

# **SELF-GUIDED NATURE TRAIL IN FARM RIVER STATE PARK**



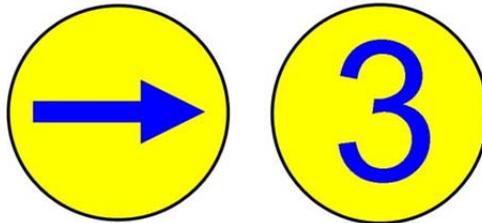
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At 62 acres Farm River State Park is one of Connecticut's smaller parks, but it offers an excellent opportunity to observe a coastal marine environment and its adjacent woodland. The park's close proximity to a metropolitan region also makes this protected bit of the natural world unique. It is hoped that by using this Trail Guide to explore the park's Nature Trail you will gain greater understanding of, and enjoyment from, this unusual little park.

The trail requires approximately an hour to walk. With the exception of two very short side trails, the nature trail is easy, level walking. The two short side trails gain approximately 25 feet of elevation and are easily negotiated, **but caution should be used when approaching or standing at the overview sites. Proceed carefully at your own risk.** All trails require suitable shoes.

The Nature Trail is well marked with blazes consisting of blue numbers or arrows on yellow circles. The numbered trees or rocks beside the trail are matched with the numbered paragraphs in this booklet. When you reach a numbered tree or rock look up the matching number in this Trail Guide and read about the natural features around you. If you come upon an arrow blaze, turn in the direction the arrow points to find the next Nature Trail station.



To fully experience the marine aspects of the park, your visit should be as close to low tide as possible. This will allow you to observe the unique plants and animals living in the various tidal zones of the marine environment. Low and high tides occur approximately 50 minutes later each day. One way to determine when low and high tides will occur is to check the Weather Page in the New Haven Register. This newspaper publishes these times daily. Another way in which to find the times of low and high tides is to access the following website:

<http://www.weatherforyou.com/reports/index.php?forecast=tides&pands=06512>

The natural features covered in this guide have necessarily been limited to things than can be seen in all seasons. However, in the proper season look for the many flowers, birds, insects, and other wildlife which make their home along the Farm River. To help you observe shorebirds and other animals that frequent the park, it is suggested that you bring a pair of binoculars and possibly even a bird identification book.

The Self-Guided Nature Trail is reached by walking the ¼ mile park access trail. This trail leaves from the parking area of the North Entrance of Farm River State Park, located on Route 142 in East Haven.

The Self-Guided Nature Trail begins where the park access trail joins the Brown Access Road. At this point, turn to the right and follow the Brown Access Road to its junction with the Wheaton Access Road. Follow the Wheaton Access Road for approximately 200 feet as it curves to the left. Look for the turn blaze (an arrow) on the right that marks the turn to the right. This leads you to the first point of interest.

We welcome you to the Nature Trail and ask that you leave our natural environment undisturbed by your passing.

**1. WHITE OAK (*Quercus alba*) and RED OAK (*Quercus rubra*)** – All oaks belong either to the white oak group or the red oak group. If you can learn to place an oak into one of these two groups, you have taken your first step in identifying the oaks.

This young tree with the station 1 blaze on it is a white oak (*Quercus alba*). You will see rounded lobes on its leaves and light gray bark. Walk 25 feet more and you will find on your right a red oak (*Quercus rubra*) (also labeled as station 1). Notice its leaves have pointed lobes and its bark is a darker color than that of the white oak.



White Oak Bark



White Oak Leaf

Red Oak Leaf



Red Oak Bark

**2. DOUBLE (FORKED) TRUNK RED OAK TREE** – This is a red oak tree with a double (forked) trunk. Several trunks on the same tree often produce an interesting pattern. When a tree grows from a seed it will, under normal conditions, produce just one trunk. However, under certain other conditions several trunks might occur. For example, if the main trunk is cut off more than one sprout may come up from the stump. If an insect damages the terminal bud, a tree with two or more trunks will grow. Or, if disease kills the main trunk, the stump may put up several sprouts some of which will grow into new tree trunks.

**3. WHITE PINES (*Pinus strobus*) STRUGGLING TO SURVIVE IN LOW LIGHT** – Just ahead, 10 feet off the trail on the right is a young white pine tree. When given enough room and sunlight, white pines grow into tall, straight, graceful trees. Their trunks were used in colonial times as masts on tall ships and the wood continues to be an important building material today. Even the seed the white pine produces is a valuable food source for numerous woodland animals. You can identify that this young tree is a white pine by counting the number of needle-shaped leaves in a bundle. There will be five, easy to remember as there are five letters in the word white. White pines generally grow more slowly in the low light of the forest's understory than do hardwood trees such as oaks and maples. However, if the mature pitch pine standing immediately next to the young white pine should topple down, then enough of the canopy may be opened so that the white pine can grow rapidly enough to outcompete its neighbors.



**4. LOW BUSH BLUEBERRIES (*Vaccinium angustifolium*) –**

Surrounding this tree is a favorite food of many forest mammals and birds, the ripened fruit of the low bush blueberry. These low growing shrubs produce their fruit from June through August. These shrubs grow more robustly in bright open areas, but will also grow in shaded forests.



**NOTE:** The Nature Trail makes a turn to the left as a side trail uphill.

**5. PITCH PINE (*Pinus rigida*) –** Pitch pine is a tough, fire-adapted, medium sized pine tree characteristic of poor, sandy soils and rocky terrain. Its highly resinous wood is quite resistant to rot and so has been used in such projects as ship building and production of railroad ties. Notice that the pitch pine's needle-shaped leaves occur in bundles of three. The leaf bundles grow on the ends of branches, but these leaf bundles can also sprout directly out of the trunk. The pitch pine tree has thick, fire-resistant bark that breaks into large plates as it matures giving the tree a very distinctive look.



**USE CAUTION AS YOU APPROACH STATIONS 6 & 7. THESE OVERVIEWS END IN A STEEP CLIFF.**

**6. OVERVIEW OF SALT MARSH ZONATION (BASIC FEATURES) – Station 6 is the overview immediately to the left.** Looking down on the surface of the salt marsh below you can see several typical features of a Connecticut marsh. Bisecting the marsh are straight-edged mosquito ditches and curving tidal



creeks. Covering the marsh surface is its dominant plant, grasses. The type of grass in any particular location is determined by the amount of time that particular patch of ground is covered by tidal water.

Standing upright along the edges of mosquito ditches is smooth cord-grass (*Spartina alterniflora*). Smooth cord-grass can withstand being flooded by salt water twice a day. At slightly higher elevation is salt meadow cord-grass (*Spartina patens*). This grass is a lighter green color than the smooth cord-grass. By mid-summer a weak spot at the base of the salt meadow cord-grass causes it to fall over forming what look to be cowlicks scattered over the surface of the marsh.

**Note:** Follow the arrow to Station 7, the second overview. **Again, proceed with caution!**

**7. IMPORTANCE OF SALT MARSHES AND TIDAL CREEKS** – Salt marshes are at the interface between the ocean and the land, providing an environment that is one of the most productive on Earth. Salt marshes act as nurseries and feeding areas for numerous crabs, shellfish, finfish, birds and mammals. Salt marshes also serve as a buffer zone, protecting the shoreline from damage due to severe ocean storms and hurricanes. In places where salt marshes have been drained and filled for development, the coastline is extremely vulnerable to storm surge and flooding. Another service provided by coastal wetlands is filtering out pollutants and excessive nutrients draining from upland areas, thus allowing cleaner water to enter the ocean environment.



Looking down on the salt marsh from this station you can see a tidal creek making its way into the lower reaches of the Farm River. Tidal creeks have natural curves and so are easily distinguished from the straight-edged mosquito ditches. It is up through these creeks that many types of fish, such as the common mummichog, are carried as the tide comes in. Here they can find shelter and an abundance of food in the form of detritus, algae, insects, etc. Here, also, the predators of these fish (such as bluefish, great blue heron and osprey) can find a meal.

**NOTE:** Retrace your steps back to the main Nature Trail where you will turn to the left.

**8. PRIMARY SUCCESSION ON BARE ROCK** – Ecological succession occurs in several stages all of which can be seen on the large rock outcropping to your right. Succession is a series of continuous changes which occur in a community over a long period of time. The process involves an orderly, gradual replacement of plant and animal groups by new and different groups until the whole character of the community is changed. Each successive stage is able to appear only because the previous organisms have provided a suitable habitat for them. Eventually, a stable group of plants and animals will be reached which is called a climax. In a climax community the same kinds of plants and animals simply replace themselves.



Under normal circumstances, the time needed for a complete successional series to take place in one location can be longer than a human life span. However, we are fortunate to be able to see most of the stages for this type of forest (oak-hickory) on this large boulder outcrop. This is possible because the soil on the bedrock that makes up Farm River State Park is very thin and may be removed by periodic climatic disturbances such as hurricanes, thus setting the stage for the

process of succession to begin anew. The result seen here is a patchwork of rock exposures of different ages that represent different stages of succession.

The most prominent stage seen on this rock outcrop is the earliest stage, which consists mainly of blue-grey patches of lichens and small, low-growing clumps of mosses. Only these organisms and other small plants can survive here because the soil is not yet deep enough for larger plants to take root.



In some of the cracks and crevices of these two boulders we see later stages of succession consisting of patches of much larger mosses and grasses, shrubs, and even some young trees clinging precariously to the rock. These larger plants can now take root because enough eroded material has been trapped by earlier stages to allow a deepening of the soil.

**9. SUGAR MAPLE (*Acer saccharum*)** – The sugar maple is almost synonymous with New England because of its vibrant autumn color and production of maple syrup. Sugar maple trees are usually found inland on hillsides of northerly exposure and moist soils. However, the dry outcrops and south-facing woodlands of Farm River State Park are not a very favorable environment for the sugar maple, making this specimen something of a rarity here in this forest of oaks, hickories and pines.



**10. MOCKERNUT HICKORY (*Carya tomentosa*) AND PIGNUT HICKORY (*Carya glabra*)** – Here, side-by-side, are two types of hickory trees; a mockernut hickory is on the left and a pignut hickory is on the right. Their wood is hard and dense making it useful for such items as tool handles, skis and firewood. The nuts of certain hickory trees are sweet and edible, but the nuts of other types of hickories are bitter and eaten only by wildlife, such as deer and squirrels. The easiest way to differentiate between the two types of hickory trees here is to examine their leaves. Hickory trees have compound leaves. Compound leaves are made

up of leaflets attached to a flexible, greenish main stem. The mockernut hickory tree on the left has 7 – 9 leaflets in one leaf and the underside of each leaflet is quite hairy or “wooly”. The pignut hickory on the right has 5 – 7 leaflets in each leaf and the underside of the leaflets is hairless.



Mockernut Hickory

Pignut Hickory

**NOTE:** The trail turns to the left to reach station 11.

**11. SALT MARSH TO LAND INTERFACE** – If you have arrived here at low tide you may see wading birds in the now low water in the distance. Birds such as the great blue heron (*Ardea Herodias*), great egret (*Ardea alba*) and snowy egret (*Egretta thula*) may sometimes be seen wading in coastal marshes as they carefully hunt for small fish and other small animals. Scanning the marsh as its elevation increases and becomes the dry land you now are standing on, you will see that the marsh grasses are replaced by shrubs and eventually small trees. Two of the transitional shrubs at your feet are marsh elder (*Iva frutescens*) and beach rose (*Rosa rugosa*). Marsh elder stabilizes this transitional edge of the marsh and provides a place of refuge for small mammals and birds such as the red-winged blackbird. Beach rose flowers in July forming pinkish-red flowers which then become bulbous rose hips filled with seeds. Here on the rocky outcrop on which you are standing you can find the post oak (*Quercus stellata*); it is small and tough enough to grow on poor sites such as this. The post oak has leathery leaves with hair on the undersides and rounded lobes. These very tough leaves are shaped somewhat like a Maltese cross. The eastern redcedar (*Juniperus virginiana*) and pitch pine (*Pinus rigida*) are also found on this soil-poor site.



Great Egret



Marsh Elder



Beach Rose



Post Oak

**NOTE:** Retrace your steps back to station 10. Turn right walking 15 feet to station 12.

**12. MICROHABITAT** – In the hole near the base of this tree note the tiny reservoir of water. This is present most of the year and serves as a perfect breeding site for mosquito larvae.



**NOTE:** If you wish to see a view of the Farm River State Park marina, take the right fork of the trail. However, if you wish to continue to station 13 take the left fork retracing your steps until you reach a turn arrow. This arrow guides you to again take a left fork in the path.

**13. AMERICAN BEECH (*Fagus grandifolia*)** – One of the most handsome deciduous trees in the forest is the American Beech. Its smooth, blue-gray bark is unmistakable, but so often shows the scars of thoughtless persons who carve their initials on the trunk. Acts of vandalism such as this detract from the natural beauty of our forests, and the wounds leave the tree open to infection and invasion by fungi, bacteria and insects.



Natural Beech



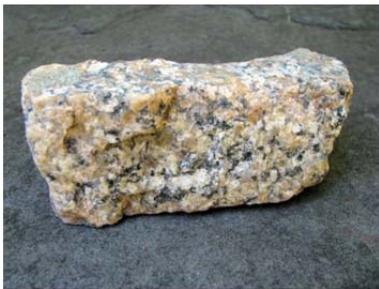
Vandalized Beech



**14. GLACIAL CREATED CAVE** – This station is on the left and marks the entrance to a small cave. This cave is the result of the deposition of boulders from the last continental glacial period some 15,000 years ago. Small caves such as this are often used as periodic homes by many small mammals such as foxes, raccoons, rabbits, and chipmunks.

**NOTE:** Continuing on for about 50 feet, a left turn arrow points you back to the main park road. Once on the main park gravel road, turn to the right. Continue until the gravel road becomes paved. At this point, walk down the wide grass-covered road on your left.

**15. COMMON REED (*Phragmites australis*)** – On your left is the common reed, often referred to as *Phragmites*. It is a non-native, invasive species and is one of the largest grasses found at the drier margins of Connecticut wetlands. It spreads rapidly outcompeting native plants, closing off tidal pools and channels, and altering the marsh habitat for fish, birds and mammals alike. Its sharp-edged blades can cut skin, and its dense stands make it difficult for native animals, such as deer and many salt-marsh birds, to penetrate.



**16. LIGHTHOUSE POINT GRANITIC GNEISS** – On your right, the exposed bedrock of Farm River State Park is named Lighthouse Point Granitic Gneiss. Granitic gneiss is a metamorphic rock that was formed when granite was subjected to tremendous heat and pressure. The heat and pressure stretched the large individual mineral crystals in granite into the bands of minerals characteristic of gneiss. Some of the minerals this granitic gneiss rock contains are potassium feldspar, oligoclase, quartz, biotite, magnetite and muscovite. (US Geological Survey)

**17. MUDFLATS AT LOW TIDE** – If you have arrived here at low tide, you will be able to see tidal mudflats exposed. Moving over the surface of these mudflats are hundreds of slow moving mud snails (*Ilyanassa obsoleta*) foraging for algae and decaying plant and animal matter. Somewhat camouflaged by the brown mud is the brown alga known as rockweed (*Fucus sp.*). This seaweed contains air bladders to help its fronds float up toward the sunlight when covered by the incoming tide. If you look carefully, you will also see ribbed mussels (*Guekensia demissa*) protruding from the dark brown mud and the green alga, sea lettuce (*Ulva sp.*), lying prone on the mud's surface waiting for the tide to return when once again its sheer, leafy green body can float upright.



## 18. LOOKING OUT AT THE FARM RIVER ESTUARY –

The Farm River runs 16 miles, from the towns of Wallingford, Durham and North Branford in the north down to the area of Kelsey Island where it enters Long Island Sound. The Farm River begins as freshwater in its northern reaches and flows into tidal salt water as it winds its way south. This, by definition, makes the Farm River an estuary. Estuaries are highly productive ecosystems; they and their associated wetlands provide a nursery, foraging area and shelter for numerous fish, invertebrates, shellfish, birds, plants and mammals. The Farm River also provides food and a resting place for migratory birds coming from as far north as Canada.



**NOTE:** At this point, turn back the way you came, and you will find station 19 on your right.

## 19. FIDDLER CRABS AT LOW TIDE AND NESTING OSPREY –

### Fiddler Crabs:

If you have arrived during warm weather at low tide, you will see the exposed muddy bank of a tidal creek and, as you approach, dozens of small crabs scurrying toward their burrows. These crabs are fiddler crabs (*Uca* sp.). Female fiddler crabs have claws of equal size which they use to scoop up algae and bits of detritus to eat. However, male crabs have one small claw and one over-sized claw. The smaller claw is used for eating but the male crab uses his larger claw to attract mates and defend his territory. The burrowing of fiddler crabs provides a vital service to the low salt marsh. Low marsh sediment is saturated with water and so is oxygen-poor. The burrowing of fiddler crabs mixes these sediments bringing in much needed oxygen and nutrients for use by the roots of the low marsh plants.



### Osprey:

If you look to your left, you will see a tall pole with a platform on top erected in the marsh. This was built as a nesting site for osprey, a hawk that dives and catches fish in relatively shallow water. The osprey, as well as other birds of prey such as the bald eagle and peregrine falcon, faced near extinction in the 1960's and 1970's due to the use of the pesticide DDT. This pesticide washed from the soil into waterways and entered the food chain there. Top predators, such as the osprey, received concentrated amounts of the pesticide

when feeding on contaminated fish. Once in the body of the osprey the DDT interfered with the bird's ability to produce adequate calcium for its egg shells. As a result, when the parents would incubate the egg it would crack, killing the chick inside. DDT was banned in 1972 and the ospreys, bald eagle and peregrine falcon have all made significant strides in rebuilding their populations.



The nesting platform that you see here helps to offset the loss of natural nesting sites due to human encroachment on osprey habitat. If you are here in the breeding season between March and August, you will likely see osprey nesting and raising chicks on this platform. It is a small success for a species that has faced great challenges in the recent past.

**NOTE:** Continue back along this grassy road until you again reach the main gravel road. Here, turn right. As you walk along, you will see a wall of eastern redcedar (description below) lining the right side of the road.

**EASTERN REDCEDAR (*Juniperus virginiana*)** – This aromatic evergreen tree is found in open, sunlit areas and dry soils along the Atlantic coast. Its disease and decay resistance makes it an excellent tree for construction, fencing and furniture. Adding to its monetary value, cedar oil is used for medicines and perfumes. Beginning at the end of July you will find these trees covered with bluish-white berries (they are actually cones) which are a valuable source of food for many species of birds throughout the fall and winter.



**NOTE:** Continue along the main gravel park road until you see a turn arrow to the right.



**20. UPROOTED TREE WITH EXPOSED ROOTS** – Ten feet into the woods is a large uprooted red oak tree that was toppled by strong winds from a previous coastal storm. Note the massive amount of trapped soil and rock that was lifted by the roots of the tree as it fell down. It is not uncommon for large trees to be toppled where the underlying bedrock is close to the surface and the topsoil is very thin, causing the roots to spread out horizontally rather than penetrate deep into the soil. Over the course of many years this tree will die and begin the process of

decomposition by microorganisms, insects, and other small animals. Eventually, the organic matter of the tree will be returned to the soil to support new organisms.

**NOTE:** About 70 feet further down the path The Nature Trail makes a turn to the right as a side trail uphill.

**USE CAUTION AS YOU APPROACH STATION 21. THIS OVERVIEW ENDS IN A STEEP CLIFF.**

**21. OVERLOOK VIEW OF MOSQUITO DITCHES** – In the 1860's Civil War soldiers returning from the South brought malaria back home with them to New England. In the final years of the nineteenth century, it was discovered that malaria is transmitted from person to person by the *Anopheles* mosquito. To reduce the breeding habitat of the mosquito vector, drainage ditches were dug in salt marshes. Looking down on the surface of the salt marsh, mosquito ditches are still visible as long, rectangular depressions in the grass.



Although malaria was eliminated from the U.S. in the mid-twentieth century, ditching continued in Connecticut until the 1980's as a way to reduce nuisance mosquito populations. Although not seen here, today's more ecologically sound mosquito prevention techniques involve constructing deep ponds that house large populations of native minnows. During spring tides, which occur twice a month, the minnows are washed onto the surface of the marsh where they feed on mosquito larvae.

**NOTE:** Return to the main Nature Trail and turn right.

**22. HOLLOW LIVING TREE** – The object of interest at this number is a hollow oak tree. It is often difficult for people to believe that the entire core of a living organism can be absent and yet the organism remains alive. Such is the case here. The vital living tissues of a tree are located just beneath the bark in a region known as the cambium layer (or sapwood). The older central portion of a tree, sometimes called heartwood, has lost its ability to transport nutrients and water and so is not functional. This leaves the heartwood of a tree vulnerable to destruction by organisms such as insects and fungi. The result may be a tree such as this, which because of its functioning sapwood is still alive even though most of its heartwood is gone.



**NOTE:** Continuing on the Nature Trail you will reach the main gravel road. The right fork takes you back to the park access trail on the left.



**POSSIBLE BIRDS** – The following list is a sample of the many birds that may be observed either in the forest, salt marsh, or tidal mud flats of the park:

- Gulls
- Cormorants
- Egrets
- Terns
- Plovers
- Sandpipers
- Red-winged blackbirds
- Herons
- Grebes
- Swans
- Swallows
- Grackles

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We hope that you have enjoyed this Self-Guiding Nature Trail. Tell your friends of its possibilities. Further explore other items of nature, as this trail guide provides only a taste.

# Farm River State Park Nature Trail Map

