# Swamp Life

Self-Guided Trail

**Take a walk to discover what lies within the unique environment of a hardwood swamp.**

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With this guide and a keen eye you will be able to observe plants, trees, and even wildlife along the trail. To begin, follow the blue blazes starting from the Swamp Life kiosk. You will encounter 21 trail markers, each with a corresponding description in this booklet. Enjoy exploring the forested wetlands near the headwaters of Toms River. For your safety, please stay on the trail to avoid contact with poison ivy and ticks.

1.

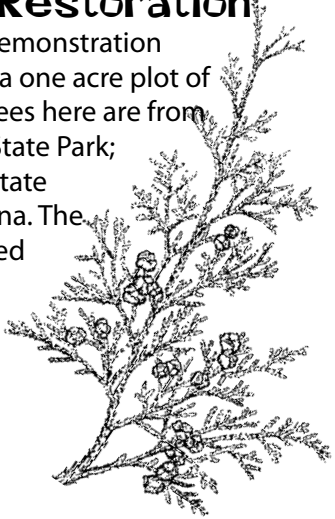
## Name that Tree

Examine each of the tree species shown on the trail marker. Then look nearby to see if you can identify all nine trees.

2.

## Atlantic White Cedar Restoration

At this location, a forest management demonstration project was initiated in 1996 to convert a one acre plot of hardwood swamp into cedar swamp. Trees here are from four different seed sources: High Point State Park; Belleplain State Forest, Brendan Byrne State Forest, and Craven County, North Carolina. The solar-powered electric fence was installed to prevent extensive deer browse when the seedlings were first planted.



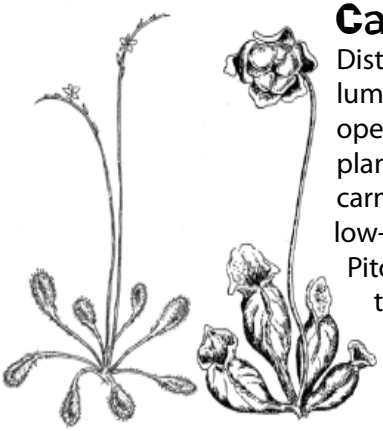
3.

## Snags

Snags are standing dead or decaying trees in a forest that provide habitat for cavity nesters, such as Red-headed Woodpeckers, Raccoons, Barred Owls, and Red-shouldered Hawks.

## Carnivorous Plants

4.



Disturbances in wetlands, such as lumbering or cranberry bogs, provide openings in a swamp for some special plants with unique abilities. These carnivorous plants, adapt to survive in low-nutrient, acidic soils by eating insects. Pitcher Plants are passive pitfall traps that have pitcher-shaped leaves with downward pointing hairs, leading the victim to a deadly pool of digestive fluid. Sundews are active traps that have sticky globules on stalked glands. When insects touch the colorful globules they become stuck. If they try to escape, the stalked glands will actually move to entrap the prey.

## Irrigation Pond

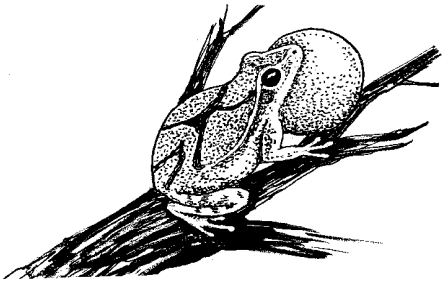
5.

This spring-fed pond was once part of a large cranberry bog. The pond contains a variety of aquatic plants, and provides habitat for wading birds, frogs, turtles, and fish. Try to tiptoe along the edge of the pond and you may spot some wildlife such as a basking Painted Turtle.

## Blowdown and Vernal Pool

6.

This tree was toppled by the wind. Trees in a swamp are typically surface-rooted, having intertwined prop roots in order to remain upright. This blowdown has created a vernal pool which provides habitat for Wood Frogs, Marbled Salamanders, and Spring Peepers. These amphibians lay eggs seasonally in wet pools that are free of predatory fish.



7.

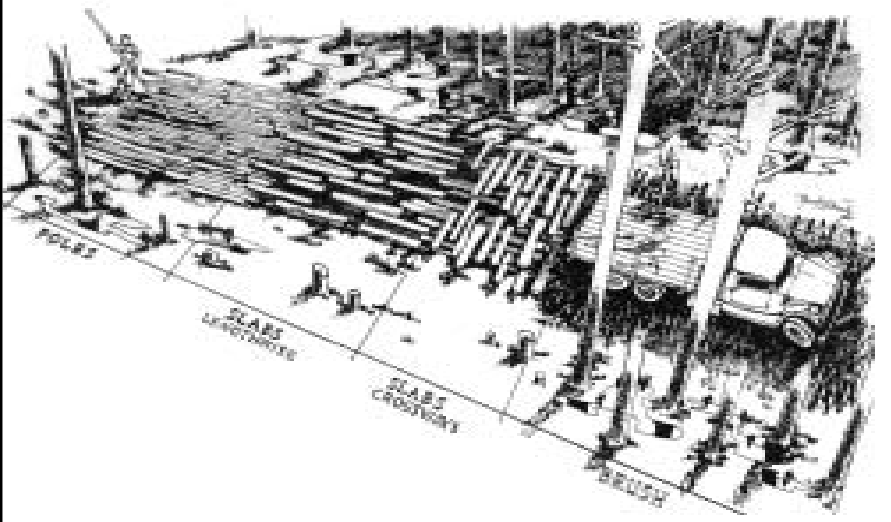
## Sphagnum Moss

Sphagnum is found growing in dense mats in bogs, swamps, pond edges, and "spongs" (spongy areas). This valuable evergreen moss retains over 90 times its weight in water and is an antiseptic. It has been used for packing flowers, tree seedlings, for bandaging wounds, and traditionally even as absorbent diapers.

8.

## Corduroy Roads and Discolored Leaves

Swamp crossings typically use slabs from sawmills laid lengthwise and crossways in a corduroy pattern. The roadways are covered with brush. The spacing in the pattern allow for water flow as well as travel even during periods of high water. You may also find discolored leaves that are an indicator of wetlands. Over time, the leaves decay into marble-colored (mottled) soils.




## Wetlands FUN FACT

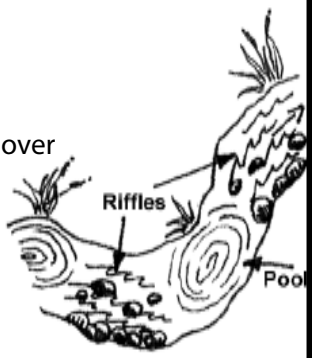
Worldwide Wetlands There are many different kinds of wetlands found all over the world such as marshes, bogs, and swamps.This type of wetlands is called a "hardwood swamp" because of the hardwood trees such as maples and gums prevelantly found here.

## Wetlands FUN FACT

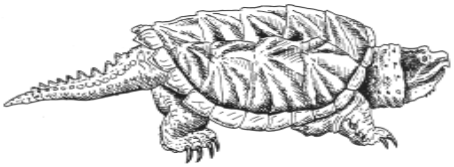
Wetlands are Natual Water Purifiers Wetlands clean and purify water by removing sediments, toxins, heavy metals, nutrients, microorganisms, and waste material. Replacing wetlands with manmade water treatment plants would cost billions of dollars yearly.



## Riffles




Riffles occur in shallow water flowing swiftly over a stream bed of gravel. The rushing water causes turbulence and oxygenation, making an ideal habitat for aquatic insects and the fish that prey on them. Riffles may cause erosion and deep scour holes where aquatic predators such as Snapping Turtles wait in ambush. Years ago, to improve fishing, this riffle was created by the installation of submerged angled poles.

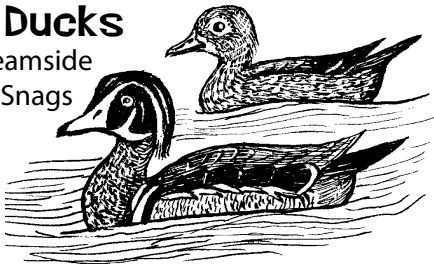


## Swamp Raptors



Although Red-shouldered Hawks hunt during the day and Barred Owls hunt at night, both birds of prey share the same habitat- swamps and stream corridors. Barred Owls may, in fact, even utilize the nest abandoned by a Red-shouldered Hawk. Populations of both raptors are in decline as forested wetlands are impacted by encroaching development.

## 11. Beavers and Wood Ducks



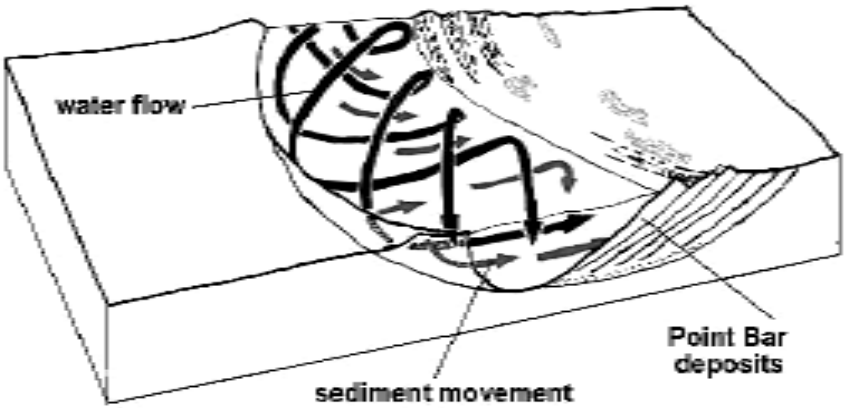
Look here for evidence that this streamside forest has been utilized by Beavers. Snags provide nest cavities for Wood Ducks. Several nest boxes have been installed along the trail to encourage Wood Ducks to nest.

## 12. Watermarks and Sediment Deposits

During major storm events, rising water levels carry sediments that are deposited along the stream banks such as the light-colored sand coating the trail surface here. Watermarks appear as dark rings surrounding the entire trunks of trees in a swamp, indicating the height of the water during flooding events. Swamp animals have been able to adapt to fluctuating water levels.

## 13. Point Bars

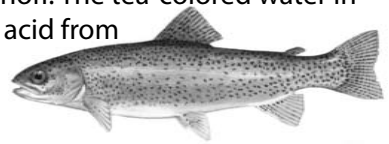
Sandy point bars result from deposits of sediment caused by erosion of river banks. As the outside banks of meandering streams erode, point bars are formed by sand or silt deposited on the inside bends, eventually changing the course of the stream. Look for animal tracks on this sand bar.



## Toms River and Trout Fishing

14.

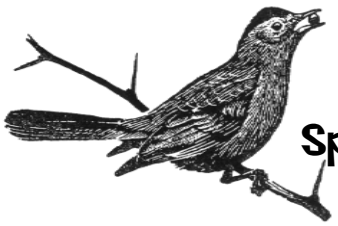
The New Jersey Division of Fish and Wildlife stocks 3 ½ miles of the Toms River with Brook, Brown, and Rainbow Trout. Trout favor cool, clear, running water. The roots of trees in the streamside forest filters silt and sediment from storm water runoff. The tea-colored water in Pinelands streams is caused by tannic acid from leaves, and by the iron content of the water.



## Borrow Pit and Swamp Causeway

15.

The soil was mined ("borrowed", but never replaced) from this area to create a swamp causeway. Old roadways through a swamp were typically constructed with a corduroy base, and covered with sand and gravel. The elevated roadways were covered with "turf", squares of rooted shrub mats pieced together to prevent wash outs. Look and listen for Catbirds along the roadway.



## Spring House

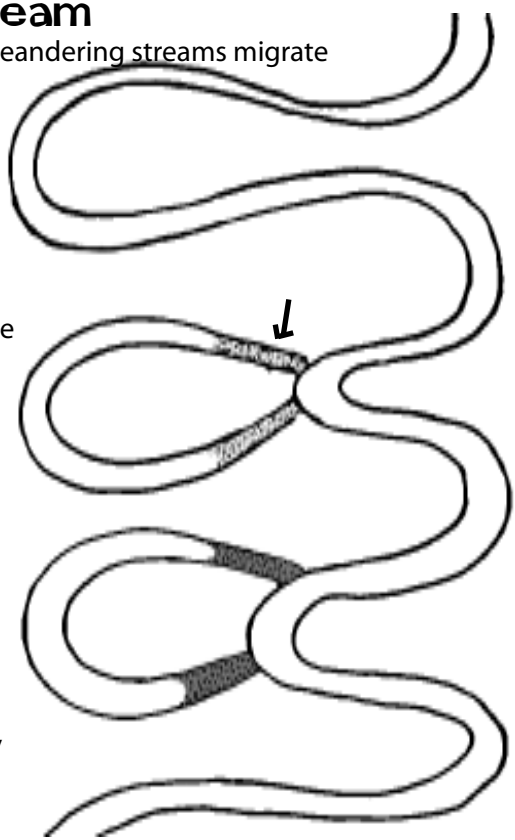
16.

Spring houses were traditional, outdoor "refrigerator" sheds built over a spring or wetland seep. The thick walls were surrounded by cool, wet soil, and had shelves mounted above the waterline to store food. The spring house was built partially underground with thick walls which kept it continuously damp and maintained a constant cool temperature of about 55 F.

17

## Meandering Stream

Winding over a floodplain, meandering streams migrate due to fluctuations in stream flow, resulting in continual deposits of sediments on one side of the stream and erosion of existing stream banks on the other side. The water flows more swiftly along the outside of the curve of the channel than on the inside, causing the loop in the channel to continue to grow. Over time, the stream flow may erode the neck of the loop, cutting it off from the stream completely, and forming an oxbow lake.



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## Oxbow Lake

A crescent-shaped "lake" may be formed in a meandering stream through constant erosion and sediment deposition. Oxbow lakes are named for their resemblance to the bow part of the harness yoke traditionally used by teams of oxen. Once the water supply to the neck of the loop in the stream channel is blocked, aquatic plants, shrubs, and trees will sprout. The gradual buildup of silt deposits will transition the lake into a swamp.

## Wetlands FUN FACT

Wetlands are Thirsty for Runoff One inch of rain falling on 1 acre of pavement produces 1 million gallons of stormwater runoff. An acre of wetland can store 1–1.5 million gallons of water. Wetlands are a valuable resource for preventing runoff, flooding, and pollution.

## Wetlands Soils and Groundwater

19.

The acidic soils found in the lowlands here are classified as "Berryland." These soils are sandy, poorly drained, and subject to frequent flooding. Except during drought periods, the water table is at or near the surface. Berryland soils have very limited uses for any type of development due to saturation and root-matted organic content. Cranberry bogs, blueberry fields, and aquifer-fed ponds utilize Berryland soils.

## Maple Sugar Bush

20.

Each year in late winter, Native Americans tapped maple trees with a tomahawk chopped "V" wound. Later, a hollowed out sumac branch was used as a straw to direct the sap into hollowed-out logs. They evaporated the sap into syrup by placing hot rocks into the wooden "buckets". Maple syrup is still made in many areas using traditional methods. In 2005, young maple trees were planted to reforest the sugar bush.

## Clues to the Past

21.

What do you think that this structure was used for? We know that the Holman family operated a farm on this site beginning in the early 1700's. In the 1930's, the New Jersey Division of Fish and Wildlife established the State Quail Farm here. It is uncertain whether the structure was used as a smoker to cure meat, or as an incinerator.


**New Jersey Forest Service operates the Forest Resource Education Center (FREC) located in Jackson Township**. The FREC site encompasses 660 acres of forested uplands and hardwood swamps along the headwaters of the Toms River. The FREC strives to teach and practice forest stewardship - managing New Jersey's forest resources so that we have healthy trees and forests, clean air and water, and places to learn and enjoy the outdoors.

GROWING The New Jersey Forest Tree Nursery utilizes 45 acres of the FREC site to grow and process over 300,000 tree seedlings yearly for reforestation and conservation plantings.

TEACHING FREC Interpretive Center staff provides free comprehensive interactive programs about the environment for schools, scouts, and civic groups.

HAVING FUN Recreational opportunities are available on the trails for hiking, nature photography, trout fishing, horseback riding, and mountain biking.

**Forest Resource Education Center**

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