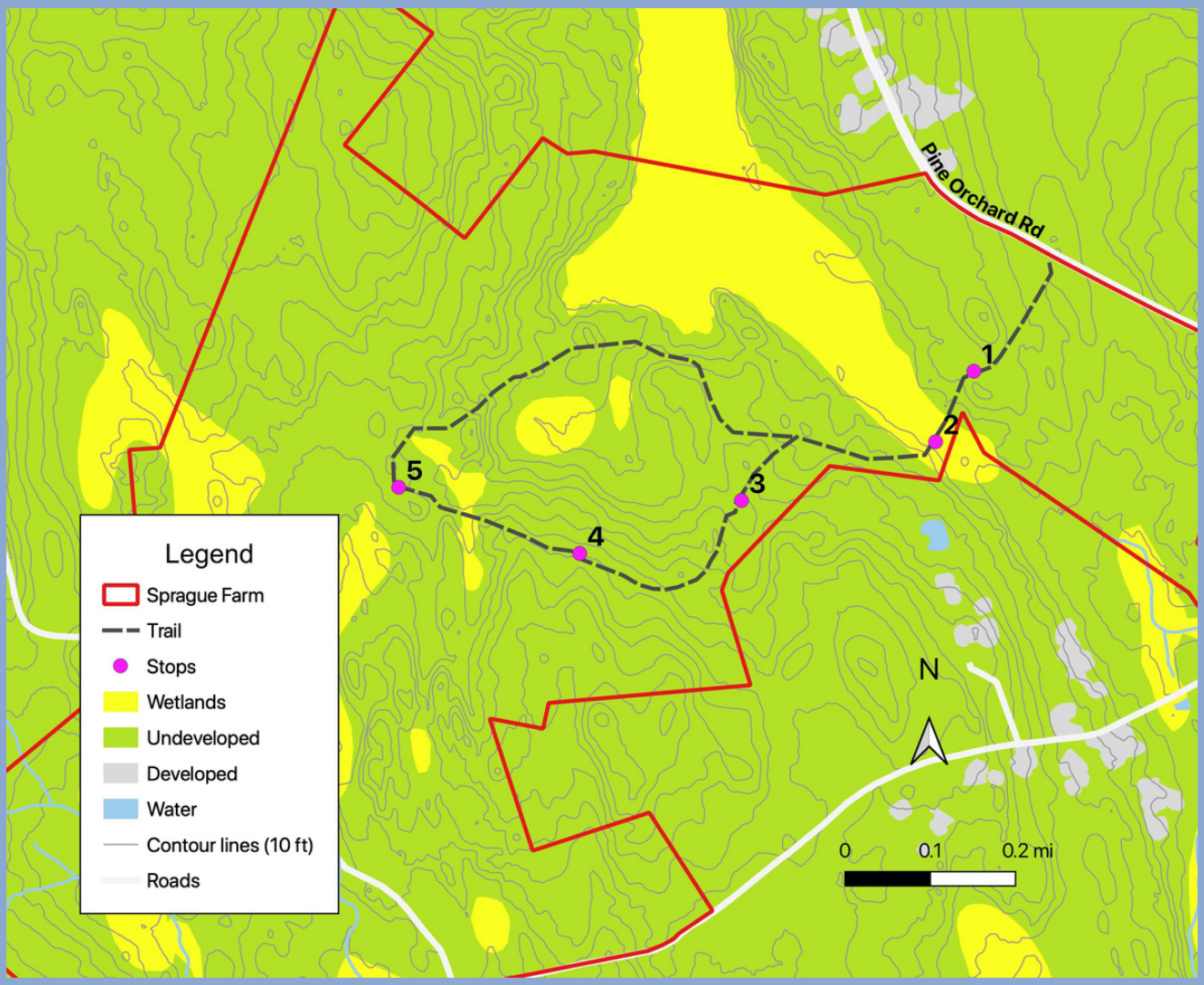
SPRAGUE FARM

Address: Pole #33, Pine Orchard Road, Chepachet, RI

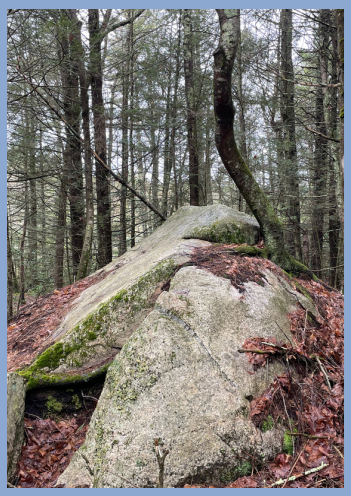
Length: 2 miles

Difficulty: mild to moderate



Welcome to the Glocester Land Trust's Sprague Farm property! This is a special place with a special connection to the past—from ice ages to sheep farms and much else besides. Follow along with the stops in this guide for a glimpse of some of Sprague Farm's many pasts.

STOP 1 - GLACIAL BOULDERS



From the start, this visit to Sprague Farm will be defined by the ghost of something that was here almost yesterday, geologically speaking. The Laurentide Ice Sheet, which formed during the height of the last ice age, covered northeastern North America as far south as New York City in an ice pancake that averaged 2 miles thick. Just 20,000 years ago we were under that ice sheet here in Rhode Island. Signs of it are all around—including this boulder and many others like it that dot the landscape at Sprague Farm. These rocks were "entrained" or caught up in the ice sheet and dropped out of it as the ice melted. Rocks like these are often termed "glacial erratics." A strict use of the term, however, confines it to boulders that are geologically "out of place," made up of different minerals than the bedrock they sit atop. Because we can't be sure if this boulder and the others at Sprague Farm meet this definition, we could just call them "big old glacial boulders." In any case, they offer striking testament to our recent, icy past.

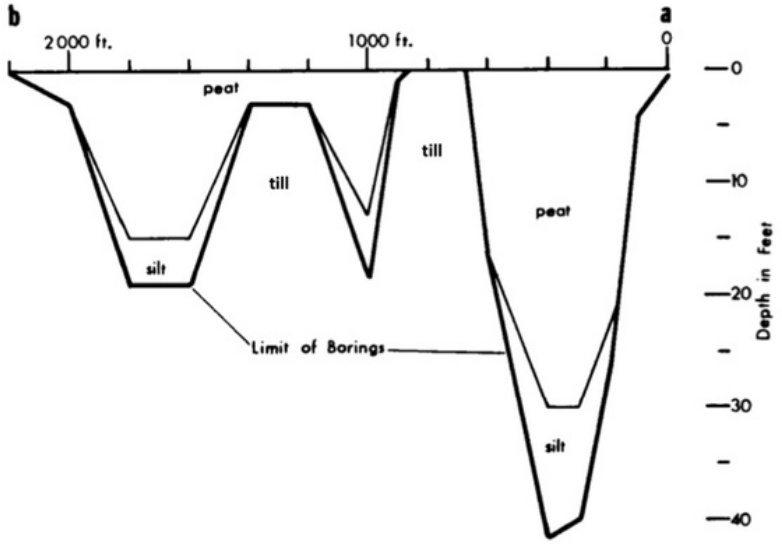
STOP 2 - CEDAR SWAMP STORIES

Welcome to Sprague Farm's cedar swamp! Part of this swamp's history has to do with glaciers, too. All across the landscape of Sprague Farm, what geologists call "till" blankets the underlying bedrock, often only a few inches beneath the surface soils. Till is an unsorted mix of cobbles, gravels, and finer sediments—all of the "stuff" that melted out of the ice as the ice sheet retreated. If we took a vertical slice out of this swamp, we could expect to find till at the bottom. But there is more than till to this swamp's "stratigraphy"—the layers that make up its history.

As the glaciers retreated, running water flowed from the ice front and moved through the low places in the landscape, depositing silts and clays along the way. Here, a pre-existing depression made an ideal spot for silts to settle; after the ice sheet retreated further, a cold, sediment-rich post-glacial lake would have been left behind. Over time, this lake gradually filled in with peat—partially decomposed organic matter—as plants grew and died. Eventually it became the swamp it is today, with hardy trees and woody plants growing atop waterlogged, peaty soils. The cross-section below shows how a similar sequence of events left their mark on a swamp in southeastern Massachusetts—and gives a sense of the swamp as a document with layered histories hiding beneath its surface.

STOP 2: CEDAR SWAMP STORIES

Swamp cross-section – Lincoln, MA



Source: O'Brien, 1977

The northern whitecedar, Thuja occidentalis, is a particularly special part of this swamp—look for its weathered, evergreen branches tipped with scale-like needles, maybe just visible from where you stand, but more abundant in the deeper reaches of the swamp. The cedar is an extremophile, thriving under conditions of adversity. It is also a connection to another meaning this place holds, one much closer to us in time and personal significance.

During the late 1600's, tensions between the native tribes of southeastern New England and British colonists erupted into King Philip's War. This conflict, though often-overlooked today, was an appalling one. It ended with the near-destruction and enslavement of multiple indigenous nations. Some of the most important episodes of the conflict played out in cedar swamps, because they were places of refuge for native communities—and, ultimately, the sites of massacres carried out by colonists.

STOP 2: CEDAR SWAMP STORIES

Less than ten miles to the east as the crow flies is Nipsachuck Swamp, the site of one of the most devastating such encounters, which took place in the summer of 1676. The "battle" was a largely one-sided encounter, during which colonists and their allies from other native tribes "within 3 hours slew and tooke prisoners 171." Below is a historical map of Smithfield with Nipsachuck Swamp's location marked out. While painful, these associations are part of this landscape's history, and deserve to be remembered.

Town of Smithfield - 1831

Source: A Topographical Map of the State of Rhode Island and Providence Plantations, 1831, James Stevens
URL: http://www.old-maps.com/z_bigcomm_img/ri/town/1831_StateMap/Smithfield_1831_web.jpg

STOP 3: TREES ON THE MOVE

Further reminders of Southern New England's past are alive here in the form of trees and woody plants that are growing partly "out of place," away from the forest communities where they are most at home. Southern New England is located at an inflection point along a continuum of forest types that stretches up and down eastern North America. In northern Maine and across southeastern Canada, coniferous "boreal" forests made up of spruce and fir emerge at the southern edge of the treeless tundra, thriving in extreme cold and deep snow. Further south, broadleaf trees like aspens and birches enter the mix; in northern New England these trees are joined by a more diverse suite of hardwood species including maples, ashes, cherries. Around northern Rhode Island this community starts to change once again, with trees like pines, oaks, and hickories—which tolerate hot and dry conditions—increasingly well-represented.

In a way, this continuum is not only spatial, but temporal. Trees and tree communities migrate in response to changes in climate—and the last 20,000 years have seen a series of dramatic climatic fluctuations as the Earth has moved from a glacial to an interglacial period. Pollen records show that the trees of eastern North America have moved with the changing climate, following the receding ice sheet and the newly exposed land it left behind. Here at Sprague Farm, we can see a number of tree species that are growing at the warmer edge of their range, reminding us of the northern forests that may once have been more dominant here. Below are photos and key identifying features of three common northern forest trees that can be found at Sprague Farm (perhaps close to where you're standing right now!). See also the map of where northern hardwood forests predominate today—can you imagine those green shapes shifting and moving over time?

Source: Conservation Gateway
URL: https://www.conservationgateway.org/ConservationByGeography/NorthAmerica/UnitedStates/edc/Documents/HabitatGuides/maps/42.jpg

STOP 3: TREES ON THE MOVE

Yellow birch

Leaf arrangement – alternate (stems do not emerge from branch opposite each other)

Leaf shape – "ovate" (shaped like an oval).

Leaf margin – "doubly serrate" (edge of the leaf is toothed, with both large and small teeth)

Twig – strong wintergreen flavor when crushed or chewed

Bark – golden-yellow to greyish-black, peeling in fine horizontal strips

Growth form – a medium-sized tree, often grows on stumps, rotting logs, and boulders

Striped maple

Leaf arrangement – opposite (stems emerge from branch opposite each other)

Leaf shape – 3-lobed (bottom of leaf rounded, tip of leaf divided into three triangular points), resembles a "goose's foot"

Leaf margin – "finely serrate" (edge of the leaf is toothed, teeth are very small)

Bark – light greenish with reddish-brown vertical stripes

Growth form – a large shrub or occasionally a small tree, opposite-branching and lanky

Eastern hemlock

Leaf features – evergreen, with small, soft needles <1/2 in long arranged in rows along the twig. Needles are flat in cross-section, with two lines of tiny white "stomata" (breathing pores) running along their undersides. Fragrant when crushed.

Bark – Red-brown to grayish-brown, with pronounced furrows and ridges on older trees.

Growth form – Grows slowly and lives a long time. Very "shade-tolerant." Young saplings can survive for decades in the understory. When large, hemlocks grow with a solid, even majestic form; live branches extend down the trunk to make a full, deeply-shady "crown."

STOP 4: SHEEPISH HISTORY

You are now standing in an area crisscrossed by old stone walls and other signs of past land use, like large, solitary “wolf trees” whose gnarled crowns suggest that they grew in open fields. It is hard to decipher stories from these wordless landmarks, especially in the absence of historical documentation. Many of the people who worked this land are, to us, unnamed, as are the crops they planted, the animals they kept, and the markets they participated in. But some parts of their lives and livelihoods can be reconstructed with a little creativity and deductive reasoning—and in this regard, landscape signs can serve as a starting place.

Across New England, stone walls generally date from a relatively uniform time period, roughly the mid- to late-1800’s. What happened during this time to spur a stone wall building boom? Oddly enough, the answer starts in 1806, when the Napoleonic Wars came to Spain. For centuries, Spanish authorities had managed to maintain a very profitable monopoly on a special breed of sheep, the merino. The merino sheep's superpower lies in the fineness and length of its hairs; when carded and spun into wool, these long, fine fibers produce a strong, soft yarn, without the itchiness caused by the short, blunt fibers of most other sheep breeds.

In 1810, as Spain's ability to enforce its embargo collapsed, the United States Ambassador to Portugal brought a herd of 3,000 merino sheep to his farm in Vermont. This act opened a Pandora’s Box of sheep! It was particularly significant because US domestic manufacturing of woolen cloth was about to take off. Rapid advances in mechanized cloth manufacturing had been underway since the 1790’s (with Rhode Island a notable center of innovation). But in 1812, another war (the aptly named War of 1812), led to a US trade embargo with Europe. This meant that the nation had to supply its own finished cloth for the first time in its history. Two years later, a refined “power loom,” which could produce cloth at a pace unimaginable just a decade before, was brought into use in Waltham, Massachusetts. The stage was now set for an unprecedented boom in demand for merino wool.

A "wolf tree" and stone wall at Sprague Farm

STOP 4: SHEEPISH HISTORY

Over the next 30 years, historians estimate that more than half the total land area of central New England was clearcut for sheep pasture. All of that pasture needed to be fenced, and as wooden fences started to rot, stone walls replaced them. After all, the materials (glacial till) were close at hand! A landscape historian writes of this era: "Stone walls appeared over time and were built mostly wall by wall as the supply of labor and of stones worked up by frost and erosion permitted… most stone walls on rocky upland slopes were low-maintenance stock-management fences."

A scene from Colebrook, Connecticut in 1838

Here at Sprague Farm, we can imagine that the stone walls around us once fenced in pastures where extra-woolly sheep grazed. A few of the trees that grew in these pastures remain with us today, living connections to a long-ago past. The stone foundations of sheds, outbuildings, and farmhouses help to complete the picture. They also recall the fate of the merino boom: as prices fell, more and more land was exhausted to provide pasture for more and more sheep, whose wool sold at a lower and lower price. Eventually, it went bust.

For many New England farmers, this was a first encounter with high-volume commodities markets. In the end, the markets were not kind, and the sheep bust was an important factor in pushing these farmers and their children into urban areas or westward towards the frontier. While common to most of the southern New England landscape, this is a story that has largely been overlooked or forgotten. Perhaps Sprague Farm can be a site for remembering, and also a call to inquire into a past that in some ways looks unexpectedly familiar: defined by wars, markets, personal aspirations—and sheep.

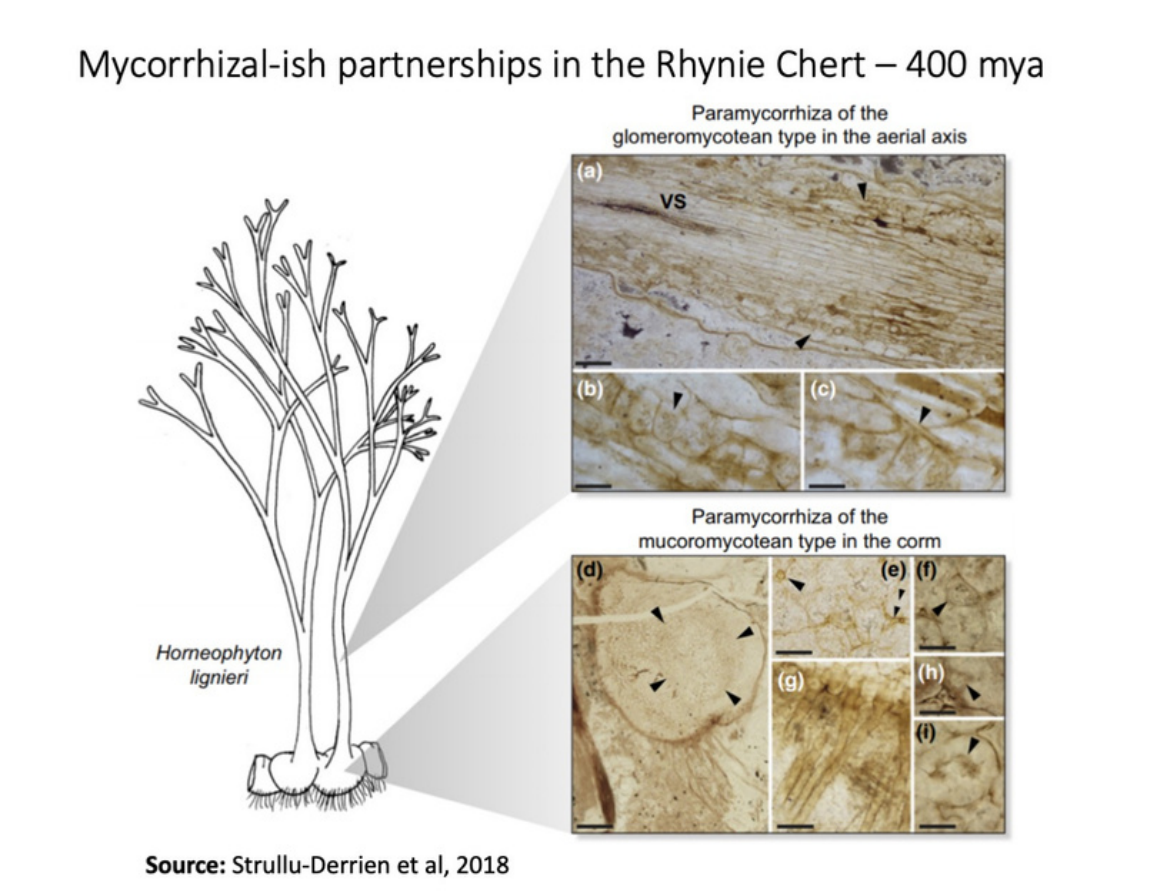
STOP 5: MOUNTAIN LAUREL SECRETS

As you descend a small hill towards a brook, see if you can observe the gnarled, waxy-leafed shrubs growing along the sides of the trail. These are mountain laurel, Kalmia latifolia, and they are an extra special plant to find here at Sprague Farm. If you happen to visit in mid-June, you may be lucky enough to spot their pink, origami-like flowers in bloom. Whenever you visit, this species has an interesting story to tell. It thrives in harsh conditions, and especially enjoys itself on nutrient-poor, acidic sites. While it can be found across Rhode Island, Sprague Farm is almost too cushy for this species to really thrive.

So what allows mountain laurel to live so happily in harsher environments? As it turns out, this plant is partnering with fungi that make structures called mycorrhizal networks—fungal filaments that weave in and out of plant roots and feed plants water and hard-to-access soil nutrients in exchange for sugars from photosynthesis. While mycorrhizal partnerships are common, occuring in over ninety percent of studied plant species, the mountain laurels and their plant family, the Ericaceae or heaths, are connected to a special group of "ericoid-mycorrhizal" partners which join extra-closely with their host plants. These fungal partnerships are a big part of how that beautiful, pink flower comes to bloom on these thin, acidic soils.

STOP 5: MOUNTAIN LAUREL SECRETS

Mycorrhizal partnerships aren't just important in the present; they are ancient, predating the evolution of the laurel, its ancestors, and its ancestors' ancestors. The earliest well-preserved land plants are found in a Scottish rock formation called the Rhynie Chert, named after a village near Aberdeen. This formation preserves plants that are more than four hundred million years old, and it preserves them so well that, when these plants are sliced and put under a microscope, scientists can see the microscopic structures inside their cells! But in the last twenty or so years, scientists have found something unexpected: there are clearly-recognizable fungal structures inside those cells. These plants were closely linked to mycorrhizal fungi (or something very much like them) even though many of them had yet to evolve roots. So the mountain laurel we see today is a link to a much older past than we might first have realized.



This figure shows microscopic views of the stem and primitive roots of a plant found in the Rhynie Chert, with mycorrhizal structures visible (to the trained eye). Look for small, curling structures inside the round cells of (B) or for a long fungal filament stretching between cells in (C).

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Stop 1 - Glacial boulders

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Stop 2 - Cedar swamp stories

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Stop 5 - Mountain laurel secrets

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