

Trail Guide
Flora B. Peirce Nature Trail
New Bedford, Massachusetts

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Introduction and Trail History

Who was Flora B. Peirce?

Flora B. Peirce (pronounced 'purse') was a New Bedford native and a member of the New Bedford Conservation Commission from 1964 to 1984. She was, in fact, instrumental in forming the Conservation Commission in 1964 and served as its first chairperson (a post she filled several times during her tenure).

Under Miss Peirce's direction, the first major project undertaken by the Conservation Commission was the development of the trail system in what is now known as the Flora B. Peirce Nature Trail. An article detailing the dedication of the Trail in the September 28, 1973 issue of the Standard-Times describes Miss Peirce as a "woman who has done so much for New Bedford in the name of preserving the green grass, trees and trails left from a long past."

While on the Conservation Commission, Miss Peirce also worked on beautification of Buttonwood Park, public education programs, and the preservation of numerous small open spaces in New Bedford. She was also involved in the League of Women Voters where she was on the Board of Directors for 15 years. Her community involvement also included teaching English to local immigrants in preparation for their naturalization. After a lifetime of community involvement, Miss Peirce died in 1990 at the age of 91.

The Peirce Trail Site

The FBP Trail is a mostly wooded preserve in the extreme northwest of New Bedford. New Plainville Road forms the northern border of the site and separates the site from Turner's Pond and the Acushnet Cedar Swamp, a 1,850 acre Massachusetts State Reservation. To the south and east is the New Bedford Municipal Airport, whose +300 acres abuts the Nature Trail property. The New Bedford – Dartmouth town line defines the entire western border of the site.

The trail is sandwiched between two swamps, the Acushnet Cedar Swamp to the north, and the Apponagansett Swamp to the south, which is bisected by the New Bedford – Dartmouth town line (a third swamp, the Flag Swamp in Dartmouth, is within a mile of the Nature Trail.) Since red maples far outnumber Atlantic White Cedar at this site, this community would be classified as a Northern Swamp Forest rather than an Atlantic White Cedar Swamp.

The Peirce Trail site combines forested, red maple-dominated wetlands with drier, white pine-dominated uplands. A north-south strip of forested wetland area follows the Paskamanset River as it flows south from its beginnings at Turner's Pond through the Trail property. The south-central and southeastern section of the preserve are also characterized by forested wetland. There are drier upland areas in the northeast and north central sections, as well as in the southwestern section. Included in this southwestern section is a small meadow. A small pond and wet meadow are located in the northeast, and separate gas and water right-of-way easements that bisect the west and southwestern sections create a fair amount of edge habitat in the preserve.

Starting as early as 1925, the city began to acquire land in this area. As the amount of city-owned acreage in this area grew, the city encouraged Bristol County to purchase abutting acreage in order to increase the amount of open space in New

Bedford. The land that now comprises the preserve is either owned and managed by the City of New Bedford, or owned by Bristol County and managed by the City of New Bedford, under mutual agreement.

Part of the current trail system in the preserve was blazed in the late 1960's, and the area was officially dedicated as the Flora B. Peirce Nature Trail in 1973. More trails were blazed in the mid-1970's and some wooden bridges and walkways were added. New walkways and bridges were installed, and repairs were made to existing structures in the preserve in 1978 as a part of a federally funded summer Youth Corps project through CETA.

Who was Flora B. Peirce? and The Peirce Trail Site, taken from Management Plan for the Flora B. Peirce Nature Trail, 1995, written by Kristen E. Leotti. Reprinted with permission.

Trail Rehabilitation

Southeastern Environmental Education Alliance (SEEAL) members The Coalition for Buzzards Bay and Greater New Bedford Regional Vocational Technical High School along with New Bedford Conservation Agent, Elizabeth Leidhold, began a collaboration in early 1999 to bring the trail back to its full potential for education and passive recreation. When this project is finished, the old wooden boardwalks will have been replaced with boardwalks made from recycled plastic lumber. Trails will have been cut back to allow easy passage. Certain old paths, damaged by heavy river flow and saturation will be allowed to return to their natural state. Finally, this trail guide and accompanying numbered posts will have been made available to serve as a handy tool for self-education and navigation on the trail system.

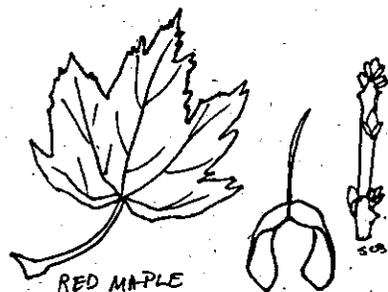
Bob Rocha
Education Coordinator
The Coalition for Buzzards Bay

Post 1 Typical Mature Wetland Forest Type

As you walk into the woods, notice the canopy formed by the Red Maple (*Acer rubrum*) and the Atlantic White-Cedar (*Chamaecyparis thyoides*) trees. The canopy they form shades the plants and shrubs below. These two trees are the dominant species in this part of the trail. The presence of these trees, and the other species you see, tells us that this is a wetland forest. All species are adapted to living in seasonably flooded conditions.

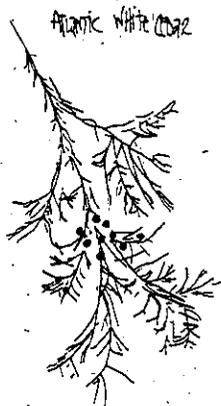
Red Maple:

A medium-sized tree which, when young, has smooth bark. Older trees bear bark that is rough and scaly. Leaves have 3 to 5 lobes, are toothed and whitish below. New growth on trees has reddish bark. Small red flowers are visible in the early spring. This is a very common eastern tree.



Atlantic White-Cedar:

An aromatic evergreen tree with a narrow, pointed crown and slender, horizontal branches. Its reddish brown bark is thin with narrow, forking ridges and the leaves are dull, blue-green and scale-like. The wood of this tree is very resistant to rot, so it's widely used for shingles and fence posts.



Understory and Herbal Layer Species

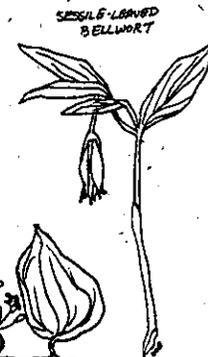
Highbush Blueberry:

A tall, woody plant with peeling bark, its leaves are elliptical (ovals closing in a point at the tip), with smooth edges. The green leaves turn red in the fall, new branch growth is green and slightly fuzzy. Its bell-shaped flowers grow in white to pink clusters and bear edible fruit in the late summer.



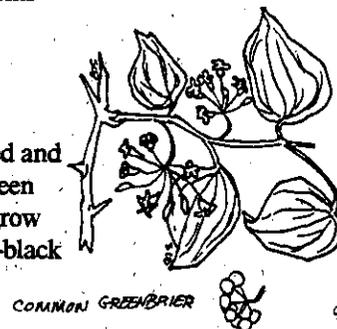
Sessile-leaved Bellwort:

(Wild Oats) A low, delicate plant with oblong leaves growing alternately along an arching stem. Yellow bell-shaped flowers hang upside down from the ends of the stems and appear in early spring.



Common Greenbrier:

Its leaves grow somewhat egg-shaped and are shiny green on top, but duller green underneath. Its rigid green thorns grow along the vine. Also has small blue-black berries. Very common on trail.



Canada Mayflower:

Common throughout most of New England, this low-growing plant forms mats, with two to three shiny green leaves which are heart-shaped at the base. In the spring, flowers bloom in a raceme (similar to a bunch of grapes) and small, red-speckled berries can be seen.



Cinnamon Fern:

Receives its name from the cinnamon colored hairs along base of leaf stalk. Fronds are large, deeply-cut, with smooth edges. Grows in circular clusters.



Royal Fern:

Look for opposite branches on central frond. Each branch has pairs of smooth-edged, green, slightly triangular leaflets.



Post 2 Poison Ivy

While enjoying the beauty of the forest we are tempted to smell and touch the surrounding plants and trees. Not only does this bring us closer to nature, but it also helps transport pollen. Often, our contact with plants is accidental; branches, leaves or flowers may brush up against us as we tour the trail. However, we should avoid touching certain plants, one of which is Poison Ivy

Poison Ivy grows all over this forest but the thickest concentration is found in this area, Post 2. You should look for plants whose leaves grow in groups of three, and have smooth edges. The leaves are shiny green, deeply-veined and turn red at the end of summer. You may see berry-like fruit growing in the summer, and sometimes the plant will grow like a climbing vine.

Poison Ivy produces poisonous oils that can stick to skin and clothing and cause rashes and blisters throughout the year. The oil is present in all parts of the plant. If you touch P.I., wash your clothing and wash your skin in warm, soapy water.

Finally, never burn Poison Ivy. The oils will become airborne and can be breathed in.

Remember... "Leaves of 3 - Let it Be."

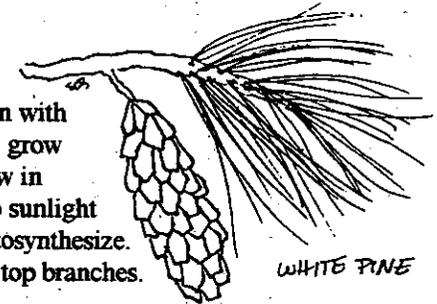


Post 3 White Pine Forest

This open area of the forest is dominated by White Pine (*Pinus strobus*). In contrast to Post 1, there is very little growth below the canopy layer. The trees effectively block most of the sunlight from reaching the forest floor. The lack of sun prevents most plant species from growing in this part of the trail system. It is expected that this area will look the same for many years to come, unless a major weather event were to topple one of these pines and open a hole in the canopy layer.

White Pine:

A coniferous (bearing cones) evergreen with rough, deeply furrowed bark. Needles grow in bundles of five, while branches grow in whorls. Lower branches unexposed to sunlight die off because they are unable to photosynthesize. Larger trees only grow needles on the top branches.



Starflower:

Five to ten lance-shaped, deeply veined leaves grow in a whorl near the end of the plant stem. Leaves form a star. White flowers with seven petals rise out of the center of the whorl. Dry seed capsules may be visible.



Wild Sarsaparilla:

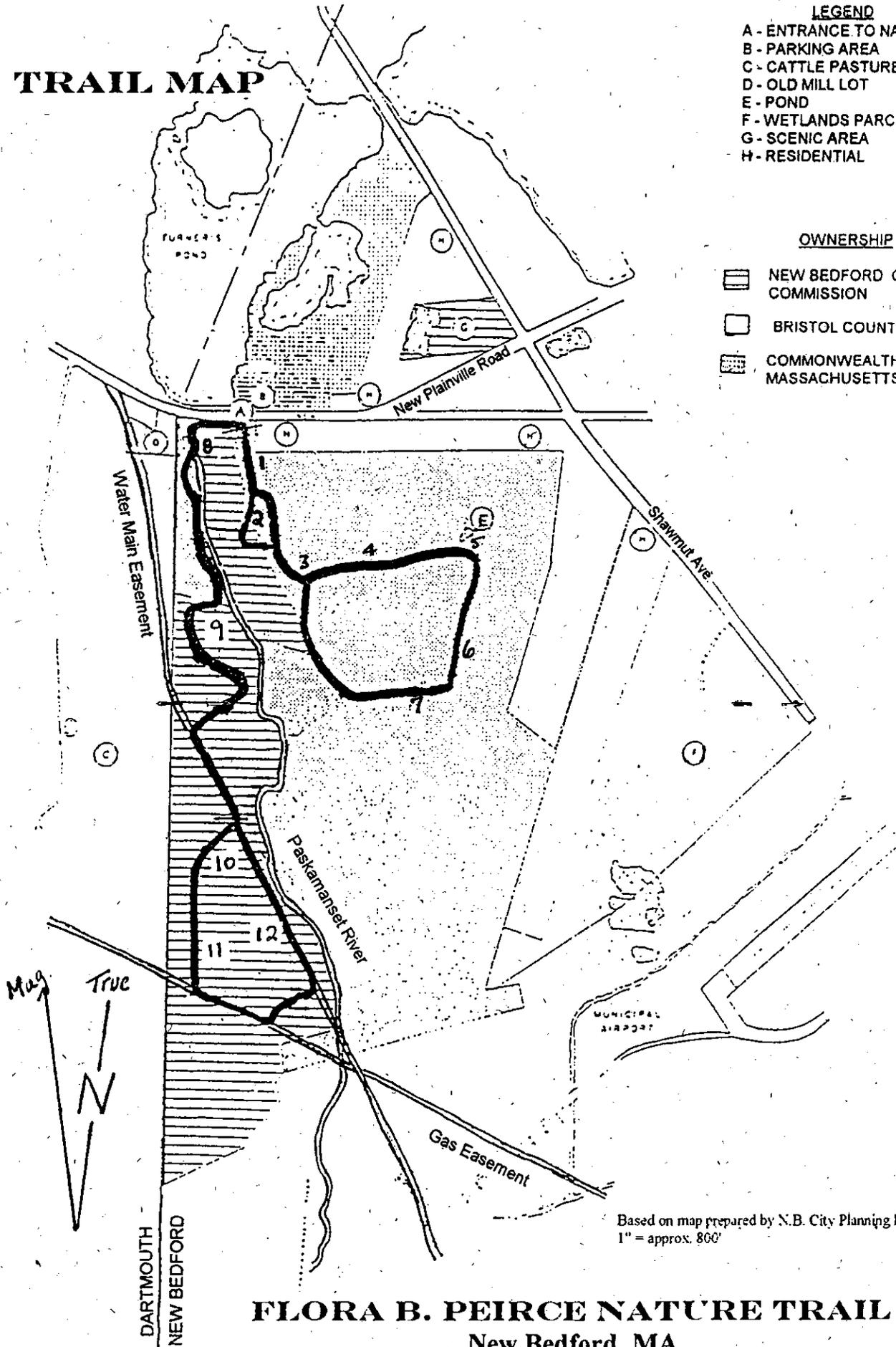
Growing in an umbrella-like fashion, its three-leaf groups branch from the main stalk and each leaf group (leaflet) holds five leaves. The edges are slightly toothed, and small whitish-green flowers appear in late spring. When leaves have withered or fallen off, small purplish berries may be seen. At first glance this plant resembles Poison Ivy.



TRAIL MAP

- LEGEND**
- A - ENTRANCE TO NATURE TRAIL
 - B - PARKING AREA
 - C - CATTLE PASTURES
 - D - OLD MILL LOT
 - E - POND
 - F - WETLANDS PARCEL
 - G - SCENIC AREA
 - H - RESIDENTIAL

- OWNERSHIP**
-  NEW BEDFORD CONSERVATION COMMISSION
 -  BRISTOL COUNTY
 -  COMMONWEALTH OF MASSACHUSETTS



Based on map prepared by N.B. City Planning Dept. in 1978
 1" = approx. 800'

FLORA B. PEIRCE NATURE TRAIL New Bedford, MA

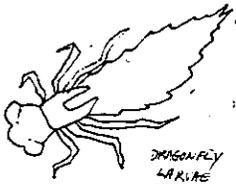
Post 5 Pond

Since this trail preserve is situated between two swamps, you would expect to see a lot of water. In fact, you will encounter several sites along the trail which have required boardwalks to allow for walking. Most of this water nourishes the plants and trees, or flows through the preserve in the Paskamanset River (see Post 8). This site, however, appears to be the only one along the trails that is a true pond, holding water year round.

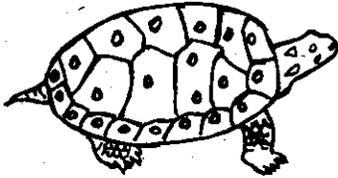
Ponds are self contained fresh water ecosystems. The plants and algae that live in a pond turn sunlight energy into sugar just like plants that live on land, thus beginning many food webs. These plants and algae get eaten by tiny invertebrates, tadpoles, insects and turtles. These animals become food for other animals that live in or near the pond. Animals that die in this pond will provide nutrients for future generations as their bodies are broken down and eaten.

If you make the effort to wait quietly, you may be rewarded by seeing or hearing several animals and insects. These include Spotted Turtle, Painted Turtle, Bullfrog, Green Frog, Dragonfly, Damselfly and Water Strider. The larval forms of several insects can be found in this pond, along with adult and larval amphipods. You can also expect to see many bird species feeding or nesting nearby.

There is another natural process taking place here along with life cycles. The pond is slowly (very slowly) being reclaimed by the woods. The leaves that fall off the trees that surround the pond accumulate on the pond bottom, as does any soil or other organic material that washes down the pond banks. The small islands of red maple and sweet pepperbush also will continue to trap material to slowly add to the amount of solid material in the pond. This depression on the trail will always be saturated, but the size and shape of the pond will change over time.



DRAGONFLY
LARVAE



SPOTTED
TURTLE



SWEET
PEPPERBUSH

Post 6 Sphagnum, Mounds and Hummocks

It is possible, and likely, that by the time you've walked from Post 5 to this site that your shoes got really wet. You probably tried to avoid the wetness of the trail by stepping on the outer edge of the trail or by stepping on mini hills of soil and plants.

These mini hills are known as mounds or as hummocks, depending on their origin. Hummocks are formed when plants or trees sprout and grow on stumps, downed logs or raised root systems of other woody plants. Mounds are formed after a tree is blown over and its roots become exposed after getting ripped out of the ground. Over time, the soil that was lifted out with the roots falls off and, with the decaying roots, forms a mound of soil in the site where the tree once stood.

There are examples of both here. See if you can find a fallen tree that has since become covered with vegetation. Its appearance stands out among the smaller hummocks.

These mounds and hummocks are necessary for the growth of many of the woody species and trees in this part of the trail. You've already seen and experienced the saturated conditions. The high water level makes it difficult for oxygen to get through the soil to the roots of the trees. Being able to grow on a raised platform helps with this problem.

The wet conditions, however, are ideal for the growth of types of mosses known as sphagnum. Sphagnum is the small, leafy green (and probably wet) plant that you see covering the ground like a lush, green carpet. This growth habit, with rolled branch leaves and overlapping leaves, allows them to draw up water and store it. In fact, these mosses are capable of storing water that amounts to many times more than their own body weight.

These qualities make sphagnum important for land conservation, flood control and protection from soil erosion. They have also led to other unique uses such as insulation, packing material for nursery plants, absorbent surgical dressings (especially during battle) and perhaps even as diaper material.



Sphagnum
or Peat Moss

Editor's note: Boardwalks made from recycled plastic are expected to be placed on this section of trail sometime in late 1999 or in 2000.

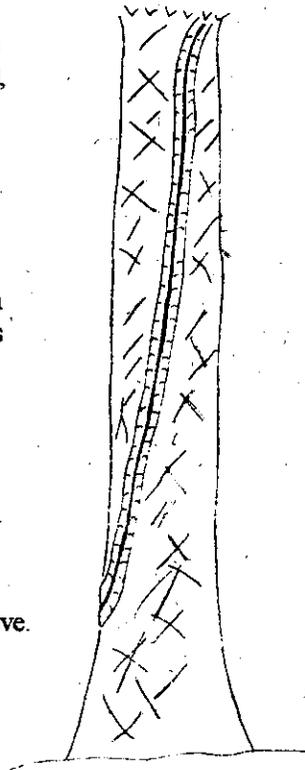
Post 7 Lightning Strikes

Lightning is one of the most dangerous natural occurrences in the world. It is a visible discharge between rain clouds and the ground. When discharging, the electricity takes the easiest path to the ground, which is usually through the highest standing point in the area. In this case it was the White Pine you see in front of you.

White Pine is a northeastern tree with needles two to four inches long. The needles are five to the bunch. A good way to identify White Pine is that in the word white, there are five letters, the same amount of needles in a bunch on a white pine tree. The cone is smooth, slender and grows to three to ten inches in length. Very few of the 200-220 foot pines first viewed by settlers exist because of lumbering. The largest modern pine trees are more likely to reach 100-110 feet.

When a tree is struck by lightning there are several possible effects. The strike can hit the crown of the tree and then jump to the ground, which may cause minor damage. A more destructive effect is when the strike heats up the water tremendously between the bark and the core of the tree and blows the bark off. This is more common in pines than oaks. The bolt will then travel down the side of the tree in a twisting or corkscrew fashion or even straight down. Although one would think this would kill the tree, this is not always the case. If the strike does not kill the tree, the wound is now left open and the tree becomes susceptible to disease.

After the incident, the recovery may take up to a full season. A good way to identify if the tree is dead or not is to take the bark off an outer twig. If the wood is green, the tree is alive. If the wood is brown, the tree is dead.



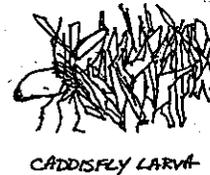
Post 8 Paskamanset River

You are at the beginning of the Paskamanset River. This river flows out of Turner's Pond, which is just on the other side of New Plainville Road. The Pasky, as it is nicknamed, flows south through the Peirce Trail property, past the western border of New Bedford Airport, through the Apponagansett Swamp into Dartmouth. It will pass under Route 195 and Route 6 and reach the Russell's Mills area of Dartmouth, in all a 7.5 mile trip, as the crow flies. The river at this point changes names, now being called the Slocum River. The Paskamanset is a fresh water river. The Slocum, however, mixes with the salt water of Buzzards Bay. It is not unusual to have the fresh water section of a local river keep the Wampanoag name, and have the salt water portion named for a European settler. You can visit the small pond and fish ladder at end of the Pasky if you park in the small lot at the beginning of Rock O'Dundee Road, just down the hill from Davoll's General Store.

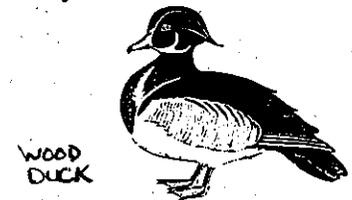
This river is home to several species of invertebrate larvae and adults. Crayfish, water striders, water scorpions, whirligig beetles and amphipods make their homes here. Adult dragonflies, damselflies, stoneflies, and caddisflies lay their eggs here. In fact, recent data from the Lloyd Center for Environmental Studies lists nearly 30 species of dragonflies in Turner's Pond and the Paskamanset River. A wide variety of dragonflies is an indicator of good water quality within a river system.

This river system is an inviting place for Mallard and Wood Ducks, both of which have been seen here at various points along the river. Several other bird species, including American Redstart, Black-capped Chickadee, Blue Jay, Eastern Phoebe, Great Crested Flycatcher, and Yellow Warbler take advantage of the bounty of insects found in and along the river. Insects are an important source of protein for developing nestlings.

We strongly encourage you to walk along the riverside path, from post 8 southward, at different times of the year. You will directly experience the wide fluctuation in water level in this river and the speed at which this water can travel. It is the power of this water that destroyed several boardwalks put on the trail in 1979. In fact, two paths that had been created in 1979 have since been obliterated by the river.



CADDISFLY LARVA



WOOD DUCK

Post 9 Deer Rubbing

One of the most interesting things that you can see while exploring Post 9 are rubs of the White-tailed Deer on a cedar tree. A rub is a worn spot on a tree or sapling where the deer has rubbed his antlers to remove the velvet and mark his territory. This action removes the bark from the tree.

A scrape is a cleared area on the ground created during mating season by the deer. All the leaves and sticks are in a circular pattern and are brushed away from the tree by the constant pawing of the animals. Sometimes the circle extends for several feet. Look for deer hair and footprints in this area.

Sometimes if the ground on the path is soft you can see the footprints of the deer. The very path that you are traveling on is traveled by deer. Before the recent trail enhancements were performed, certain parts of the trail had to be located by looking for deer tracks. If their tracks weren't present, their droppings (scat) often were.



Post 10 Meadow

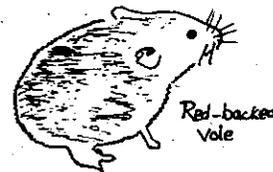
You have reached the only meadow on the Flora B. Peirce Nature Trail. We are not sure of its origin, but suspect that the area was part of a nearby farm and was incorporated into the trail preserve.

This meadow and the water main easement you traveled to get to this post provide a change in habitat from the rest of the trail system. This in turn provides an opportunity to encounter species not seen elsewhere on the trail system.

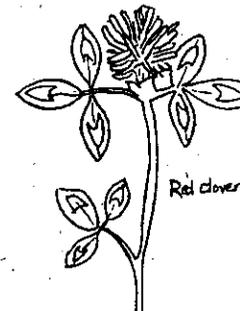
Plants such as Cow Vetch, Daisy, Goldenrod, Milkweed and Red Clover can be found. Many species of grasses and sedges grow here. Animals such as voles, shrews, mice and foxes abound. Mantids (praying mantis and associated species) lay their egg cases and hunt here. Several species of butterfly and moth search for nectar and lay their eggs on the meadow plants. Spittlebugs, small to medium sized jumping insects that hop about on plants and shrubs like a tiny frog, can be found by searching for their spittle. The nymphs discharge masses of bubbly wet spittle on plant stalks and hide inside of them.

The presence of the Milkweed plant offers us a chance to look into a specialized relationship between plant and insect. The colorful Monarch Butterfly lays its eggs on the underside of Milkweed leaves. After the caterpillars hatch out they eat these leaves, ingesting the poisonous, milky sap. However, the sap is not poisonous to the Monarch caterpillars. But, by taking the sap into their bodies, they become poisonous, or at least repulsive, to predators. So if any are eaten they are immediately spit out. The image and colors of the butterfly, black and orange, are then remembered by the predator. Most creatures in nature that have the combination of black and orange, or black and red, are poisonous.

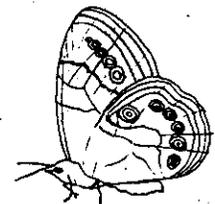
The open sky over the meadow plants makes viewing birds much easier. Red-tailed hawks and turkey vultures have been seen soaring overhead.



Red-backed
vole



Red clover



Eyed brown
butterfly

Post 11 Snags

The simple definition is: snags are standing dead trees. Just thinking of them this way overlooks their importance to life in the woods.

Snags are, in fact, home to a wide variety of mammals, amphibians, birds, insects, spiders and other invertebrates. Since snags are dead, their wood gets progressively softer and easier to bore into. Woodpeckers excavate holes for nesting cavities. Many insect species burrow tunnels. Raccoons use their claws to remove some of the soft wood. Fungus will help create more cavities and living space. All of these open areas inside the tree are very inviting as nesting, resting and feeding places.

Snags were once cut down and hauled away by foresters because they were thought to be commercially useless and a home to tree pests. Now that we know that cutting down snags removes an entire 'apartment complex' for dozens of species, snags are being allowed to stand.

There is one large snag directly behind the sign post and three others within this general area. Take some time to look closely at them. You'll see the openings to birds' nesting cavities and tunnels made by ants. You may see fungus living off the tree's nutrients. You might even see an owl, hawk or porcupine sitting on a branch.

You will also be looking at a natural recycling project. All of the activity in and on these snags will someday turn these trees back into soil. This soil and the nutrients in it may help to support a new tree.



Post 12 Vernal Pool

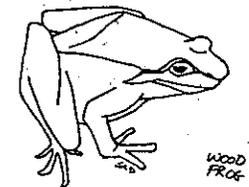
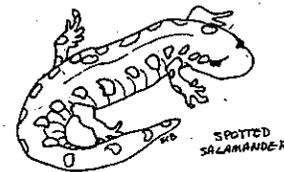
The small pond at this site is a temporary pond, more technically known as a vernal pool. They are indeed temporary, similar to puddles. (One of their nicknames is 'Wicked Big Puddles'.) Their water comes from rain, snow and occasionally groundwater. They have no other water sources. This results in them drying up in the summer, leaving no fish or aquatic animals to be found.

These pools are home to several organisms that evolved to only breed in vernal pools. Wood frogs and spotted salamanders complete the change from egg to adult before the pools dry up. The eggs they lay and the larva that hatch from them have a better chance of surviving because there aren't any fish to eat the eggs. These animals return to their pool of birth every year to breed, further highlighting the importance of these temporary ponds. This vernal pool is also home to caddisflies, dragonflies, predaceous diving beetles, mosquitoes and many microscopic species.

The critters here use the vegetation as shelter and hiding places. The plants provide attachment sites for frog and salamander eggs. They also benefit from the shade provided from these plants and the trees around the rim of the pool. The shade lowers the temperature and slows down the evaporation process in the pool.

Although vernal pools are breeding sites for amphibians and fairy shrimp that cannot breed anywhere else, they continue to disappear. Often mistaken as big, lifeless puddles or nothing more than a breeding site for mosquitoes, they get filled in, paved over or built on. When viewed in their dry summer stages, their true function cannot be seen or estimated by those unfamiliar with vernal pools.

The necessary paperwork is underway to certify this vernal pool with the state of Massachusetts.



List of birds seen at FBP Trail

American Crow
American Goldfinch
American Redstart
American Robin
Black Capped Chickadee
Blue Jay
Brown Creeper
Carolina Wren
Downy Woodpecker
Eastern Phoebe
Gray Catbird
Great Crested Flycatcher
Mallard
Northern Cardinal
Northern Flicker
Ovenbird
Red Bellied Woodpecker
Red Tailed Hawk
Rufous Sided Towhee
Tufted Titmouse
White Breasted Nuthatch
Wood Duck
Veery
Yellow Warbler

Resource List

- Boyd, Howard P. 1991. *A Field Guide to the Pine Barrens of New Jersey: Its Flora, Fauna, Ecology and Historic Sites*. Plexus Publishing Inc., Medford, NJ.
- Leotti, Kristen E. 1995. *Management Plan for the Flora B. Petree Nature Trail*. For the City of New Bedford Conservation Commission, New Bedford, MA.
- Lloyd Center for Environmental Studies. Mark Mello, Executive Director
- Maloney, Katrina M. 1991. *Plants of the Horatio Colony Preserve: A Beginner's Field Guide*. Edited by Rick Van de Poll, Katrina M. Maloney. Antioch New England Graduate School, Keene, NH.
- Merritt, Joseph F. 1987. *Guide to the Mammals of Pennsylvania*. University of Pittsburgh Press for The Carnegie Museum of Natural History.
- Milne, Lorus and Milne, Margery. 1992. *The Audubon Society Field Guide to Insects and Spiders*. Alfred A. Knopf, Inc.
- Mitsch, William J., and James G. Gosselink. 1993. *Wetlands*, Second Edition. Van Nostrand Reinhold, New York, NY.
- Newcomb, Lawrence. 1977. *Newcomb's Wildflower Guide*. Little, Brown and Company.
- Petrides, George A. 1988. *Peterson's Field Guides - Eastern Trees*. Houghton, Mifflin Company, Boston.
- Wessels, Tom. 1997. *Reading the Forested Landscape: A Natural History of New England*. The Countryman Press, Woodstock, VT.

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