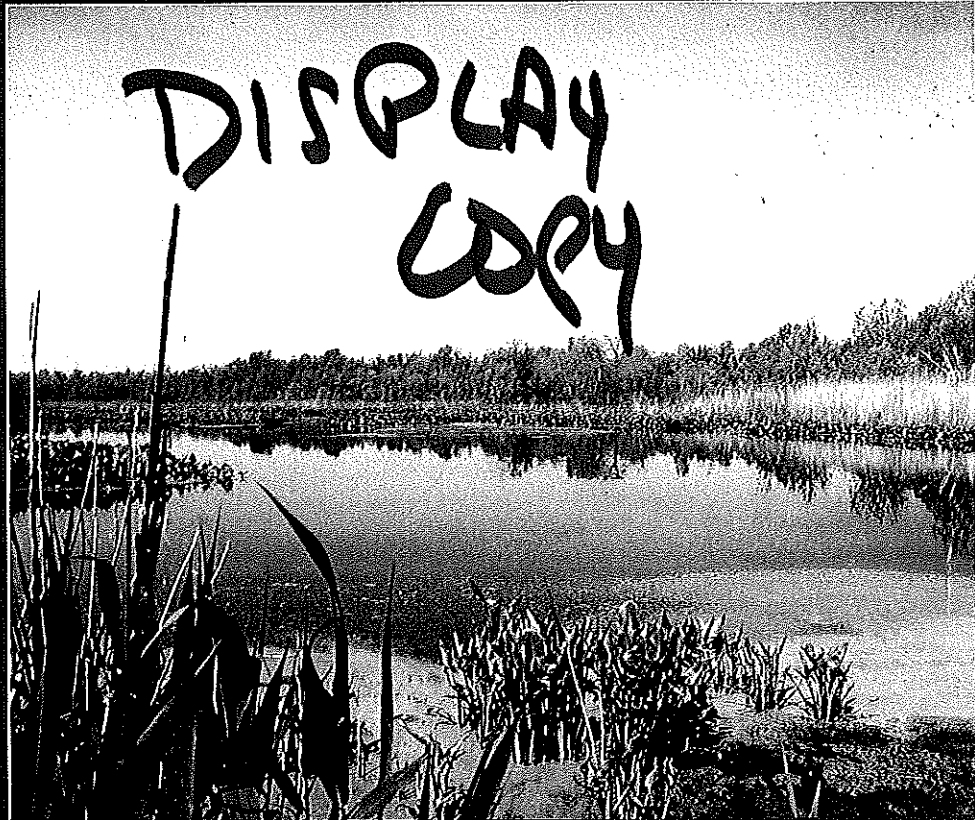
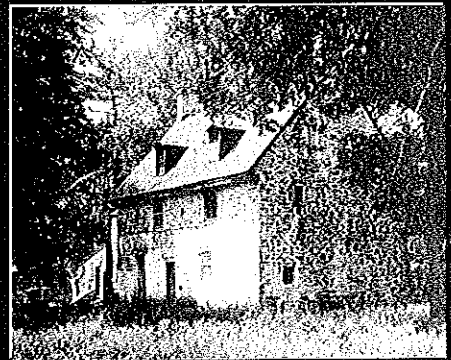
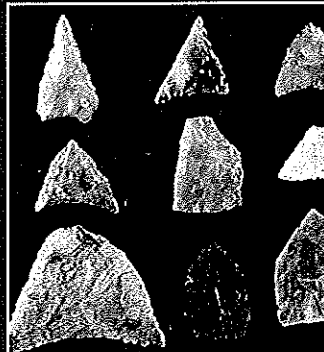
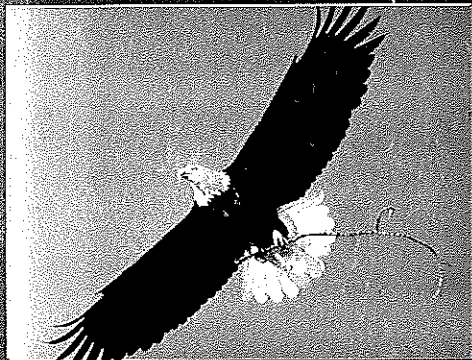


Hamilton/Trenton Marsh Management Plan 1999



Delaware & Raritan Greenway, Inc.

570 Mercer Road

Princeton, New Jersey 08540

Tel (609) 924-4646 / Fax (609) 924-5577

Published by:
The Hamilton/Trenton Marsh Management Plan Committee

Coordinated by:
Delaware & Raritan Greenway
570 Mercer Road, Princeton, NJ 08540
Tel (609) 924-4646; Fax (609) 924-5577

Acknowledgments

With special recognition and grateful appreciation, Delaware & Raritan Greenway and the Hamilton/Trenton Marsh Management Plan Committee acknowledge The William Penn Foundation and Public Service Electric and Gas Company for their generous financial support underwriting the development of the Hamilton/Trenton Marsh Management Plan.

Credits

Writing, photography, design: Patti Orban Quinby
Illustrations: Heather Lovett
Location map: Douglas Kane
Hamilton/Trenton Marsh maps: John Rassweiler
Printing production: Mahlon Lovett

Cover photographs

Bald Eagle: Vireo, Academy of Natural Sciences
Watson House and artifacts found at Abbott Farm National
Historic Landmark: New Jersey State Museum
Canoeists and Marsh View: Patti Orban Quinby

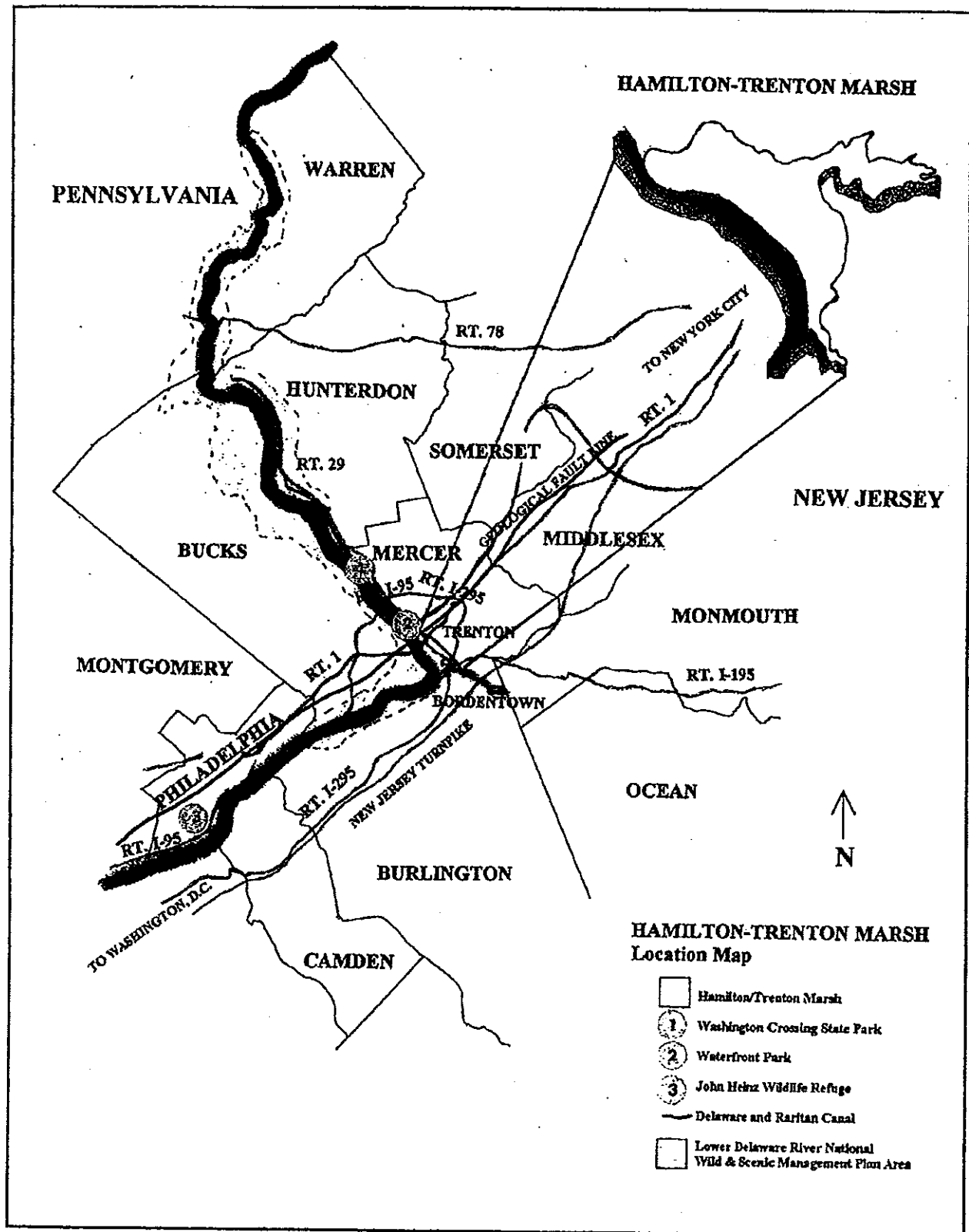
Contents

Location map	2
Introduction	3
Vision	5
Goal: Protection and Preservation	8
Goal: Stewardship	9
Goal: Education	11
Goal: Recreation	14
Goal: Management	17
Maps	18
Map 1. Base Map	
Map 2. Aerial Base Map	
Map 3. Protected Areas	
Map 4. Natural Resources	
Map 5. Abbott Farm	
Resource Inventory of the Hamilton/Trenton Marsh	19
Management Plan Committee	21
Hamilton/Trenton Marsh Contributors	22



Tulip poplar
(*Liriodendron tulipifera*)

Location map



Introduction

Location

The Hamilton/Trenton Marsh is the northernmost tidal freshwater wetland on the Delaware River. The 1,250-acre natural area is located in a densely developed region of central New Jersey, where the communities of Trenton, Hamilton and Bordentown meet. Its borders cross two counties with a combined population of 720,890 residents.

Major transportation routes, including interstate highways 295 and 195, increase the Marsh's visibility and make it accessible to a large regional population. The Marsh is also located within walking distance of Mercer County's Waterfront Park.

The market analysis for Waterfront Park, which examined an area within a 25-mile radius of the park, including Mercer County and portions of Hunterdon, Middlesex, Somerset, Monmouth, Ocean, Burlington and Camden counties in New Jersey and portions of Bucks, Montgomery and Philadelphia counties in Pennsylvania, showed a primary market of 2.6 million people. The trends associated with this market include increasing economic, population, and household growth and are expected to continue. Travel and tourism in the Delaware River region constitute major industries that have led to increased demand for a variety of public access opportunities along the Delaware River.

Significance of the Marsh

The Hamilton/Trenton Marsh is a unique urban wetland with significant natural and historical resources. These marshlands connect multiple ponds, several creeks (the largest being Crosswicks Creek), the Delaware & Raritan Canal (D&R Canal), and the Delaware River. It also links the Crosswicks, Delaware & Raritan and Delaware River greenways. The diverse wildlife habitats support more than 1,000 identified species of plants and animals with many others awaiting discovery. Scientists indicate that the quality of the natural habitats of the Hamilton/Trenton Marsh surpasses that of the John Heinz Wildlife Refuge, formerly the Tinicum National Environmental Center, near Philadelphia.

To residents of the immediate area, the Marsh provides scenic vistas, space to unwind, and a place for recreation. Visitors from across the country and across the Atlantic Ocean have enjoyed the Marsh for birding, hiking, canoeing, fishing, photography, and other outdoor recreational activities.

Recognized as a natural attraction, the Marsh is listed in *Birding the Delaware Valley*¹, *A Guide to Bird Finding in New Jersey*², and *New Jersey: A Guide to the State*³. The John A. Roebling Memorial Park is highlighted in the *New Jersey Wildlife Viewing Guide*⁴ as part of the Watchable Wildlife Program. It is noteworthy that on a state-wide basis, fish and wildlife resources are valuable not only for their recreational and aesthetic worth, but for the economic boost they give to the state's economy. Fishing, hunting, birding, and other outdoor activities contribute \$2.65 billion in economic activity annually.

The area boasts a rich human history that includes the Abbott Farm National Historic Landmark, where Native Americans thrived some

The Hamilton/Trenton Marsh is a unique urban wetland with significant natural and historical resources.

1. Harding, John J. and Justin J. *Birding the Delaware Valley Region*. Temple University, 1980.
2. Boyle, Bill. *A Guide to Bird Finding in New Jersey*. Rutgers University Press, 1986.
3. Westergaard, Barbara. *New Jersey: A Guide to the State*. Rutgers University Press, 1997.
4. Pettigrew, Laurie. *New Jersey Wildlife Viewing Guide*. Falcon Publishing Co., 1998.
5. Initiative undertaken by National Park Service.
6. Mercer County Waterfront development Initiative.
7. National Park Service initiative linking Bristol, PA and Trenton, NJ with a loop trail.

The Marsh also provides important and economically valuable ecological functions to the region. These benefits include ground water recharge, filtering pollutants to protect water quality, and managing flood waters.

6,000 years ago. In the mid-1800's, the D&R Canal and the Camden and Amboy Railroad were constructed across the Marsh and used as major transportation routes. During that same time, White City Amusement Park was built at the Marsh, attracting visitors from throughout the region. Additionally, homes along the bluffs, including Mercer County's oldest standing house, the Watson House, link the marsh to the early settlers.

The Marsh also provides important and economically valuable ecological functions to the region. These benefits include ground water recharge, filtering pollutants to protect water quality, and managing flood waters. In addition, the tremendous amount of plant material produced per acre annually by the tidal marsh, shown by scientific studies to rival that of a tropical rain forest, contributes to the food chains of the Delaware River system.

History of the Project

The Delaware & Raritan Greenway (D&R Greenway), a regional land conservancy, initiated the preservation and stewardship of the Hamilton/Trenton Marsh in 1994 to complement its efforts to buffer and protect the D&R Canal. Since then, D&R Greenway has been successful in building public support and laying the groundwork for a management plan to protect and preserve the Marsh permanently. Programs have involved a broad audience including residents, students, educators, and the media, as well as government, community, and business leaders from throughout the region. Partnerships have been established with federal, state, county, and local governments, schools, historical societies, and community groups.

Task forces consisting of government and business leaders, educators, and concerned citizens were established to identify goals and lay the groundwork for development of the management plan. The task forces spearheaded a major enhancement project at John A. Roebling Park, the only public access to the Marsh in Mercer County and the location of most of D&R Greenway's education and outreach programs. The improvements generated greater support, use and visibility of the Marsh as an important natural and cultural resource to the region.

Management Plan

In March, 1998 a public forum was held to identify important issues relating to the management of the Marsh and to develop the community-based support necessary to address them. A 17-member planning team was established to formulate a plan to carry out identified goals. The vision is to optimize the Hamilton/Trenton Marsh's potential, while complementing other Delaware River initiatives including the Lower Delaware Wild & Scenic Designation⁵, Waterfront Park⁶, the Heritage Trail⁷, and the D&R Greenway. The report that follows contains the team's recommendations addressing five key goals:

- Preservation and Protection
- Stewardship
- Education
- Recreation
- Management



Red-bellied turtle
(*Pseudemys rubriventris*)

Vision

The management plan for the Hamilton/Trenton Marsh supports a vision that:

- protects critical natural and historical resources,
- preserves valuable wetland functions,
- optimizes the educational potential of the Marsh,
- enhances recreational opportunities,
- establishes linkages with broader regional systems, and
- builds strong partnerships for long-term stewardship and management.

It also intends to bring the numerous benefits accruing from enlightened management to the attention of a wide array of partners.

The 1,250-acre Hamilton/Trenton Marsh is located in an ancient meander of the Delaware River between Trenton, Hamilton, and Bordentown. It is an oasis of natural wildness nestled in a densely populated urban environment. The extraordinarily diverse habitats found there include: tidal freshwater marshes where wild rice can grow to 10 feet, ponds created by humans as well as by beaver, tidal creeks and rivers, flood plains, a 94-acre constructed wetland and other human altered sites, nearly impenetrable swamps, wet forests, and upland woods with thickets of mountain laurel and rhododendron. These habitats support more than 230 species of birds, 775 species of plants, and many more reptiles, amphibians, insects, and mammals.

The area is steeped in human history and includes the Abbott Farm National Historic Landmark, the D&R Canal, and remnants of the White City Amusement Park (circa 1800's). Several historic homes stand on the bluffs along the edge of the marsh including Mercer County's oldest standing house. Revolutionary War boats lie at the bottom of Crosswicks Creek. Today, people enjoy the Marsh for a wide variety of passive recreational activities.

The Hamilton/Trenton Marsh is a unique natural attraction linked inextricably to the surrounding communities. Through protection and enhancement of its diverse natural and historical resources neighboring communities can honor their roots, celebrate, with a deepening sense of pride, the natural and cultural richness of the region, and reap the associated economic, educational, and quality of life benefits.

The Marsh is also a prime site for tourism and supports a growing recreation and tourism industry today. Enhancement of resources and development of relevant programming would encourage educational and recreational activities for all. The development of self-sustaining initiatives compatible with protection of the Marsh would, in fact, contribute to the economic viability of the region. In addition, the value of neighboring properties is likely to increase as the Marsh is protected and better managed.

Through quality education programs, students and adults can learn about the natural and human history of the Marsh, the impact humans have on their environment, and the benefits associated with these outstanding wetlands. They can also become better informed to make decisions



Osprey
(*Pandion haliaetus*)

The extraordinarily diverse habitats ... support more than 230 species of birds, 775 species of plants, and many more reptiles, amphibians, insects, and mammals.

... the tremendous amount of plant material produced per acre annually by the tidal marsh, [has been] shown by scientific studies to rival that of a tropical rain forest, ...

regarding land use, and to influence attitudes and behavior regarding nature.

The potential market is considerable. Nearly 130,000 students attend public and private schools in neighboring Mercer and Burlington County communities. An additional 19,000 students attend public schools in the City of Camden, a community located to the south of the Marsh that will soon be connected to the region through a light rail line linking Camden and Trenton.

During development of this plan, it became increasingly clear that the range of partnerships for education and recreation should be enlarged to include state and federal governments. Increasing regional development, the strategic location of the Hamilton/Trenton Marsh near the urban centers of Trenton and Camden, the impending construction of a light rail line connecting the two cities, together with the quality of the Marsh's natural resources, impel us to seek public and private support for an interactive, public environmental education center (like the Hackensack Meadows Environmental Center) and designation by the federal government as a national wildlife refuge with accompanying benefits.

Goals

The management plan for the Hamilton/Trenton Marsh addresses five key goals with the intent of optimizing the Marsh's potential while complementing other Delaware River initiatives.

These goals are:

Preservation and Protection. Preserve and protect natural habitats and historic resources, and enhance land conservation values and awareness;

Stewardship. Maintain the integrity of the natural and historical resources by striving to achieve a balance between preservation, protection, and human use;

Education. Use the Marsh as an educational site integrating the natural and human history and uniqueness of these urban wetlands in order to foster knowledge, understanding and action;

Recreation. Provide and enhance appropriate recreational use by the public while minimizing negative impact on resources;

Management. Establish an organizational structure to oversee the long-term stewardship of the Marsh.

This plan provides strategies for achievement of these goals and proposes methods of implementation to insure the protection and long-term stewardship of this significant regional resource.

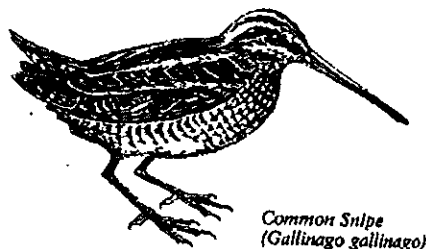
Implementation Priorities

The vision and goals for protection, stewardship and management of the Hamilton/Trenton Marsh are ambitious and exciting. While all of the strategies identified by the committee are important to the success of the effort, the sheer number of strategies and tasks, and the complexity of the effort make it impossible to implement all of the strategies and tasks immediately. To make the process manageable, priorities for implementation, to begin during 1999, have been identified as follows:

- Establish an independent management entity (e.g., nonprofit organization, public/private partnership, governing commission) to implement the management plan and coordinate individual and partner commitment.
- Establish partnership agreements (i.e., Memorandums-of-Understanding) to enable consistent management of marsh resources.
- Secure permanent protection, through acquisition and conservation easement, of critical marsh lands that are privately owned.
- Coordinate with regional programs (e.g., Mercer County's Waterfront Park, the Delaware River Heritage Trail, and D&R Canal enhancements) to gain greater visibility for the Marsh and to support the goals of the management plan.
- Clearly identify appropriate access points and permitted activities, and prohibit uses incompatible with the management plan through signage and enforcement.
- Maintain existing enhancements through management, stewardship and enforcement.
- Maintain and build an educational program at the Marsh by securing partner commitments to provide programming and by physical improvements that support educational objectives.
- Provide a facility to host visitors and to serve as a focal point for Marsh activities.

The balance of strategies and tasks developed to achieve each of the goals are delineated in the management plan that follows. It is anticipated that those strategies and tasks not listed as priorities to be implemented in 1999 will be addressed in the year 2000 and beyond. It is understood that the management plan is flexible and has the ability to respond to new opportunities as they arise and to changing circumstances.

Fishing, hunting, birding, and other outdoor activities contribute \$2.65 billion in economic activity annually.



Common Snipe
(*Gallinago gallinago*)

Goal: Protection and Preservation

Permanently protect the habitats, wildlife, historical resources, and conservation value of the Marsh.

STRATEGY: Develop an inventory of major habitats.

TASKS:

- Identify habitats and delineate boundaries.
- Determine how habitat quality has changed over time.
- Evaluate impact of habitat quality on wildlife.

STRATEGY: Determine how the Marsh fits into a broader network of natural areas including the Lower Delaware Wild and Scenic River, John Heinz Wildlife Refuge (Tinicum), Delaware River Estuary, D & R Canal, as well as the Assunpink, Crosswicks, Delaware River, and D&R greenways.

TASKS:

- Evaluate how the Marsh is related to and impacts regional ecological issues (e.g., flood management, water quality, etc.).
- Identify land acquisition needs as they relate to linkages and networks of open space.

STRATEGY: Formulate protection plans and secure permanent protection.

TASKS:

- Designate specific areas and resources to be protected.
- Coordinate protection targets with goals for public access and recreational sites.
- Identify ownership of target protection sites and identify most effective means of protection (e.g., conservation easement, fee simple acquisition, land management methods).
- Contact landowners and negotiate for permanent protection.
- Secure partner commitment for ownership of protected sites (either easements or fee simple), and secure necessary funding to implement acquisition.

STRATEGY: Balance human uses with protection of critical natural and historical resources through management and monitoring.

TASKS:

- Minimize impact of public access via trails, boardwalks, and other manmade structures.
- Limit motorized water craft to motorboats with electric motors and eliminate jet skis.
- Control access to prevent looting of artifacts at the Bordentown Bluffs and elsewhere.
- Create stewardship agreements and monitoring plans (see Stewardship objective).



Wild Rice
(*Zizania aquatica*)

Goal: Stewardship

Maintain the integrity of the natural and cultural resources of the Marsh through good stewardship practices following resource management guidelines.

STRATEGY: Balance human use of resources with protection to preserve integrity of resources.

TASKS:

- Determine how use has changed historically and how this has impacted Marsh resources (e.g., agriculture, hunting over the past 200 years).
- Identify sites for enhancement, cleanup, educational, recreational, or other use.
- Develop plan for ongoing monitoring of use impacts on resources, habitat changes, invasive and/or exotic species, water quality and other criteria that measure the health of the Marsh.
- Establish hunting policies to control the impact of deer.
- Determine how fishing will impact the aquatic resource.

STRATEGY: Develop partnership agreements (e.g., Memorandums-of-Understanding) to enable consistent management of Marsh resources.

TASKS:

- Establish management plans to protect critical resources.
- Determine property ownerships.
- Facilitate meetings of partners to achieve consensus on management techniques and responsibilities.
- Secure management agreements between partners.

STRATEGY: Maintain biodiversity and protect critical natural resources.

TASKS:

- Control invasive species (plants, wildlife).
- Plant only locally native species.
- Enhance habitats (e.g., installation of duck boxes, dredging of Spring Lake).
- Maintain open tidal flats.
- Encourage growth of wild plants that provide quality food and shelter for animals.
- Maintain and update inventories of natural resources in partnership with colleges and universities.
- Enlist colleges and universities to conduct research projects and demonstrations within the Marsh.

STRATEGY: Determine mitigation methods for hazardous waste sites.

TASKS:

- Identify location of sites.



*Tree Swallow
(Tachycineta
bicolor)*

- Determine contaminants and levels of concentration.
- Research brownfields regulations for applicability to enable protection, mitigation, and re-use of sites.
- Involve the State in determining mitigations for contaminated areas.

STRATEGY: Minimize impact of pollution.

TASKS:

- Minimize use of herbicides and pesticides by educating property owners about alternative techniques and through model demonstration projects in partnership with universities.
- Maintain regular trash removal, prevent pollution from storm drains, water borne flotsam, and illegal dumping along roadways, as well as limit impact of increased access and usage.
- Determine impact of dredging the Delaware River on water quality and habitat sedimentation.
- Develop oil spill plan to protect the Marsh in the event of an oil spill on the Delaware River near the mouth of the Crosswicks Creek.

STRATEGY: Minimize community development and other activities (e.g., industrial development, agricultural uses, golf courses, etc.) that would negatively impact watershed and tide waters.

TASKS:

- Gather information on all regulations that apply.
- Educate local governments about existing regulations, innovative methods and alternative means of resource protection.
- Encourage adoption of ordinances that will protect or minimize impacts to resources.
- Provide information on significance and boundaries of Marsh resources to regulatory agencies to assist permit review.

STRATEGY: Create a commission with enforcement power to oversee and regulate activities that affect the Marsh's natural and cultural resources.

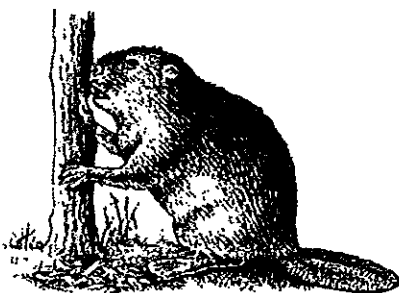
TASKS:

- Study models (e.g., D&R Canal Commission, Pinelands Commission, Delaware River Basin Commission, Upper Delaware Council) and determine best structure to meet Marsh objectives.
- Establish guidelines and regulations for the Marsh.
- Seek endorsement of guidelines/regulations from municipalities, counties, state.
- Monitor and enforce compliance.

STRATEGY: Seek national and state recognition and designations for the Marsh.

TASKS:

- Determine applicable designations (e.g., National Natural Landmark).
- Prepare application package and garner support from legislators, community leaders and constituents.



Beaver
(*Castor canadensis*)

Goal: Education

Use the Marsh as an educational site integrating the natural and human history with uniqueness of these urban wetlands in order to foster knowledge, understanding and action.

STRATEGY: Identify and build target audiences and determine their needs. Target audiences should include local residents, inner city youth and adults, landowners, school students, teachers, visitors, ecotourists, government agencies (municipal, county, state and federal), business leaders, land planners, environmental and community groups, colleges and universities, and the media.

TASKS:

- Develop an advisory committee to support educational programming.
- Evaluate needs of audiences.
- Identify existing partner groups who could provide funding, staffing, programs and other resources.
- Secure funds to develop education programs and facilities.
- Develop a corps of volunteers to support education program.
- Provide outdoor educational programs for their students.
- Establish school advisory subcommittee including curriculum administrators and teachers.

STRATEGY: Develop outreach program to reach target audiences and build a constituency.

TASKS:

- Market through media, community events, state nature and tourism guides and brochures.
- Invite school boards, principals, superintendents, elementary and middle school teachers to special events.
- Use slide programs, displays, and other outreach materials.

STRATEGY: Develop education programs that address the following aspects of these outstanding wetlands:

- Natural history and science
- Geography, geology, and biodiversity
- Natural services, such as water filtration, ground water recharge, and flood control
- Wildlife habitats
- Interacting scientific processes, such as geological, hydrological, and ecological
- Human history and impact
- Archaeology and history
- Effects of urbanization
- Shifting human effects of use, abuse, and restoration



Sweetgum
(*Liquidambar styraciflua*)

- Interconnectivity
- The evolution of the Marsh over a geological time scale as well as during human occupation
- Connectedness and harmony in relationship with people
- How the whole is greater than the sum of the parts

STRATEGY: Develop integrated, experiential interpretive plan and education programs to enhance audience connectedness and harmony with the marsh.

TASKS:

- Solicit advice from school advisory subcommittee
- Develop education programs to:
 - Provide integrated education opportunities for students that align with the core curriculum requirements for K-12,
 - Provide education programs to help teachers use the Marsh as a valuable local natural teaching resource,
 - Provide ecological experiences and research opportunities for students and faculty of area colleges and universities,
 - Foster environmental awareness and an environmental ethic among the general public, the corporate constituency and others through adult education,
 - Provide all season education.

STRATEGY: Develop indoor and outdoor education facilities to enhance audience connectedness and harmony with wetlands, provide audiences with an understanding of past, present and future dependence on wetlands, and integrate science, technology, and human use with environmental impacts.

TASKS:

- Develop attractive self-sustaining federal-, state-, county-, municipal and/or nonprofit-run visitors centers and interpretive programs.
- Enhance and construct outdoor facilities including:
 - A network of linked trails (self guided, bilingual, handicapped accessible, for the blind) in uplands, on boardwalks across wetlands and to tidal areas, and on waterways (for canoe and kayak),
 - Link neighboring trails (Heritage Trail, D&R Canal State Park) and recreational areas (Mercer County Delaware River waterfront),
 - Covered pavilion for an outdoor classroom,
 - Rest room facilities in several locations (e.g., Spring Lake, Watson Woods picnic area, constructed wetland),
 - Outdoor user-friendly displays (e.g., aquaria, touch / smell areas, wetland processes),
 - Observation decks, towers and blinds,
 - Places for quiet reflection,
 - Model Indian village and model archeological excavation and research site.



*Brown Daddy-long-legs
(Phalangium opilio)*

- Identify existing or build new indoor facilities at one or more locations at the Marsh, that will include:
 - An auditorium with flexible usage that can seat 100,
 - Indoor user-friendly displays,
 - A library of Marsh resources and information available to students and the public,
 - A herbarium and other plant and animal collections,
 - A store with books and related merchandise,
 - Office space for director and staff,
 - Storage facilities for tools, education equipment, and other program materials.
 - Create interpretive signage and displays.



Goal: Recreation



Monarch Butterfly
(*Danaus plexippus*)

Provide for enjoyment and recreational use of the Marsh by the public.

STRATEGY: Develop a land use plan that delineates appropriate public access areas while protecting the natural and historical resources of the Marsh.

STRATEGY: Balance recreation use of the Marsh with protection of resources.

TASKS:

- Delineate Marsh boundaries.
- Identify specific areas open to recreation and the activities permitted in each area.
- Prohibit access in areas that would cause deterioration and/or an adverse impact on habitat and/or wildlife.

STRATEGY: Foster use of the Marsh by the public for compatible recreational activities including:

- a. walking, hiking, jogging, cross country skiing, nature study, birding, canoeing and kayaking, picnicking;
- b. bicycling and horse drawn carriages on designated trails only;
- c. fishing and hunting in designated areas during designated seasons only.

TASKS:

- Publish guidelines and rules for use of Marsh.
- Promote Marsh in tourism brochures and nature guides.
- Interface with education programs.
- Provide public outreach events as recreational experiences.

STRATEGY: Prohibit incompatible recreational activities including off-road motorized vehicles (snowmobiles, all-terrain vehicles (ATVs), dirt bikes, four-wheel drive vehicles), jet-skis and gas powered water craft.

TASKS:

- Post and enforce rules throughout the Marsh.
- Maintain gates to minimize access.
- Recruit volunteers to monitor activity.
- Maintain law enforcement presence.

STRATEGY: Establish and manage appropriate points of access.

TASKS:

- Maintain upkeep of current access points.
- Enhance existing public access facilities with visitors centers, restrooms, parking areas, signage, trash management, trails, benches, and links to neighboring recreational facilities to make public access areas more attractive and encourage a variety of appropriate low-impact uses by the public.

- Enhance Roebling Park with restrooms, outdoor pavilion, boardwalk across Marsh, observation blinds and decks along north and south marshes, observation tower overlooking headwaters of Watson Creek, restore White City Amusement Park stairway, maintain trails.
- Dredge Spring Lake to enhance fishing and boating.
- Develop attractive self-sustaining federal-, state-, county-, municipality and/or nonprofit-run visitors centers and interpretive programs.
- Create trail across Marsh linking waterfront development area, Roebling Park (Watson Woods and Spring Lake area), D&R Canal and Heritage Trail.
- Create boardwalk along the Bordentown Bluffs, now protected with a conservation easement, to connect them to the Heritage Trail and the D&R Canal State Park.
- Enhance Bordentown Bluffs by stabilizing erosion of bluffs, providing railing at lookout, rerouting trail away from edge of bluffs for safety, securing artifact sites, providing public parking area and benches, installing interpretive signage and kiosk with visitors information and maintaining trails.
- Enhance trail access including marsh boardwalk at Northern Community Park.
- Enhance constructed wetlands on Duck Island with maintained walking trails, boardwalk to canoe launching access and restroom facilities.
- Enhance D&R Canal including restoration of lock 1, installation of trail along canal, dredging the canal from lock 1 to lock 2, linking canal with waterfront development, eliminate tidal influence on canal and provide for canoeing access.
- Seek funding and in-kind support from local businesses and government sources.

STRATEGY: Promote economic development in border communities by private small businesses that would provide visitors low-impact recreation opportunities related to the natural and historical resources such as a canoeing and kayaking livery, bicycle rental, tour boat and/or barge ride along the Delaware River, the D&R Canal, and possibly Crosswicks Creek.

TASKS:

- Advertise and market to existing businesses.
- Investigate funding incentives.

STRATEGY: Promote restoration of historical buildings and sites bordering the Marsh to enhance the appeal of the region as a tourist destination.

TASKS:

- Involve local historical societies.
- Encourage local governments.
- Engage artisans.



Nodding
Bur Marigold
(*Bidens cernua*)

STRATEGY: Establish the Marsh as a destination point for tourism and provide access for eco-tourism.

TASKS:

- Restore historical homes along the bluffs, and develop and promote a historical package for tourists.
- Develop a visitors center that would communicate the uniqueness of these urban wetland and help visitors connect to and understand their rich natural and human history through programming and indoor and outdoor displays.
- Develop a model Native American village.
- Develop model archeological excavation site.
- Create self-guided walks and canoe/kayak trails at the Marsh.

STRATEGY: Promote the Marsh as a valuable natural and historical site in state, county and municipal tourism brochures, at visitors centers and at tourism websites.

TASKS:

- Develop a newsletter and mailing list for community outreach.
- Involve community to increase sense of ownership.
- Establish a Marsh website.
- Seek advertising support for brochure, website and newsletter from local businesses.
- Distribute information through tourist brochures, nature guides, visitor information centers.



Pickerelweed
(*Pontederia cordata*)

Goal: Management

Develop a management structure to oversee long-term stewardship of the Marsh.

STRATEGY: Develop a permanent governing board (regional nonprofit, public/private partnership or commission) to manage the resources, provide programming, raise funds, and implement the management plan for the Marsh.

TASKS:

- Investigate management models and identify benefits of each type.
- Establish governing board.
- Develop constitution and by-laws.
- Secure funding to support start-up staff and programming.
- Hire staff including director, program coordinator and part-time administrative/clerical support staff.
- Secure interim office space and equipment.
- Delineate roles and responsibilities for management of resources.
- Oversee partner commitment to management.
- Establish a diverse funding base to implement plan.
- Develop volunteer program and recruit volunteers.

STRATEGY: Provide a facility to host visitors and to serve as a focal point for Marsh activities including education programming, recreational activities, board and committee meetings and staff offices, as well as use as a community resource.

TASKS:

- Design facilities with an eye toward future needs.
- Integrate facility into the wide range of activities including education, recreation and management.

STRATEGY: Secure short- and long-term funding to support ongoing operations and funding for capital projects.

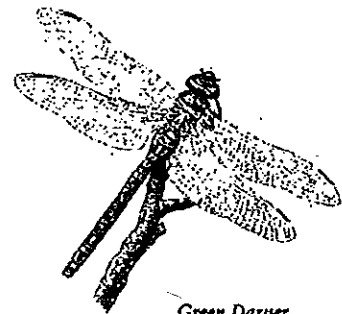
TASKS:

- Hire director and/or support staff experienced in writing grants and raising money.
- Develop business partnerships.

STRATEGY: Develop partnerships, including forming a coalition or alliance of organizations to implement programs.

TASKS:

- Identify partner resources, goals and responsibilities.
- Host biennial meetings of alliance organizations.
- Contribute to programs for NJ Teachers Association, Association of New Jersey Environmental Educators, and others.



Green Darner
(*Anax junius*)

Maps

The Hamilton/Trenton Marsh

1. Base Map includes marsh boundaries, waterways, and roads.
2. Aerial Base Map includes marsh and neighboring areas, marsh boundaries, waterways, and roads.
3. Protected Areas Map includes Marsh Base Map and protected properties, public open space, tax parcels map, and properties with potential for protection.
4. Natural Resources Map includes marsh boundaries, tax parcels map, waterways, uplands, forests, marshlands, and disturbed areas.
5. Abbott Farm National Historic Landmark Map

Every effort was made to assure accuracy. Occasionally, the most current available sources are outdated. When possible the maps have been corrected to reflect more current data that can be confirmed on a site visit.

The maps were prepared by John Rassweiler.



Resource Inventory of the Hamilton/Trenton Marsh

At the 1,250-acre Hamilton/Trenton Marsh one can find palustrine and riverine, natural and constructed wetlands. Habitat types include wetlands and uplands, rivers, ponds, marshes, shrub forest, wet forests, disturbed wetland edges, constructed wetlands, upland forest, and disturbed areas. Half of the area is tidal. This diversity of habitats supports many kinds of plants and animals. More than 789 plant species have been recorded. About 234 species of birds, including 100 nesting species have been observed at the Marsh as well. Other groups of animals are less well known.

Species Inventories

There is an ongoing effort to document species and habitat diversity. While some inventories are fairly complete, other groups of organisms, such as fish, mollusks, insects, and lower plants (e.g., algae and mosses) are woefully neglected.

Endangered and Threatened Wildlife Species

Birds

ENDANGERED

Pied-billed Grebe
Bald Eagle
Northern Harrier
Cooper's Hawk
Peregrine Falcon
Short-eared Owl
Vesper Sparrow

THREATENED

American Bittern
Black-crowned Night Heron
Great Blue Heron
Little Blue Heron
Osprey
Northern Goshawk
Red-shouldered Hawk
Long-eared Owl
Barred Owl
Red-headed Woodpecker
Cliff Swallow (nesting)
Savannah Sparrow
Bobolink

Fish

ENDANGERED

Shortnose Sturgeon (Delaware River)

Source: New Jersey Department of Environmental Protection,
Division of Fish, Game and Wildlife, 1998.

Rare and Endangered Plant Species

ENDANGERED

Cacalia atriplicifolia – Pale Indian Plantain
Cyperus tenuifolia – Low Flatsedge
Ptelea trifoliata – Wafer Ash

RARE

Agastache scrophularifolia – Purple Giant Hyssop
Carex frankii – Frank's Sedge
Cuscuta polygonorum – Smartweed Dodder
Desmodium cuspidatum – Toothed Tick-trefoil
Elantane americanum – American Starwort
Eupatorium altissimum – Tall Thoroughwort
Heteranthera multiflora – Mud Plantain
Isoetes riparia – River-bank Quillwort
Juncus brevicaudatus – Narrow-panicked Rush
Juncus torreyi – Torrey's Rush
Mimulus alatus – Winged Monkey Flower
Ranunculus longirostris – Eastern White Water Crowfoot
Sagittaria subulata – Subulate Arrow Head
Schoenoplectus smithii – Smith's Bulrush
Scirpus atrocinctus – Black Woolgrass
Silene caroliniana – Wild Pink
Stachys tenuifolia – Smooth Hedge-nettle
Utricularia gibba – Humped Bladderwort
Utricularia intermedia – Flat-leaved Bladderwort

Compiled by Dr. Mary A. Lock using the New Jersey State rare plant list:
Snyder, D. B. *Special Plants of New Jersey*. Office of Natural Lands
Management, Division of Parks and Forestry, Department of Environmental
Protection, 1997.

Other species inventories* include:

Birds: 234 known species including 100 nesting species.

Plants: 789 known species.

Amphibians and Reptiles: 17 known species.

Butterflies: 28+ known species.

Mammals: 16 known species.

*Compiled by Mr. Raymond Blicharz, Dr. Charles F. Leck, and Dr. Mary A. Leck.

Mr. Raymond Blicharz

Mr. Blicharz was the regional editor for the NJ Audubon Society Field Notes for 17 years, compiled the Christmas Count for the Trenton and Princeton regions for 31 years, and conducted Big Day birds counts for the Trenton Naturalist Club for 18 years.

Dr. Charles F. Leck

Dr. Leck has studied the bird life of New Jersey for more than forty years, including visits to the Hamilton/Trenton Marsh since 1958. He is a professor in the ecological sciences at Cook College, Rutgers University and is the State Ornithologist for New Jersey.

Dr. Mary Alessio Leck

Dr. Leck is a professor of biology at Rider University. She is a botanist whose studies have involved plant population ecology, seed germination ecology, and seed banks (seeds in soil) at the Hamilton/Trenton Marsh since 1975.



Jewelweed
(Impatiens capensis)

Management Plan Committee

Management Plan Committee

D&R Greenway recognizes with grateful appreciation the planning committee members:

James Amon, *Delaware & Raritan Canal Commission*

James Badgley, *NJ Department of Transportation*

Merkle Cherry, *Trenton Open Space Advisory*

David Cox, *NJ Department of Transportation*

Dennis Davidson, *NJDEP/Green Acres Program*

Carol deGroot, *Bordentown Township*

Lisa Fritzinger, *Mercer County Planning*

John Garcia, *NJDEP Parks & Forestry*

Sue Herron, *NJDEP Parks & Forestry*

Pat Kane, *New Jersey Audubon*

Mary Alessio Leck, *Rider University*

Donna Lewis, *Mercer County Planning*

Fawn McGee, *Burlington County Land Use Office*

Linda J. Mead, *Delaware & Raritan Greenway*

Carl Nordstrom, *NJDEP Parks & Forestry*

Joseph Oakley, *Public Service Electric and Gas Company*

James Panacek, *Public Service Electric and Gas Company*

Robert Prunetti, *Mercer County*

Patricia Orban Quinby, *Delaware & Raritan Greenway*

John K. Rafferty, *Hamilton Township*

Allen Schectel, *Hamilton Township*

Edmund Stiles, *Rutgers University*

Zigmont Targonski, *City of Bordentown*

Hamilton/Trenton Marsh Contributors

D&R Greenway acknowledges with grateful appreciation the many contributions of the following people and organizations.

Building Environmental Education Solutions (BEES) • Margaret Benton • Bordentown Historical Society • Gregory Camilleri • CoreStates Bank • Geraldine R. Dodge Foundation • Doerler Landscaping • Charlie Fisher • Pat Flores • Ruth Gibson • Granville Academy • William Haines • Hamilton Historical Society • Hamilton Township • Doug Howlett • J. Seward Johnson, Sr. Charitable Trusts • Douglas Kane • Charles F. Leck • Warren Libensperger • Jim Lynch • Robert Markley • Marturano Recreation Company • Donald McCloskey • Mercer County • Middlesex, Somerset, Mercer Regional Council (MSM) • Mohawk Canoe Club • National Park Service • NJ Committee Garden Club of America • Bobbi Parmet • Tom Poole • Public Service Electric and Gas Company • Clyde Quin • Frank Ragazzo • John Rassweiler • Rider University • Robert Schaffener • Joe Schmeltz • Bob Simpkins • Stony Brook Garden Club • Suburban Fence Company • Whole Earth Center • Tom Wilkins • The William Penn Foundation.

Many other individuals did much to aid in the evolution of this plan as employees of the above organizations, volunteers, program leaders, sponsors of programs, and participants at the public forum and other Marsh events. To each is extended a sincere thanks.

