.
- Remove invasive plants inside fences.
- Remove invasive plants along paths and entrances.
- Apply, as needed, to NJDEP Green Acres for funding support.
- Involve the public in projects and education.
- Maintain ongoing fence patrol.
- Social media platforms.
- Monitor progress.
- Celebrate success.

APPENDIX

Appendix A. Aerial Photographs and Trials Mapping	13
Appendix B. Inventory of Flora.....	17
Appendix C. Deer Exclosure Fencing Fact Sheet.....	21
Appendix D. Invasive Plant Control Recommendations	23
Appendix E. Native Plant Recommendations.....	27
Appendix F. Bird Species Checklist	28

Appendix A. Aerial Photographs and Trails Mapping

Figure 1. Aerial View of Celery Farm – 1955



This historic photograph of the Celery Farm as the farm, which spawned the name for the preserve. The streams were dammed and the lake pumped to allow the land to be farmed, producing celery and onions.

Figure 2. Aerial View of Celery Farm - 1989



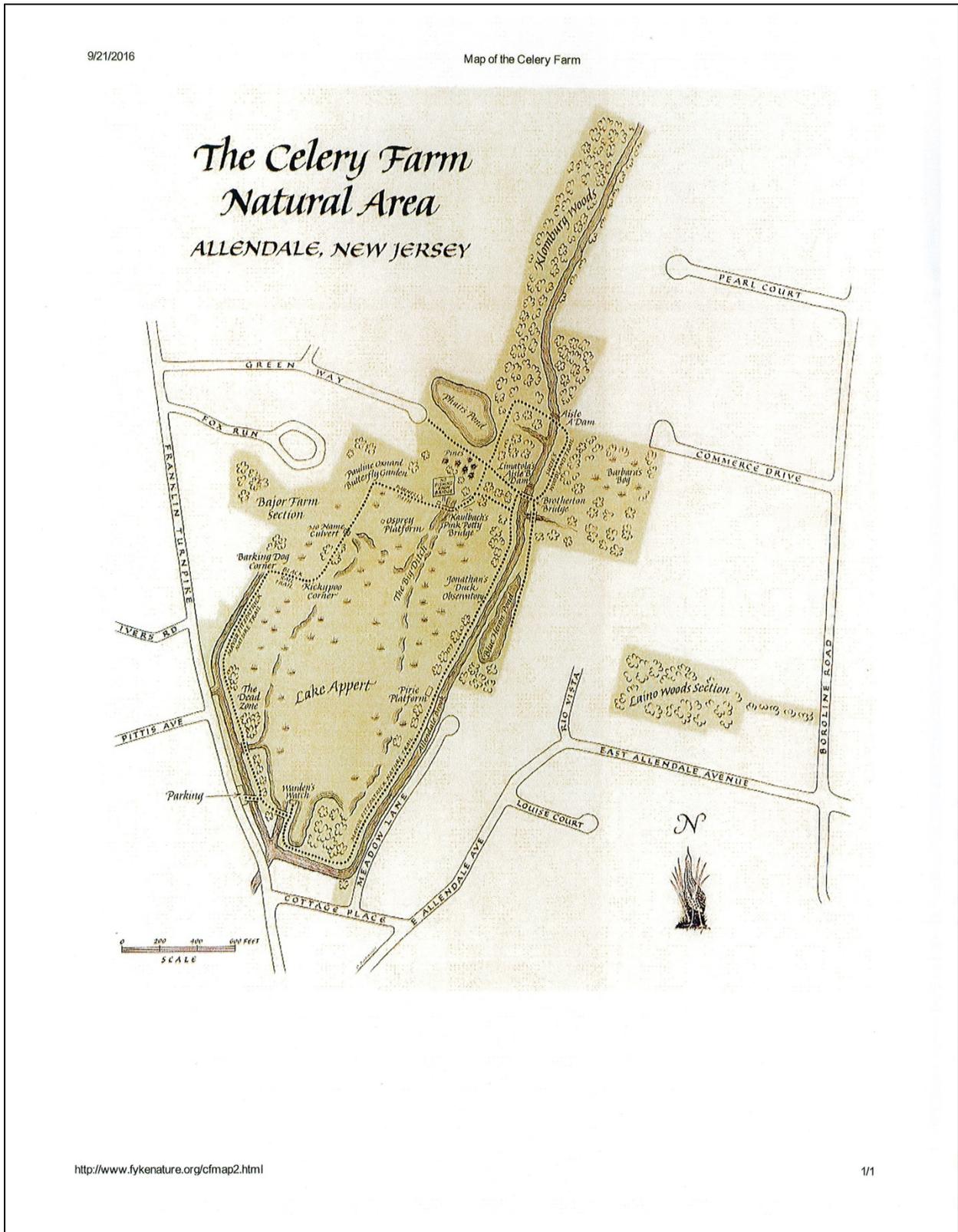
This photograph shows the transition of the Celery Farm from a farm to the preserve. Lake Appert is in the center.

Figure 3. Aerial View of Celery Farm – 2016 (LightHawk)



This photograph is the Celery Farm as it is today. Lake Appert is the central feature of the preserve with wetlands and forest surrounding the waterbody.

Figure 4. Trails at the Celery Farm



Appendix B. Inventory of Flora

Table 2. Trees

Trees	
<i>Native Species</i>	<i>Non-Native Species</i>
Acer negundo (ash leaf maple)	Acer platanoides (Norway maple)
Acer rubrum (red maple)	Picea abies (Norway spruce)
Acer saccharinum (silver maple)	Pyrus maple (apple)
Acer saccharum (sugar maple)	Pyrus sp. (crab apple)
Betula alleghaniensis (yellow birch)	Robinia pseudoacacia (black locust)
Betula populifolia (gray birch)	
Carya sp. (hickory)	
Cornus florida (flowering dogwood)	
Fraxinus americana (white ash)	
Juniperus virginiana (red cedar)	
Nyssa sylvatica (tupelo)	
Pinus strobus (white pine)	
Platanus occidentalis (American sycamore)	
Populus deltoides (cottonwood)	
Prunus serotina (black cherry)	
Quercus bicolor (swamp white oak)	
Quercus palustris (pin oak)	
Quercus rubra (red oak)	
Salix nigra (black willow)	
Sassafras albidum (sassafras)	
Tilia americana (American basswood)	
Ulmus americana (American elm)	

Table 3. Shrubs

Shrubs	
<i>Native Species</i>	<i>Non-Native Species</i>
Alnus serrulata (smooth alder)	Berberis thunbergii (Japanese barberry)
Cephalanthus occidentalis (buttonbush)	Elaeagnus umbellata (autumn olive)
Cornus amomum (swamp dogwood)	Euonymus alatus (winged euonymus)
Cornus racemosa (gray dogwood)	Lonicera morrowii (Morrow's honeysuckle)
Lindera benzoin (spicebush)	Rosa multiflora (multiflora rose)
Prunus virginiana (chokecherry)	Vinca minor (periwinkle)
Rubus occidentalis (black raspberry)	
Rubus sp. (blackberry)	
Salix discolor (pussy willow)	
Sambucus canadensis (common elderberry)	
Vaccinium corymbosum (high bush blueberry)	
Viburnum dentatum (arrowwood viburnum)	
Viburnum prunifolium (blackhaw viburnum)	

Table 4. Herbs

Herbs	
<i>Native Species</i>	<i>Non-Native Species</i>
Achillea millefolium (yarrow)	Alliaria petiolata (garlic mustard)
Agrimonia parviflora (small flowered agrimony)	Allium vineale (field garlic)
Allium tricoccum (wild leek)	Artemisia vulgaris (common mugwort)
Arctium sp. (burdock)	Barbarea vulgaris (common wintercress)
Arisaema triphyllum (jack in the pulpit)	Cirsium arvense (Canada thistle)
Asclepias syriaca (common milkweed)	Cirsium vulgare (bull thistle)
Cardamine pensylvanica (Pennsylvania bittercress)	Galium mollugo (wild madder)
Cerastium vulgatum (mouse-ear chickweed)	Linaria vulgaris (butter and eggs)
Claytonia virginica (spring beauty)	Lythrum salicaria (purple loosestrife)
Erigeron annuus (daisy fleabane)	Polygonum cuspidatum (Japanese knotweed)
Erythronium Americanum (trout lily)	Rumex crispus (curly dock)
Eupatorium rugosum (white snakeroot)	Verbascum thapsus (common mullein)
Galium aparine (cleavers)	
Geranium maculatum (wild geranium)	
Geum canadense (white avens)	
Glechoma hederacea (gill over the ground)	
Impatiens capensis (jewelweed)	
Maianthemum canadense (Canada mayflower)	
Monarda fistulosa (monarda)	
Pachysandra terminalis (pachysandra)	
Pilea pumila (clearweed)	
Plantago major (common plantain)	
Potentilla recta (rough-fruited cinquefoil)	
Potentilla simplex (common cinquefoil)	
Pycnanthemum muticum (broad-leaf mountain mint)	
Ranunculus abortivus (kidney leaf buttercup)	
Ranunculus bulbosus (bulbous buttercup)	
Rumex obtusifolius (broad-leaved dock)	
Solidago spp. (goldenrods)	
Symplocarpus foetidus (skunk cabbage)	
Taraxacum officinale (dandelion)	
Thalictrum pubescens (tall meadowrue)	
Typha latifolia (cattail)	
Viola cucullata (marsh blue violet)	
Viola sororia (common blue violet)	

Table 5. Vines

Vines	
<i>Native Species</i>	<i>Non-Native Species</i>
Amphicarpaea bracteata (hog peanut)	Celastrus orbiculatus (Asiatic bittersweet)
Calystegia sepia (hedge bindweed)	Lonicera japonica (Japanese honeysuckle)
Clematis virginiana (virgin's bower)	
Parthenocissus quinquefolia (Virginia creeper)	
Smilax rotundifolia (round-leaved greenbrier)	
Solanum dulcamara (bittersweet nightshade)	
Toxicodendron radicans (poison ivy)	
Vitis aestivalis (summer grape)	
Vitis labrusca (fox grape)	

Table 6. Rushes and Sedges

Rushes and Sedges	
<i>Native Species</i>	<i>Non-Native Species</i>
Carex pensylvanica (Pennsylvania sedge)	
Carex vulpinoidea (Fox sedge)	
Juncus effusus (soft rush)	

Table 7. Grasses

Grasses	
<i>Native Species</i>	<i>Non-Native Species</i>
Dactylis glomeratus (orchard grass)	Anthoxanthum odoratum (sweet vernal grass)
Panicum clandestinum (deer-tongue grass)	Phragmites australis (giant reed grass)
Phalaris arundinacea (reed canary grass)	
Poa annua (annual bluegrass)	
Poa pratensis (Kentucky bluegrass)	

Table 8. Ferns and Fern Allies

Ferns and Fern Allies	
<i>Native Species</i>	<i>Non-Native Species</i>
Athyrium filix-femina (lady fern)	
Hydrocotyle umbellata (water pennywort)	
Onoclea sensibilis (sensitive fern)	
Osmunda claytoniana (interrupted fern)	
Pteridium aquilinum (bracken fern)	
Thelypteris palustris (marsh fern)	

Table 9 lists plant species were not found during the site visits but have been observed at the site by The Fyke Nature Association. These species may still be present at the preserve and were not seen during the site visits conducted for this report.

Table 9. Plant Species previously seen at the Celery Farm

Native Species		Non-Native Species
<i>Herbs</i>	<i>Ferns and Fern Allies</i>	<i>Herbs</i>
Callitriche palustris (water starwort)	Lycopodium obscurum (ground pine)	Hemerocallis fulva (tawny day lily)
Chelone glabra (turtlehead)		
Circaea lutetiana (enchanter's nightshade)		
Convallaria majalis (lily of the valley)		
Fragaria virginiana (wild strawberry)		
Hydrocotyle umbellate (water pennywort)		
Ludwigia palustris (marsh purslane)		
Smilacina racemosa (false Solomon's seal)		
Urtica dioica (stinging nettle)		

Appendix C. Deer Exclosure Fencing Fact Sheet

Installing deer exclosure fencing will allow the native vegetation and understory to reestablish itself, creating a robust forest ecosystem. Used as an educational tool, the fenced areas will showcase the impact of non-native species and deer herbivory can have on an ecosystem and what a healthy forest looks like.

The best opportunity to restore the preserve will be to install fencing encircling the entire site. Alternatives to this would be to install the fencing in select areas within the Celery Farm as follows:

- ✓ Northeastern forested section backing to Commerce Drive
- ✓ Butterfly garden
- ✓ Middle of preserve where trails connect
- ✓ Left of the Franklin Turnpike entrance where native plants were planted by Fred Weber

These locations are shown on the **Map 2. Proposed Deer Exclosure Fences**.

The fence should be inspected after major storms (wind, rain, snow), and at least once a month to ensure that the integrity of the fence posts and wire remain intact.

A gate will allow access but must always be kept closed to keep the deer from entering the area.

The installed fencing should be:

- 8 feet tall and enclose the entire area
- Include easy to use pedestrian access gates
- 14 gauge high tensile galvanized steel

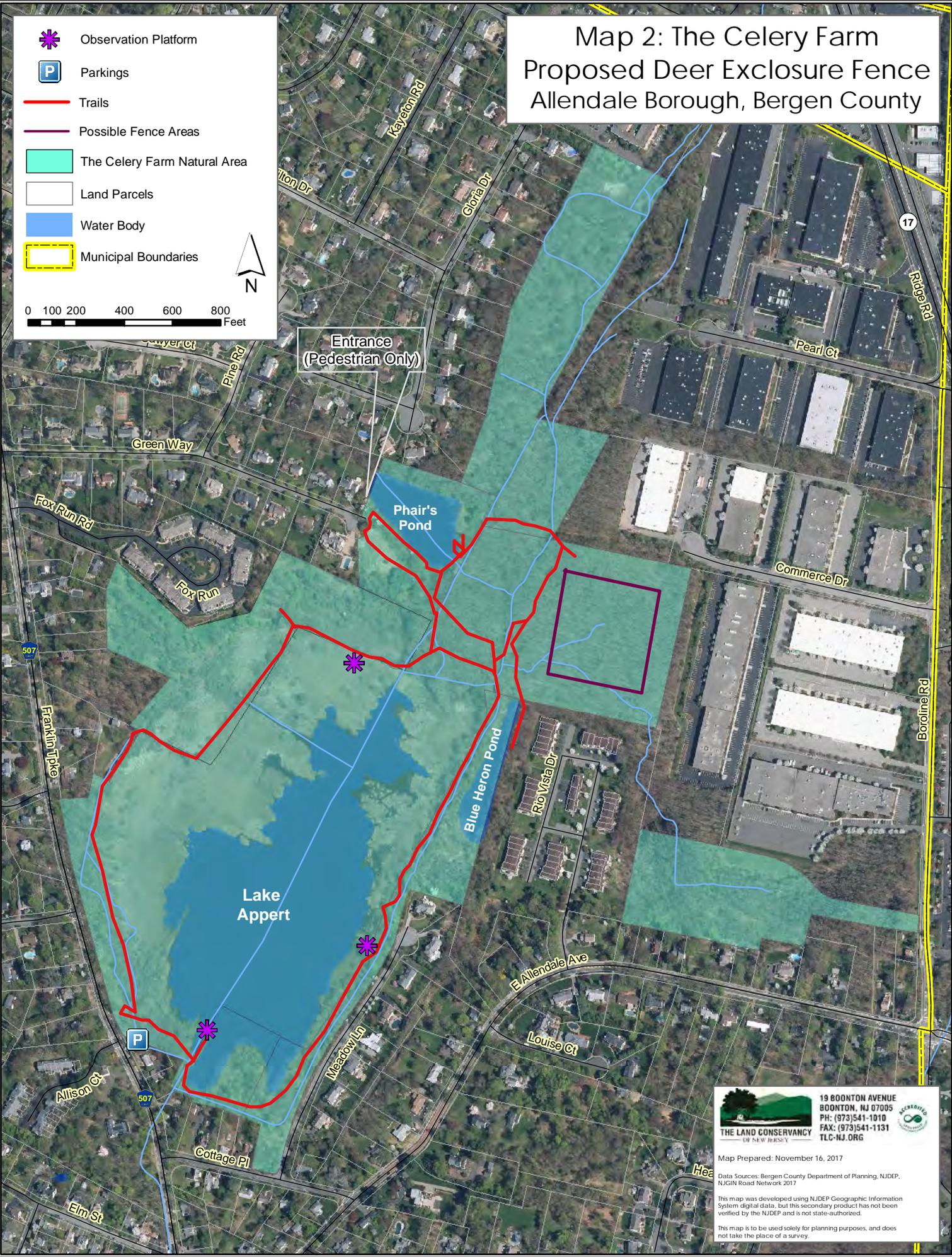
Map 2: The Celery Farm Proposed Deer Exclosure Fence Allendale Borough, Bergen County

-  Observation Platform
-  Parkings
-  Trails
-  Possible Fence Areas
-  The Celery Farm Natural Area
-  Land Parcels
-  Water Body
-  Municipal Boundaries

N

0 100 200 400 600 800 Feet

Entrance
(Pedestrian Only)




 19 BOONTON AVENUE
 BOONTON, NJ 07005
 PH: (973)541-1010
 FAX: (973)541-1131
 TLC-NJ.ORG

Map Prepared: November 16, 2017
 Data Sources: Bergen County Department of Planning, NJDEP, NJGIN Road Network 2017
 This map was developed using NJDEP Geographic Information System digital data, but this secondary product has not been verified by the NJDEP and is not state-authorized.
 This map is to be used solely for planning purposes, and does not take the place of a survey.

Appendix D. Invasive Plant Control Recommendations

In 2007 New Jersey Audubon Society published the *Guide to Controlling Non-Native Invasive Plant Species on New Jersey's Natural Lands*. In their introduction they state the following:

“Non-native invasive plants pose a significant threat to native plant and animal communities. The physiology of these plants enables them to thrive under a wide variety of conditions and habitats. Non-native invasive plants out-compete native species, rapidly overtaking a habitat, causing a complete change in the local ecosystem. One problem is there are few, if any, natural controls for non-native invasive plant species. Both the plant biology and the potentially broad means of seed dispersal, make the control of undesirable plants both a challenge and a necessity”⁶.

Recommendations for the control and eventual removal of non-native plants at the Celery Farm Natural Area include:

Herbaceous Plants:

1. Japanese Stiltgrass: Japanese Stiltgrass is an aggressive grass that will take over large patches of bare ground. A single plant can produce 100 to 1,000 seeds that remain viable in the soil for at least ten years. As such, it is difficult to eliminate this invasive plant species. The best methods for control would be to hand pull the grass (due to its shallow roots) or spray with multiple applications of glyphosate before they flower in July.
2. Japanese Knotweed: This plant is an aggressive plant with deep roots. It is prevalent on the preserve. Use the same control and removal methods as Autumn Olive, described below. It is recommended that management include the re-introduction of native plants to outcompete the re-introduction of Japanese Knotweed.
3. Mugwort: This plant is also an aggressive plant that spreads primarily through a dense underground root system which forms a broad, tangled structure. This plant is very difficult to remove. It is not prevalent in the preserve at this time. Organic Avenger Weed Killer is known to help control Mugwort.
4. Pachysandra: This plant has leathery, evergreen dark green foliage with slightly indented margins. It reaches about 8 to 10 inches tall and bears tiny white male flowers. It spreads by rhizomes, eventually forming a mat at least 2 inches thick. It is not currently a problem in the preserve, only one patch was seen.
5. Garlic Mustard: Garlic mustard is a biennial (two-year life cycle), herbaceous plant that spreads rapidly by seed in many types of woodlands. One of the most invasive and difficult-to-control weeds in the region, it is a major threat to desirable woodland wildflowers, tree seedlings and wildlife. It displaces native species by competing for available light, nutrients and water resources. Hand pulling works best especially before setting seeds in May.
6. Phragmites (common reed): Common reed is a vigorous growing plant that forms dense monotypic stands that consume available growing space and push out other plants. It also alters wetland hydrology, increases the potential for fire and reduces and degrades wetland

wildlife habitat due in part to its very dense growth habit. This is a tough plant to remove. Phragmites should be cut and sprayed to inhibit and limit growth.

7. Purple Loosestrife: Purple loosestrife invades marshes and lakeshores, replacing cattails and other wetland plants. This plant can form dense, impenetrable stands which are unsuitable as cover, food, or nesting sites for a wide range of native wetland animals including ducks, geese, rails, bitterns, muskrats, frogs, toads, and turtles. Many rare and endangered wetland plants and animals are also at risk. The NJDEP released, as needed, imported beetles to reduce these plants on similar sites.

Wooded Vines:

1. Oriental Bittersweet: Oriental Bittersweet is a species of aggressive vine that will climb and eventually strangle trees. At this time this vine is not prevalent on the preserve. The cut and spray method will work to help control this species using glyphosate.
2. Myrtle (periwinkle): Periwinkle (myrtle) is a trailing, vine-like plant spreading along the ground and rooting along the stems to form large colonies. It is not a serious problem at this time.
3. Porcelain berry: Porcelain berry is a deciduous, woody vine that climbs to heights of more than 20 feet. It has become a serious invader of the eastern United States and closely resembles native species of grape. It invades streambanks, pond margins, forest edges and other disturbed areas. The thick mats formed by this climbing vine can cover and shade out native shrubs and young trees. It spreads very quickly since birds and mammals eat and thus disperse the seeds. This plant is one of the more aggressive plants on the preserve. Cut and spray vines to help reduce their spread as soon as possible.
4. Japanese wisteria: Japanese wisteria is a highly invasive vine that prefers full sun, however, established vines will persist and reproduce in partial shade. Vines climb trees, shrubs and man-made structures. It is tolerant of a variety of soil and moisture regimes but prefers deep, loamy, well drained soils. Infestations are commonly found along forest edges, roadsides, ditches, and rights-of-way. Cut and spray vines to help reduce their spread.

Shrubs/Trees:

1. Autumn olive: Autumn olive is an aggressive invasive shrub that can take over a field in several years forming dense thickets. It is mainly located in several spots along the paths in the preserve. The cut and spray method is best used for control using glyphosate
2. Morrow's honeysuckle: The two main methods of controlling nonnative bush honeysuckles are mechanical and chemical. Smaller populations can be removed by hand, making sure to include the roots. Larger populations should be cut to ground level at least once per year, in either early spring or late fall. Glyphosate can be sprayed onto the leaves, or could also be applied to cut stems in order to kill the root system.

3. Multiflora rose: Multiflora rose is present in the preserve, mixed in with autumn olive. Management methods are the same as those used for control of autumn olive.
4. Norway maple: Norway maple is located on the eastern side of the preserve. Some are large. Cut and spray method is used to remove any smaller trees
5. Burning bush (winged euonymus): In open woodlands, Winged Euonymus overtakes native shrubs. It will form dense monotypic stands and will reduce habitat diversity. The root system forms a dense mat just below the soil surface. The combination of the dense shade provided and the tight root system makes survival of other plants beneath Euonymus impossible. Cut and spray is the best method in reducing this species.
6. Japanese crabapple: This tree can be invasive. Cut and spray young trees.
7. Japanese barberry: Barberry displaces many native herbaceous and woody plants. In large infestations, its leaf litter causes changes in the chemistry of the soil. Control by cutting and spraying.

The following options and opportunities may be considered for the management and removal of invasive plant species:

- Join the New Jersey Invasive Strike Team. The Strike Team is a statewide cooperative effort to prevent the spread of emerging invasive species across the state of New Jersey. Started in 2008 as the Central Jersey Invasive Species Strike Team, the project has now expanded statewide and consists of private individuals and over 100 public and private partner organizations representing all levels of government from federal to municipal, non-profit conservation groups and consulting foresters that will help. Their website is: <http://www.njisst.org> and their phone number is (908) 722-1200, extension 241.
- Employ a private company with experience in manual, mechanical, and chemical removal and control of non-native plant species.
- Become a Certified Commercial Pesticide Applicator/Operator through the New Jersey Department of Environmental Protection Division of Compliance and Enforcement. In order to become certified, the Basic Pesticide Training Program must be completed (four hour course, \$99 fee). Forty hours of on the job training under the supervision of a Certified Pesticide Applicator must be completed for each category. Once the exams are completed and passed the certification is good for 5 years at which a recertification must be taken for each category.
- Contact the New Jersey Department of Agriculture, Phillip Alampi Beneficial Insect Rearing Laboratory. This laboratory produces and provides beneficial insect species to control various species of pest insects and plants. Beneficial insects from this laboratory include predators of purple loosestrife, Hemlock woolly adelgid, and Mile-a-Minute. Certain species are available for purchase. Their phone number is (609) 530-4192, and their website is: <http://www.nj.gov/agriculture/divisions/pi/prog/beneficialinsect.html>.

The Celery Farm has had great success using beneficial insects to control purple loosestrife on the preserve and this could be a successful option for other invasive species on the preserve. Although Mile-a-Minute is not a significant problem at the moment, knowledge of this resource could be helpful in case it becomes problematic in the future.

It is important to note that some native plant species can become problematic. Wild grape vines, although they are native, can become very large and begin to weigh down trees within the preserve. This can eventually result in the tree becoming uprooted and falling down. This can cause damage to the trail, surrounding forest, and pose a risk to visitors. Removal of wild grape vines should be undertaken if seen at the preserve.

Appendix E. Native Plant Recommendations

Planting native species in place of non-native or invasive species will support a healthy ecosystem and reestablish a healthy understory. Native species will aid in the restoration and recovery if the preserve from non-native and invasive species that are impacting the preserve.

The following plants are recommended for planting near water or near the wet areas:

- Common Elderberry (*Sambucus canadensis*)
- Speckled Alder (*Alnus rugosa*)
- Pussy Willow (*Salix discolor*)
- Witch Hazel (*Hamamelis virginiana*)
- Spicebush (*Lindera benzoin*)
- Common Buttonbush (*Cephalanthus occidentalis*)

In the drier areas away from the stream and lake the following native plant species are recommended for the Preserve:

- Black Haw (*Viburnum prunifolium*)
- Currant (*Ribes* sp.)
- Common Ninebark (*Physocarpus opulifolius*)
- Shadbush (*Amelanchier* sp.)

Memorial Tree Recommendations

Members of the community have expressed interest in planting trees in memory of loved ones at the Celery Farm. Memorial trees should be native species that thrive in the wetland-deciduous forest environment of the Celery Farm. Recommended trees include:

- Flowering dogwood (*Cornus florida*), the New Jersey state memorial tree (ornamental)⁷
- Silver Maple
- Red maple
- Sugar maple
- Yellow birch
- American sycamore
- Swamp white oak
- Pin Oak

CHECKLIST OF THE BIRDS

	Wi	Sp	Su	Fa		Wi	Sp	Su	Fa
Loons-Grebes					Sandpipers & Allies				
Common Loon		O		R	Greater Yellowlegs	O	O	O	
Pied-billed Grebe		O	R	U	Lesser Yellowlegs	O	O	O	O
Cormorants					Solitary Sandpiper	O	O	U	U
Great Cormorant				R	Spotted Sandpiper	U	U	U	U
Double-crested Cormorant		C	C	U	Upland Sandpiper	X			
Bitterns-Herons-Ibises					Pectoral Sandpiper	R			
American Bittern		O	R	O	Baird's Sandpiper			R	
Least Bittern *		R	R		Semipalmated Sandpiper	O	O	O	
Great Blue Heron	O	C	C	C	Least Sandpiper	U	U	U	U
Great Egret		C	C	U	Stilt Sandpiper			R	
Snowy Egret		R	R	R	Short-billed Dowitcher	R		R	?
Little Blue Heron		R	R	R	American Woodcock	O			R
Cattle Egret		X	X		Common Snipe	U			U
Green Heron *		C	C	U	Wilson's Phalarope	X			
Black-crowned Night-Heron		C	C	C	Red-necked Phalarope				X
Yellow-crowned Night Heron		R	R		Gulls				
Glossy Ibis		R		R	Bonaparte's Gull			X	
Swans-Geese-Ducks					Laughing Gull		X		
Mute Swan *		O	O	O	Ring-billed Gull	C	C	U	C
Tundra Swan		R			Herring Gull	O	O	R	O
Greater White-fronted Goose	X				Great Black-backed Gull	O	R		O
Snow Goose		R		R	Terns				
Brant		R		R	Caspian Tern		X		
Barnacle Goose				X	Common Tern			X	
Canada Goose *	C	A	A	A	Least Tern			X	
Wood Duck *	R	C	C	C	Black Tern		R	R	
Green-winged Teal	R	U	R	C	Doves-Cuckoos				
American Black Duck	R	O		O	Mourning Dove *	C	A	A	A
Mallard *	C	A	A	A	Rock Pigeon	U	U	U	U
Northern Pintail		R		R	Yellow-billed Cuckoo*		O	O	R
Blue-winged Teal		O	R	R	Black-billed Cuckoo		O	O	R
Northern Shoveler		U		U	Owls-Nightjars				
Gadwall		U		U	Barn Owl				R
American Wigeon		O		U	Long-eared Owl	R	R		
Eurasian Wigeon				X	Short-eared Owl	X			
Canvasback	R	R		R	Great Horned Owl	O	O		O
Ring-necked Duck		U		U	Snowy Owl	X			
Greater Scaup		R	X		Barred Owl				R
Lesser Scaup		R			Northern Saw-whet Owl	X			
Bufflehead		R		R	Eastern Screech-Owl *	U	U	U	U
Hooded Merganser	R	C		C	Common Nighthawk		U	U	U
Red-breasted Merganser		R			Swift-Hummingbird-Kingfisher				
Common Merganser	R	O		R	Chimney Swift		C	U	U
Ruddy Duck	R	U		U	Ruby-throated Hummingbird *		O	U	O
Vultures-Hawks-Falcons					Belted Kingfisher	O	C	C	C
Black Vulture	X	X		X	Woodpeckers				
Turkey Vulture	U	U	U	U	Red-headed Woodpecker				R
Northern Harrier	R	O	R	U	Red-bellied Woodpecker *	U	C	U	C
Sharp-shinned Hawk	R	U		U	Yellow-bellied Sapsucker		R		O
Cooper's Hawk	R	U		U	Downy Woodpecker *	C	C	C	C
Northern Goshawk	R	R		R	Hairy Woodpecker *	U	U	U	U
Red-shouldered Hawk	U	U	U	U	Northern Flicker *	R	C	C	C
Broad-winged Hawk		U	R	U	Pileated Woodpecker	R	R	R	R
Red-tailed Hawk *	C	C	U	C	Flycatchers				
Rough-legged Hawk	X	X		X	Olive-sided Flycatcher		R		R
Golden Eagle				X	Eastern Wood-Pewee		O	R	O
Bald Eagle	R	R	R	R	Acadian Flycatcher		R	R	R
Osprey		C	O	U	Yellow-bellied Flycatcher		R	R	R
Merlin	X	R		O	Willow Flycatcher *		C	C	O
American Kestrel	R	R	R	O	Alder Flycatcher		O	R	
Peregrine Falcon	X	R	X	R	Least Flycatcher		O		O
Pheasant-Turkey					Eastern Phoebe *	R	C	U	C
Ring-necked Pheasant *	R	R	R	R	Great Crested Flycatcher		R	R	R
Wild Turkey				R	Eastern Kingbird *		C	C	O
Coots-Rails-Cranes					Western Kingbird				X
Purple Gallinule			X		Shrikes-Vireos				
Common Moorhen *		R	R	R	Northern Shrike	R	X		R
American Coot	R	R		O	Red-eyed Vireo *		U	U	C
King Rail		X			Warbling Vireo *		C	C	O
Virginia Rail *	U	U	U	O	Philadelphia Vireo		X	R	O
Sora	R	O	O	O	White-eyed Vireo		R	R	R
Black Rail		X			Yellow-throated Vireo		R	X	
Sandhill Crane		X		X	Blue-headed Vireo		O		O
Plovers					Jays-Crows				
Black-bellied Plover		R		R	Blue Jay *	C	C	C	C
Semipalmated Plover		R	R	R	Common Raven				X
Killdeer		U	U	U					

Appendix F. Bird Species Checklist

	Wi	Sp	Su	Fa
American Crow *	C	C	C	C
Fish Crow	R	O	O	O
Swallows				
Purple Martin		R		R
Northern Rough-winged Swallow		U	O	R
Bank Swallow		O	O	R
Tree Swallow *		A	A	U
Cliff Swallow		R	R	R
Barn Swallow *		C	C	U
Titmice-Nuthatches-Wrens				
Tufted Titmouse *	C	C	C	C
Black-capped Chickadee *	C	C	C	C
Red-breasted Nuthatch	R	R		R
White-breasted Nuthatch *	U	U	U	U
Brown Creeper	O	O		O
Carolina Wren *	O	U	U	U
House Wren *		U	U	O
Winter Wren	R			O
Sedge Wren				X
Marsh Wren *		R	R	R
Kinglets-Thrushes-Thrashers				
Golden-crowned Kinglet	R	O		O
Ruby-crowned Kinglet	R	C		U
Blue-gray Gnatcatcher *		U	O	O
Eastern Bluebird		R		R
American Robin *	U	A	A	A
Wood Thrush *		O	O	R
Veery *		U	O	O
Swainson's Thrush		O		O
Gray-cheeked Thrush		R		R
Hermit Thrush	R	O		O
Gray Catbird *	R	A	A	A
Northern Mockingbird *	C	U	U	U
Brown Thrasher *	R	O	O	O
Starling-Pipit-Waxwing				
European Starling *	C	C	C	A
American Pipit		R		R
Cedar Waxwing *	U	U	O	U
Wood Warblers				
Tennessee Warbler		R	R	R
Blue-winged Warbler		O	R	R
Golden-winged Warbler		R		R
Nashville Warbler		R		O
Northern Parula		O		O
Orange-crowned Warbler		X		R
Yellow Warbler *		A	A	O
Chestnut-sided Warbler		O	R	O
Magnolia Warbler		U		U
Cape May Warbler		R		R
Black-throated Blue Warbler		O	R	O
Cerulean Warbler		R		
Blackburnian Warbler		R	R	R
Yellow-rumped Warbler	O	C		C
Black-throated Green Warbler		O	R	O
Prairie Warbler		R	R	R
Palm Warbler		C		U
Pine Warbler		U		R
Bay-breasted Warbler		R		R
Blackpoll Warbler		U	R	U
Yellow-throated Warbler		X		
Worm-eating Warbler		R	R	R
Prothonotary Warbler		R		X
Black and White Warbler		U	R	U
American Redstart		C	O	C
Ovenbird		O		O
Northern Waterthrush		C	U	U
Louisiana Waterthrush		R		
Connecticut Warbler				R
Mourning Warbler		O	R	R
Common Yellowthroat *	R	A	A	C
Wilson's Warbler		U	R	O
Canada Warbler		U	O	O
Hooded Warbler		R		X
Yellow-breasted Chat		R	R	R
Tanagers-Cardinals-Sparrows				
Summer Tanager		X		
Scarlet Tanager		O		O

	Wi	Sp	Su	Fa
Northern Cardinal *	C	C	C	C
Rose-breasted Grosbeak *		O	U	C
Blue Grosbeak				X
Indigo Bunting *		R	O	U
Dickcissel				X
Eastern Towhee	R	O	R	O
American Tree Sparrow	C	R		U
Chipping Sparrow		R		R
Le Conte's Sparrow				X
Field Sparrow		R		O
Vesper Sparrow		R		R
Savannah Sparrow		O		O
Nelson's Sharp-tailed Sparrow				X
Fox Sparrow	R	O		O
Song Sparrow *	C	A	A	A
Lincoln's Sparrow		R		O
Swamp Sparrow *	U	C	U	C
White-throated Sparrow	A	C		C
White-crowned Sparrow		R		O
Dark-eyed Junco	C	U		U
Blackbirds-Orioles-Finches				
Bobolink		O	R	O
Red-winged Blackbird *	R	A	C	U
Eastern Meadowlark		R		R
Yellow-headed Blackbird		X		X
Rusty Blackbird		O		O
Common Grackle *	O	A	A	A
Brown-headed Cowbird *	R	C	C	C
Orchard Oriole *		O	O	
Baltimore Oriole *		C	C	O
Purple Finch		R	O	R
House Finch *	U	U	U	U
Common Redpoll		R		
Pine Siskin		R		R
American Goldfinch *	U	C	C	C
Evening Grosbeak	R			R
House Sparrow *	U	U	U	U

SEASONS

Winter	(Wi)	December - February
Spring	(Sp)	March - May
Summer	(Su)	June - August
Fall	(Fa)	September - November

KEY

A	Abundant	Species which is very numerous
C	Common	Should be seen or heard in suitable habitat
U	Uncommon	Likely to be present, but not certain to be seen or heard
O	Occasional	Seen only a few times each season
R	Rare	Possible to be present, but not seen every year
X	Accidental	Very rare
*		Known to have nested

Following is a list of rare/accidental species that have likely been seen, but which lack confirmation or sufficient details:

- Red-throated Loon
- Red-necked Grebe
- Long-billed Dowitcher
- Rufous Hummingbird
- Ash-throated Flycatcher
- Clay-colored Sparrow
- Lark Sparrow
- Henslow's Sparrow

REFERENCES

- ¹ The Fyke Nature Association. <http://www.fykenature.org/>. Accessed June 2017.
- ² The Fyke Nature Association. <http://www.fykenature.org/about.html>. Accessed May 2017.
- ³ New Jersey Audubon. <http://www.njaudubon.org/sectionibba/ibbasiteguide.aspx>. Accessed May 2017.
- ⁴ The Fyke Nature Association. Celery Farm Natural Area Trail and Informational Brochure.
- ⁵ The Nature Conservancy – New Jersey Chapter. Review of the Ecological Effects and Management of White-tailed Deer in New Jersey. 2004. <https://deerinbalance.files.wordpress.com/2010/01/review-of-the-ecological-effects-and-management-of.pdf>. Accessed November 2017.
- ⁶ New Jersey Audubon Society. Guide to Controlling Non-Native Invasive Plant Species on New Jersey’s Natural Lands. 2007. <http://www.njaudubon.org/Portals/10/IBBA/PDF/NJAS%20Invasive%20Plant%20Species%20booklet%20proof6.pdf>. Accessed May 2017.
- ⁷ New Jersey State Tree. <https://statesymbolsusa.org/symbol-official-item/new-jersey/state-tree/dogwood>. Accessed May 2017.