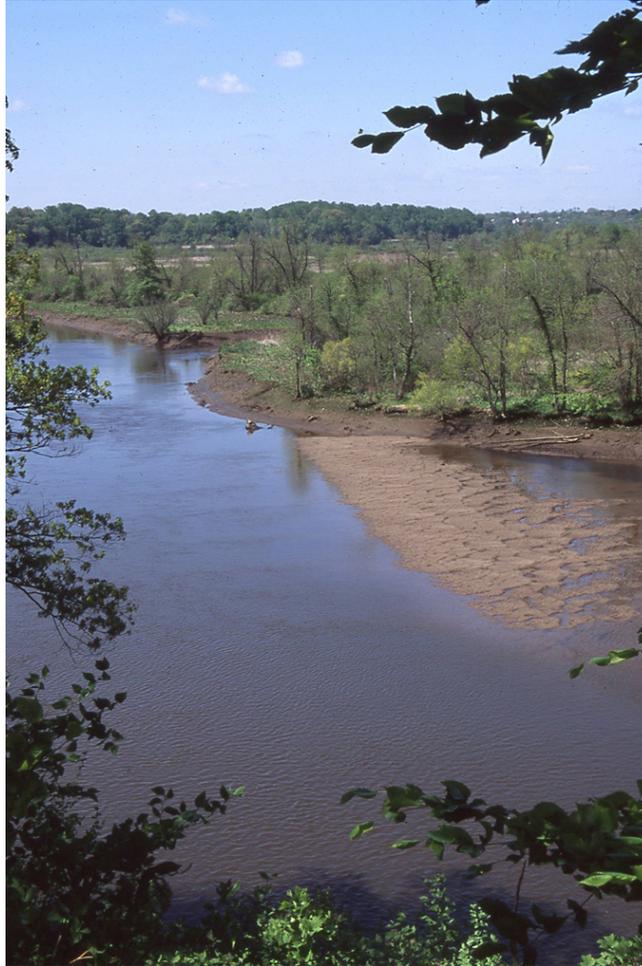


# Abbott Marshlands Trail Steward Handbook



January 2018

Thanks for volunteering to be a Trail Steward for the Abbott Marshlands. Since you have volunteered to help, you probably already care about the environment. We hope this handbook will add to your enjoyment and knowledge as you fill the important role of being a good steward of this natural treasure.

## **Abbott Marshlands - Valuable Habitats**

The Abbott Marshlands encompass varied habitats, including the northernmost tidal freshwater wetland on the Delaware River. Overall there are more than 3,000 acres of open space that are part of the Delaware River Watershed:

- There are nearly 1,300 acres of wetlands that include both tidal and non-tidal areas. Within these are non-tidal ponds created by beaver.
- In the 1,700 acres of uplands, mostly wooded, can be found mountain laurel and rhododendron thickets.

Tidal freshwater marshes are among New Jersey's rarest, yet most valuable habitat type. Those found in the Abbott Marshlands occur along Crosswicks Creek and Watson's Creek, and are among the most productive ecosystems in the world, rivaling tropical rainforests in the amount of plant production each year.

The marshlands are home to rare wildlife, such as river otters, bald eagles and cliff swallows, and many more familiar species. On their migrations along the Atlantic Flyway, passerines, raptors and wading birds use the Abbott Marshlands as a vital stop for food and rest. Species found here number 247 with 108 nesting.

More than 925 plant species have been found here. All inventories may be found on the marsh website ([www.abbottmarshlands.org](http://www.abbottmarshlands.org), under Ecology).

The Abbott Marshlands wetlands are tremendously important because of the essential services they provide of groundwater recharge, removal of pollutants from the water and air, and containment of floodwaters, as well as habitat for wildlife.

In addition to the Marsh's significant ecological roles, it is an important historical and archaeological site, and is the most significant Native American Indian site on the East Coast. Native Americans began coming here 13,000 years ago. (See [www.abbottmarshlands.org](http://www.abbottmarshlands.org) for additional information.)

Yet because of population density and past uses, this ecologically rich ecosystem, and precious habitat, continues to be vulnerable to degradation. By signing on to be a Trail Steward, you can provide significant support to help preserve and protect The marshlands and surrounding habitats.

## **Threats and what we can do**

There are a number of environmental concerns, such as air and water pollution, erosion, fracking, invasive species and potential deer overpopulation, that threaten the Marshlands. We will focus on three of these dangers, invasive species, pollution, and erosion:

### **Invasive Species**

**Definition**

An invasive species is defined by the National Invasive Species Council as “a species that is:  
 1) non-native (or alien) to the ecosystem  
 2) whose introduction causes or is likely to cause economic or environmental harm or harm to human health” (NISC 2001; <http://www.nyis.info/?action=programs#plan2001> ).

These typically reduce species diversity and / or eliminate native species that have evolved as a part of the natural ecosystem.

**Damage**

Massive costs are associated with removal of invasive species, by one estimate, \$120 billion dollars annually for agriculture, forestry and recreation.

For example, the Emerald Ash Borer (EAB) is a highly invasive forest insect that has begun to kill native ash trees (*Fraxinus* spp.). It was first detected in Michigan in 2002 and has since spread to 30 states, including New Jersey. Predictions estimate that an expanding EAB infestation will likely warrant treatment, removal, and replacement of more than 17 million ash trees with an estimated cost of \$10.7 billion. (Source: [https://www.nrs.fs.fed.us/pubs/jrnl/2010/nrs\\_2010\\_kovacs\\_001.pdf](https://www.nrs.fs.fed.us/pubs/jrnl/2010/nrs_2010_kovacs_001.pdf))

Invasive species are considered the second greatest threat to global biodiversity after habitat destruction. Invasive plant species present a threat to native plant populations on which local wildlife relies for food and habitat. Many invasive plant populations exist throughout the marsh, posing a threat to valuable marsh plants and the ecosystem in general.

**Invasive species at Abbott Marshlands**

Some of the more prevalent invasive species of concern at Abbott Marshlands include:

	RED SPECIES = EMPHASIS FOR TRAIL STEWARDS	
WETLAND species = W; FLOODPLAIN = FP	Scientific Name	Common Name

- |                                    |                    |
|------------------------------------|--------------------|
| <i>Acer palmatum</i>               | Japanese Maple     |
| <i>Acer platanoides</i>            | Norway Maple       |
| <i>Acer pseudoplatanus</i>         | Sycamore Maple     |
| <i>Ailanthus altissima</i>         | Tree of Heaven     |
| <i>Albizia julibrissin</i>         | Mimosa / Silk Tree |
| <i>Alliaria petiolata</i>          | Garlic Mustard     |
| <i>Ampelopsis brevipedunculata</i> | Porcelain Berry    |
| <i>Artemisia vulgaris</i>          | Mugwort            |
| <i>Berberis thunbergii</i>         | Japanese Barberry  |

	<i>Buddleja davidii</i>	Butterfly Bush
	<i>Celastrus orbiculatus</i>	Oriental Bittersweet
	<i>Centaurea maculosa</i>	Knapweed
	<i>Chelidonium majus</i>	Greater Celandine
	<i>Clematis terniflora</i>	Japanese Clematis
	<i>Commelina communis</i>	Asiatic Dayflower
	<i>Cynanchum louiseae</i>	Black Swallowwort
	<i>Elaeagnus umbellata</i>	Autumn Olive
	<i>Euonymus alatus</i>	Winged Euonymus
	<i>Hedera helix</i>	English Ivy
	<i>Humulus japonicus</i>	Japanese Hops
w	<i>Iris pseudacrus</i>	Yellow Iris
	<i>Lespedeza cuneata</i>	Chinese Bushclover
	<i>Ligustrum vulgare</i>	Privet
	<i>Lonicera japonica</i>	Japanese Honeysuckle
	<i>Lonicera maackii / tatarica</i>	Bush Honeysuckle
w	<i>Lythrum salicaria</i>	Purple Loosestrife
	<i>Microstegium vimineum</i> **	Japanese Stiltgrass **
	<i>Morus alba</i>	White Mulberry
	<i>Pachysandara terminalis</i>	Pachysandra
	<i>Paulownia tomentosa</i>	Royal Paulownia
w	<i>Phalaris arundinacea</i>	Canary Reed Grass
w	<i>Phragmites australis</i>	Phragmites
	<i>Polygonum cuspidatum</i>	Japanese Knotweed
	<i>Polygonum perfoliatum</i>	Mile-a-minute-vine
	<i>Pyrus calleryana</i>	Callery Pear
fp	<i>Ranunculus ficaria</i>	Lesser Celandine
	<i>Rosa multiflora</i>	Multiflora Rose
	<i>Rubus phoenicolasius</i>	Wineberry
	<i>Viburnum sieboldii</i>	Seibold Viburnum
	<i>Vinca minor</i>	Periwinkle
	<i>Wisteria floribunda</i>	Japanese Wisteria

\*Species list from invasive report (2010); for report, see [www.abbottmarshlands.org](http://www.abbottmarshlands.org), last item under Resources: Marshlands Stewardship.

\*\*For look-a-likes of some species see:

[https://www.nybg.org/files/scientists/rnaczi/Mistaken\\_Identity\\_Final.pdf](https://www.nybg.org/files/scientists/rnaczi/Mistaken_Identity_Final.pdf)

In addition, an illustrated guide to invasive species in the Mid-Atlantic States can be found at: [https://www.nybg.org/files/scientists/rnaczi/Mistaken\\_Identity\\_Final.pdf](https://www.nybg.org/files/scientists/rnaczi/Mistaken_Identity_Final.pdf)

For more information: <http://nyis.info/?action=programs#plan2001>

**Action:** The primary invasives we ask you to monitor along trails are the Mile-a-minute weed, stilt grass, and garlic mustard in upland locations. Also, near and in wetlands,

Phragmites and Canary Reed Grass. Other wetland species, such as purple loosestrife, may be visible from the trail and should also be noted.

In the first Stewardship phase, we will assess the extent of invasive species penetration with monitoring. Monitoring should occur at least once a season or ideally, once a month or more often.

Once these data have been compiled, they will be used to guide the next phase, development of a plan to remove invasives and then plant native species to populate the area. When you are ready to develop a plan for your trail, you will work with your trail contact person using all the data you have collected.

### **Pollution and Erosion**

Not as much can be done about pollution as with invasive species, but it is important to continuously monitor and track its existence with the goal of minimizing the impact.

Examples of pollution and erosion to look for include litter, dumped trash, storm run off and erosion from off-trail uses, especially along the bluffs.

### **Role of a Trail Steward**

As a Trail Steward, your role is to preserve, protect and advocate for the Marshlands with the goal of improving the ecological health and diversity of the area.

During the introductory meeting, various ways to contribute will be discussed. One way is to “adopt” one of the trails in the Marshlands:

- **Roebling Memorial Park – Spring Lake and Island trails**, Mercer County Park, Hamilton Twp)
- **Roebling Memorial Park – Watson Woods** (Mercer County Park, Hamilton Twp)
- **Northern Community Park Trail** (Bordentown Twp, part D&R Canal State Park))
- **Bordentown Bluffs Trail** (D&R Canal State Park, Bordentown Twp)
- **Tow Path Trail** (D&R Canal State Park, Hamilton Twp)
- **Branch trails from Towpath, to Delaware River, on Duck Island**
- **Tidal Water Trail** (Bordentown to/ from Watson Woods)
- **Duck Island Trails** (created wetlands, Hamilton Township)
- **Created Wetland Trail** (Duck Island), to the Delaware Rive and possibly along the east edge) to navigation beacon

Trail adoption means you will monitor and track the condition of the trail over time. Trail adoption can be done either individually or with another person, such as a friend, colleague or as a family.

The primary job is to patrol your trail once a month to survey and record:

- general health
- any maintenance needs, such as downed trees or invasive species
- other problems that should be attended to, such as erosion, loss of trail markers/trail marker maintenance

- unauthorized use, such as motorized vehicles, camping, party fire rings, dumping
- status of invasives
- any wildlife observations

To assist you in recording and tracking your observations as you walk your trail, a survey form, the Marshlands Monitoring Report, can be found in this guide and online at <https://abbottmarshlands.org/things-to-do-at-the-marsh-2/stewardship/>

## **Specific Duties and Responsibilities**

The basic responsibility is to visit the site once a month to monitor your trail and document situations that need attention. Using the Marshlands Monitoring Report, walk the length of the trail to:

- assess any maintenance or improvement needs.
- perform light trail maintenance, such as pruning back shrubs that are blocking the trail
- report poison ivy
- pick up any trash in the parking area or along the trail.
- note any other items to report, such as wildlife sightings

When you conduct your site visits, bring pruners, work gloves, a trash bag and a blank Marshlands Monitoring Report.

Your completed Marshlands Monitoring Report and any additional notes should be emailed to your Trail Contact person (see Contacts in Appendix). Be sure to check with your program coordinator or site owner listed in the appendix regarding actions you plan to undertake.

## **Marshlands Monitoring Report**

Below are some examples of items to look for on your site visit. Feel free to add any information you feel is important. Photos of problems that need to be addressed, areas of beauty and unusual wildlife sightings are always helpful.

In addition, please feel free to add monthly or seasonal observations, such as spring wildflowers, seasonal vista changes, bird or wildfowl migrations and other seasonal wildlife observations.

### **A. Parking Area**

- Is the parking area in good condition?
- Is there litter?
- Are trailhead signs in good condition?
- If present, is the kiosk in good condition? Up-to-date?
- Does the area look well maintained?

### **B. Trail Condition**

- Are the trail markers sufficient and visible?
- What is the condition of the trail? Maintenance need?

### **C. Note Any Problems**

- Downed trees along the trail

- Trail hazards, such as roots, rocks, deep ruts or pot holes
  - Erosion of the trail, stream banks, or bluff edge.
  - Poor water quality indicators such as oil film, algae blooms
  - Litter
  - Non-marsh smells
  - Vandalism of signs, kiosks or benches
  - New infestations or rapidly spreading invasive plants
  - Unauthorized use (ATVs, mountain bikes in areas where they are not permitted, evidence of party activities, such as fire rings or empty containers)
  - Activities by neighbors that could impact the area (dumping, cutting, etc.)
- D. Actions Taken (activities you did on your walk)
- Pruning or trail clearing
  - Removal of invasive plants
  - Clearing litter
- E. Future Projects
- What projects might benefit the site (e.g.: a new bench or interpretive signs, improved trail markers)?
  - Are there areas that would benefit from a boardwalk or wooden stairs?
  - Can this be done by you alone or is a crew needed? Note that projects must be approved by the trail owner.
- F. Unusual or exciting species observed?
- G. Number of visitors and their activities?

### **Abbott Marshlands Rules**

1. No motorized vehicles
2. No horses
3. Bicycles are permitted on some Roebling Park trails (around Spring Lake, from Spring Lake to Watson Woods, to the Tulpehaking Nature Center), and on the D&R Canal Tow Path trail on Duck Island. Elsewhere, bicycles are not permitted on trails.
4. Dogs must be on a leash
5. No fires
6. No camping
7. Trash should be carried out and placed in receptacles if provided or taken home.
8. No picking, digging or cutting of vegetation
9. No digging for artifacts

### **Dealing with Confrontations - Call 911 for emergencies.**

In your role as Trail Steward, don't feel you need to enforce Abbott Marshlands rules. Certainly, avoid getting into a confrontation. Instead, you may politely offer rule guidance in a non-confrontational manner and state you are a volunteer. Then record the issue on the Monitoring report and notify the appropriate contact. Take photographs as appropriate to turn in with your report. These will help document problems. (Please edit photos and submit the best (max 3)).

The report form is available as a pdf or you may submit it digitally:  
<https://abbottmarshlands.org/things-to-do-at-the-marsh-2/stewardship/>

To submit your report digitally, see on line version. You may drop the completed form off at the Tulpehaking Nature Center. Please indicate if submitting photos.

\*\*\*

### Abbott Marshlands Monitoring Report

Trail Name:  Inspection Date:

Duration (hours spent):

Steward's name:

**A. Parking area:** Good:  Fair:  Poor:  N/A:  Explain any problems:

**B. Trail condition:** Good:  Fair:  Poor:  N/A:  Explain any problems:

**C. Any hazards or potential liability factors** Yes:  No:  If yes, please explain:

**D. Invasive species found?**

Problem	yes	no	If "yes", where found
Garlic Mustard			
Porcelain Berry			
Mugwort			
Japanese Barberry			
Oriental Bittersweet			
Autumn Olive			
Winged Euonymus			
Chinese Bushclover			
Japanese Honeysuckle			
Japanese Stiltgrass **			
Canary Reed Grass			
Phragmites			
Japanese Knotweed			
Mile-a-minute-vine			
Callery Pear			
Multiflora Rose			
Seibold Viburnum			
Japanese Wisteria			
Other:			

**E. Any of the following problems seen?**

Problem	yes	no	Where found
Off-road vehicles			
Vandalism			
Fire (including "party rings")			
Soil Erosion			
Litter/			
Dumping /Pollution			
Boundary Encroachment			
Camping			
Illegal Hunting (Poaching)			
Drainage issues			
Water quality issues			
Disease/Pest Infestation			
Feral cats or loose dogs			
Other Issues (please specify):			

**D. Actions Taken by Trail Steward:**

**E. Future projects suggested:**

**F. Unique, unusual, or rare species identified:**

**G. Number of visitors encountered and their activities (e.g. hiking, bird watching, etc.):**

**H. Other observations:**

Report Reviewed By: \_\_\_\_\_ Date: \_\_\_\_\_

**Recommended Action** \_\_\_\_\_

## To Make It Official

For official purposes, various of the marsh trails require different forms to be filled out:

*For Roebling Park (Spring Lake and Watson Woods):*

Volunteer form: contact stewardship gmail [mcpcstewardship@gmail.com](mailto:mcpcstewardship@gmail.com)

*For D&R Canal State Park (Bordentown Bluffs and D&R Canal Towpath Trail).* To sign up as a volunteer, download and complete the form..

[https://www.state.nj.us/dep/parksandforests/parks/docs/individual\\_volunteer\\_2007.pdf](https://www.state.nj.us/dep/parksandforests/parks/docs/individual_volunteer_2007.pdf)

Once the completed is received by DEP, you will be mailed/emailed the volunteer agreement.

*For Northern Community Park*

Contact Roger Plew <rpjersey47@yahoo.com>

*For Duck Island - Branch Trail*

Jason Nowak <Jason.Nowak@dot.state.nj.us>

*Connector trail on Duck Island*

Jay Watson <jwatson@drgreenway.org>

*D&R Canal State Park (Bordentown Bluffs and D&R Canal Towpath Trail, either:* Patricia Kalleser: [Patricia.Kalleser@dep.nj.gov](mailto:Patricia.Kalleser@dep.nj.gov) or Stephanie Fox: [Stephanie.Fox@dep.nj.gov](mailto:Stephanie.Fox@dep.nj.gov)

## APPENDICES

### I. Abbott Marshlands Steward Contacts:

Area	Owner	Contact
<b>Roebing Memorial Park – Spring Lake</b> (and <b>Island trails</b> , Hamilton Township)	Mercer County Park Commission	Jillian Stark, Stewardjstark@mercercounty.org, 609-303-0718
<b>Roebing Memorial Park – Watson Woods</b> (Hamilton Township)	Mercer County Park Commission	Jillian Stark, Stewardjstark@mercercounty.org, 609-303-0718
<b>Northern Community Park Trail</b> (Bordentown Township)	Bordentown Twp	609-291-2133.; Roger Plew, Bordentown Environmental Commission.
<b>Bordentown Bluffs Trail</b> (Bordentown Township)	D&R Canal State Park	Stephanie Fox, naturalist, Stephanie.Fox@dep.nj.gov.
<b>Tow Path Trail</b> (D&R Canal State Park, Hamilton Township)	D&R Canal State Park	Stephanie Fox, naturalist, Stephanie.Fox@dep.nj.gov.
<b>Branch trails from Towpath to Delaware River</b>	Owners: D&R Canal State Pk; connector: D&R Greenway Land Trust	Stephanie Fox, naturalist Stephanie.Fox@dep.nj.gov. Connector – Jay Watson
<b>Duck Island Trails</b> (created wetlands, Hamilton Township)	NJ DOT	NJDOT Jason Nowak, Jason.Nowak@dot.state.nj.us
<b>Tidal Water Trail</b> (Bordentown to/ from Watson Woods)		

- D&R Canal State Park (Bordentown Bluffs and D&R Canal Towpath), Stephanie Fox, naturalist- [145 Mapleton Road, Princeton, NJ 08540, Phone: 609/924-5705.](mailto:Stephanie.Fox@dep.nj.gov)
- Northern Community Park - 609-291-2133.; Roger Plew, Bordentown Environmental Commission.
- Roebing Park (Spring Lake and Watson Woods) – Tulpehaking - Nature Center, 157 Westcott Ave, Hamilton, NJ 98610. 609-888-3218; hrs open: Fri., Sat. 10 a.m. -4 p.m.; Sun. noon – 4 p.m.  
Mercer County Rangers- 609-443-8956;  
Jillian Stark, Land Steward – Phone: 609-303-0718
- [Constructed Wetland \(south end Duck Island\): NJ DOT 609.588.6212](#) (maintenance, highways, litter pickup). Jason Novak
- [Trenton Boat Launch – Lambertson Road: City of Trenton](#) – (??? need contact info)

**For emergencies, contact 911.**

## II. Other Information:

### Abbott Marshlands Website:

<http://abbottmarshlands.org/>

For species lists, look under Ecology.

Amphibians & Reptiles

Birds

Butterflies

Fish

Plants

We'd love to add entries; make sure you provide well-documented information (time, exact location, and 1-3 photographs that show the plant or animal's distinguishing features.)

### Field Guides

#### *Flowers:*

*Newcomb's Wildflower Guide*, L. Newcomb

*Wildflowers in the Field and Forest: A Field Guide to the Northeastern United States*, Steven Clemants and Carol Gracie.

#### *Woody Plants:*

*Shrubs and Vines of New Jersey and the Mid-Atlantic States*, Martine & Fagley

*Trees of New Jersey and the Mid-Atlantic States*, Martine & Fagley

These are nice, spiral bound books available from the NJ Division of Parks and Forestry. You can order them from the following website:

<http://www.nj.gov/dep/parksandforests/forest/materials.htm>

*The Book of Forest and Thicket: Trees, Shrubs, and Wildflowers of Eastern North America*, John Eastman and Amelia Hansen

*A Field Guide to Eastern Trees: Eastern United States and Canada, Including the Midwest* by George A. Petrides, Janet Wehr, and Roger Tory Peterson

***Birds:*** *The Sibley Field Guide to Birds of Eastern North America*, David Allen Sibley

#### **Other:**

*Tom Brown's Field Guide to Nature Observation and Tracking*, Tom Brown, Jr.

*Peterson Field Guide to Ferns, Second Edition: Northeastern and Central North America*, Boughton Cobb, Elizabeth Farnsworth, Cheryl Lowe, and Roger Tory Peterson

*Butterflies of the East Coast: An Observer's Guide*, Rick Cech, Guy Tudor

*Caterpillars of Eastern North America: A Guide to Identification and Natural History*, David L. Wagner

*Mammal Tracks & Signs*, Mark Elbroch

*Bird Tracks & Sign*, Elbroch/Marks/Boretos

III. **Rich History** (see: [www.abbottmarshlands.org](http://www.abbottmarshlands.org) for more information)

The rich natural history of the Marsh is complemented by an extraordinary cultural history, with evidence that Indians lived here 13,000 years ago in the largest and most significant Middle Woodland Indian village of its type on the East Coast. Connections to the Declaration of Independence, Revolutionary War, and the Civil War abound.

Notable Bordentown residents through history include Thomas Paine, Patience Wright, who was a spy while living in London, and Clara Barton who launched free schooling. Joseph Bonaparte, brother of Napoleon and one-time King of Spain, lived at Point Breeze near Bordentown for 22 years.

To recognize the important archaeological legacy of the marsh and of Charles Conrad Abbott, a 19th and early 20th C archaeologist and naturalist who lived on the bluffs near the marsh and wrote extensively about it, the name for the marshlands was changed to Abbott Marshlands, from Hamilton – Trenton – Bordentown Marsh.

The Abbott Farm National Historic Landmark, which contains the 1708 Watson House, the oldest structure in Mercer County, recognizes the Indian legacy and the contributions of archaeologists, such as Charles Conrad Abbott and Dorothy Cross.

In October 2014, the Abbott Marshlands' Tulpehaking Nature Center (TNC) at 157 Westcott Avenue was dedicated. Prior to renovation of the existing property that was to become the TNC, an archeological survey was conducted on the property to assess and preserve archeologically important artifacts.

An Indian name, Tulpehaking, meaning Land of the Turtles, was chosen for the nature center to honor the Native American legacy. Visit the nature center (157 Westcott Ave., Hamilton) and the NJ State Museum on West State Street to see marshland displays and artifacts.

Designations:

- **Abbott Farm National Historic Landmark**, Department of Interior, 1976. It is the largest known Middle Woodland (ca. 500 B.C.-500 A.D.) village site in the coastal Mid-Atlantic/New England region. Charles Conrad Abbott, for whom the landmark is named, was an important 19th century archaeologist whose studies brought renown and controversy to the area.
- **Very Important Bird and Birding Area** - NJ Audubon. This recognizes the high quality and diversity of bird habitats.
- **NJ Natural Heritage Priority Site** – NJ DEP, Office of Natural Lands Management. This designation recognizes the marshlands as some of the best remaining habitat for rare species and rare ecological communities in the state.
- Within [Crossroads of the American Revolution](#) National Heritage Area - 2006.

This guide is provided by Friends for the Abbott Marshlands. To contact Friends:  
[info@abbottmarshlands.org](mailto:info@abbottmarshlands.org)

or by mail  
Friends for the Abbott Marshlands  
c/o D&R Greenway Land Trust  
1 Preservation Place  
Princeton, NJ 08540

### **Friends for the Abbott Marshlands Mission Statement**

The Friends for the Abbott Marshlands (Friends) is an all-volunteer grassroots organization, organized in 2002 in partnership with D&R Greenway Land Trust.

The Friends' mission is to “facilitate preservation and protection of the Abbott Marshlands (Marshlands), promote Marshlands stewardship, and educate the public about the many varied and unique resources of the Marshlands. The Friends strive to partner with other agencies (public, nonprofit and private) to protect, preserve, enhance and promote the natural, historical and recreational resources provided by the Marshlands.”



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