The Chamberlain-Reynold Memorial Forest is located off of College Rd. in Center Harbor, NH. This 169-acre forest is owned by the New England Forestry Foundation and has approximately 3.5 miles of trails managed by the Squam Lakes Association. With a variety of habitats and wonderful views from the Squam Lake waterfront, this forest is an excellent place for easy recreational hiking.
A History of Conservation

Founded in 1944, the New England Forestry Foundation dedicated itself to the sustainable management and recreation in New England’s forests. In the wake of widespread clear cutting and lacking government services, NEFF established itself as a league of trained foresters and outdoor enthusiasts that would work with landowners on sustainable practices, while stewarding public forests to keep New Englanders connected to the beautiful forests we love.

The Chamberlain-Reynolds Memorial Forest represents such a forest, allowing public access over 3.5 miles of trails while conserving key areas of the Squam Lake watershed. This property was given to NEFF in 1953 by Mr. John C. Wister, and was named after Allen Chamberlain and Harris Reynolds—friends of Mr. Wister, and active foresters for NEFF. To this day, managing of the natural resources by NEFF and maintenance of the trails and campsites by the Squam Lakes Association (SLA) have kept this wonderful forest open for generations to come and enjoy the wonders of the woods.

Core Values

- Serves the interests of all New England’s citizens by conserving forestlands and promoting the exemplary management of regional forests.
- Operates with openness, transparency, commitment, competence, and integrity.
- Innovates and advances practice in both conservation and forest management so as to maximize its own effectiveness and as a service to the conservation and forestry professions.
- Treats with courtesy and respect all of its constituencies—its benefactors, supporters, collaborators, transaction partners, community partners, peer organizations, government agencies, the news media, vendors and employees.
- Resolves conflict by fostering mutual understanding, leading to collaborative problem-solving.
- Maximizes its impact through partnerships with diverse organizations throughout the region to reach shared goals.
- Seeks double-duty or triple-duty solutions that achieve multiple outcomes from the investment of resources, and thereby leveraging donors’ contributions for the greatest possible impact.
Northern Broadleaf Forest

West Fire Road

With the diverse terrain that New Hampshire offers, there is bound to be a wide range of forest types that cover the landscape. Not all forests are the same, since every tree species has unique conditions that they are adapted to thrive in. By looking at the species of trees dominating a forest, we can make inferences about the conditions that would allow this type of forest to exist.

**Hardwoods and Softwoods**

The temperate climate of New Hampshire supports a wide diversity of plant life. In this part of the forest, most of the trees you see here are American beech, red maple, and paper birch – hardwoods with wide leaves that give New England its vibrant autumn foliage. These trees thrive in areas with rich soil and plenty of moisture, while trees such as oaks and pines tend to prefer sandier, dryer soils.

**A Diverse Web of Life**

The maple, beech, and birch trees in canopy allow plenty of sunlight to stream between their leaves, and the leaves they drop in the autumn provide nutrients to the soil. As a result, the understory of the forest supports a variety of shrubs, ferns, and wildflowers. Additionally, the nuts and seeds from the trees are a food source for mammals such as squirrels and deer. Altogether, a broadleaf forest has a variety of animal residents, and a wonderful diversity of life under its branches. What animals or signs of animals do you see?
Dead Trees & Snags

Beach Trail

Whether from disease, predation by insects, shading in by other trees, or simply old age, trees will die. Over time, the dead tree becomes a useful source of nutrients for organisms that feed on decaying plant matter. Eventually, the force of the wind will either knock the tree down, or snap it in half, making what we call a “snag.” Although relatively uncommon in the forests, snags play vital roles as places for animals to feed, shelter, and survive. See how many snags you can spot on your hike today.

Food for the Forest

The carbon, nitrogen, phosphorus, and other nutrients in every organism are always in flux throughout the ecosystem. Once a tree dies, all of its matter will eventually be recycled back into the forest, by the organisms that break it down for food. Most of the work is done by insects and fungi; ants, borers, and mushrooms will be a common sight on a decaying tree. On a decaying tree, look for species such as chanterelles, oyster mushrooms, artist’s shelf, or hen of the woods.

Shelter for Wildlife

The outer layers of wood in any dead tree are bound to be riddled with holes. The many small holes on dead trees around here are from boring insects, such as overwintering wasps, or the larvae of large beetles. Insects under the bark attract woodpeckers of all kinds; look and see if there are massive, oval holes left behind by pileated woodpeckers. Several species of trees tend to rot from the inside out, turning a large snag into a hollow chimney. The inside makes great habitat for small arboreal mammals, such as opossums and raccoons.
How could a boulder the size of a truck show up in the middle of the forest, miles from the mountains where it came from? All over North America boulders appear miles away from their estimated source, almost as if placed there erratically by some giant. The reason they were able to travel so far reminds us of the geologic history of the Earth that shaped much of our landscape into the form we see today.

**Pleistocene Origins**

Approximately 2.6 million years ago, the world saw the start of a new Ice Age; glaciers made of towering ice (sometimes over a mile thick!) expanded and slid over the land at slow rates for millions of years, pushing, grinding, and spreading dirt as they went. In front of or on top of the glacier would be boulders, picked up from mountains and slowly spread across the landscape.

**Reminders of the Past**

Glaciers during the Pleistocene underwent periods of shrinking and growth over thousands of years, but melted away completely around 11,700 years ago. What they left behind were the markings they made in the landscape, such as rolling flatlands, deep lakes made from melted ice, and giant rocks deposited along what was once the edge of a giant wall of ice.
Swamp Walk

Right at the beginning of the Swamp walk is what’s left of a massive white pine. With its branches in the swamp and its massive roots flung into the air, it’s an impressive sight. Usually when people talk about a tree falling in the woods, they think about a tree that’s dead and decaying, and can’t support itself. Believe it or not, this tree was completely healthy and alive before it fell over; this is the same fate that many large trees share.

Out of their Shadow

When this tree fell, it left some prime real estate for other plants to grow. The competition is now on for the sunny, clear space, which will be taken over by shrubs and ferns, as well as young saplings vying for a space in the canopy. Not only that, but the wood from the tree will become an excellent food source for insects and fungi as it decays. Some species to look out for are ferns, shrubs, or king boletus mushrooms.

Fallen Titans

Take a peek into the hole this tree left from its roots – what do you see? There’s lots of rocks, and surprisingly, not a lot of dirt. Much of New Hampshire is like this, since a great deal of soil was pushed away elsewhere by glaciers. With such a shallow layer of dirt to grow in, the tree will become very top heavy if it becomes too large. This becomes a problem during high winds when large gusts can push a tree so hard that its shallow roots can’t keep it up, and the tree falls down.
Swamp Biodiversity

Swamp Walk

Now that we’re deep inside the swamp, you may notice some new plants, different bird calls, and way more frogs and insects. A habitat like this supports a variety of different species, including many that only survive in swampy, marshy areas. More species means more diversity of forms of life, meaning this swamp has a very high biodiversity. While walking through the swamp, see if you can find some of the species listed below that you only find here, and not on the rest of this trail.

Plants

A few pine trees dot the landscape in the swamp and as you walk deeper into the swamp you find yourself surrounded by shrubs and grasses. In late summer, some of these bushes become more familiar to the untrained eye, when they grow plentiful blueberries. This habitat is also full of colorful wildflowers, which spring into bloom throughout the summer and attract pollinators.

Frogs and Amphibians

Swamps, marshes, and other wet areas make ideal habitat for frogs, newts, and salamanders. Hibernating and dormant amphibians will wake up in the spring as soon as the frost melts, usually in April. Soon afterward the calls of tiny spring peepers, massive bullfrogs, and several other species can be heard throughout this swamp. In the spring, look for clusters of eggs on the surface of calm water.

Birds

The abundance of insects in wetland habitats attracts numerous species of insect-eating birds, whose calls can be heard as they perch on a lichen-covered branch. Listen for the rough trill of a red winged blackbird, the whistling of a veery, or the sharp calls of a waterthrush. If you’re lucky, you may see larger birds, such as a great blue heron.
Not Your Average Plant
A pitcher plant’s leaves are fused together to make a hollow pitcher that’s used to digest their insect prey. As the pitcher fills with rainwater, sweet-smelling nectar attracts flying and crawling insects expecting to find a flower. If an insect falls into the pitcher, the plant will start to slowly digest it, providing the plant with the valuable nitrogen and phosphorus it may not be getting from the soil.

They Don’t Eat their Pollinators!
Between May and June, pitcher plants grow tall, maroon flowers that attract pollinators, like honeybees. The honeybees are not attracted to the dangerous pitcher, since they get a nice meal out of the nectar in the flower instead.

Sphagnum Lovers
Pitcher plants thrive in areas with low-nutrient, basic soils and high humidity. Swamps and bogs the perfect habitat for them, and other plants that like similar conditions. One of these plants is sphagnum moss, so the two are often found together.
Swamps and Squam

Swamp Walk

Here ends the swamp that divides this forest into halves. As you may have seen, this habitat – along with all other types of wetlands - is extremely interesting and full of exciting plants and animals. Not only that, but these are among the most crucial habitat types in all of New Hampshire. Swamps like this one border Squam Lake, and play vital roles in the protection and well-being of the lake as a whole.

Photo Credit: resourcewatch.org

Natural Buffers

Swamps are essentially a very shallow part of lakes, which are full of sandy soil and covered in dense foliage. All of these grassy and woody plants taking root in the soil stabilize the ground, and block the shoreline from eroding waves. During periods of heavy rainfall, swamps absorb extra water and mitigate flooding. As water flows into swamps from the lake and from inland streams, the abundant plants absorb waterborne particulates that cloud and pollute the water, acting like a filter that keeps the lakes, or in this case Squam Lake, clear and clean.
The Swamp Walk has come to an end, and the time has come to dive back under the cover of trees. You may notice that the forest on this side of the lagoon is a little different – most of the trees are evergreen, and the shore is lined with highbush blueberries. This corner of the forest is dominated by eastern hemlock (*Tsuga canadensis*), a species as characteristic of eastern America as cactuses to the southwest.

**Unique Conifers**
Hemlocks are different from the massive white pines (*Pinus strobus*) you may have seen elsewhere on this hike. They can be identified by the short, flat, waxy needles with white stripes on the underside. These needles stay on the tree year-round, providing ample shade to plants and animals alike. It is a common misconception that this plant is deadly toxic to consume but this tree shares a name with poison hemlock (*Conium maculatum*), a toxic flowering plant native to Europe. In fact, the needles, seeds, and bark of eastern hemlock are vital food sources to deer, rabbits, small birds, and porcupines.

**A Dominating Species**
A low elevation, rocky area so close to Squam Lake makes for perfect conditions for groves of hemlocks to sprout. These trees thrive in cool habitats with lots of water and acidic soil, often under the shaded canopy of deciduous trees. Groves of short, young hemlocks are common in the forest understory, and some may grow up into the canopy. A hemlock’s needles are full of tannic acid, which raise the acidity of the soil as they decay. Over decades, the area they inhabit becomes more suited for hemlocks and less suited for hardwood trees, eventually leading to the hemlock-dominated forest we see today.
Plants require sunlight, water, and carbon dioxide to perform photosynthesis – the process they use to create their own food supply. Did you know that some plants take another route to get their energy, and instead opt to steal it from others? They don’t depend on sunlight for growth as much, and instead absorb most or all of their nutrients through their roots. Plants such as these can be found all over the world, and with a close eye you might see some of the species that live right here in New Hampshire.

**Ghost Plants (Monotropa uniforma)**

A well-shaded area with many soft-wooded trees, like this hemlock forest, is ideal habitat for these spooky flowers. From early to late summer, keep your eyes near to the ground around the roots of large trees, and you might see white or pinkish stalks, with a single flower on top. Despite what you may think, it’s not the tree they parasitize, but rather the fungi that live symbiotically with the plant’s roots!

**Beech Drops (Epifagus virginiana)**

Many beech trees grow in these woods, and alongside them may be some of these plants, which ONLY parasitize the roots of American beech trees. An inconspicuous brown stem with alternating pink, red, or white flowers is what to look for when looking for a beech drops. Instead of photosynthesizing, these plants take water and sugars directly from the roots of beech trees.
How to Date a Stump

Dog Cove Shore Trail

Here at the tip of the Dog Cove shoreline, there’s a very old bump in the ground – a stump left by a tree that was cut decades ago. What kind of tree is this? How long ago was it cut? By following some simple clues the stump gives us, we can answer these questions. Continuing along the trail, make note of any more stumps you see, and try to guess how old they are.

What Kind of Tree?

With no leaves left, identifying the tree can be a little harder than usual. Instead of leaves, look at the bark, which is as unique between species. On this page are the bark patterns of some of the species of trees in this forest – try to match one to a stump!

If there is no bark left, then you can follow a simple rule: a stump from a softwood tree (pines, spruce, hemlocks) will rot from the outside in, some hardwood trees (maple, beech, birch) will rot uniformly, and other hardwoods (oak, locust) will rot from the inside out. Looking at which parts of the stump are mushy and soft can at least tell you which of these two groups it belonged to.

How Old a Stump?

To put an age to a stump and figure out when it was cut down, we can look at how much of the stump has rotted away. The more “rot-prone” species that rot uniformly do not leave long-lasting stumps; they will lose about 80% of their mass after 7-10 years, and decay completely within 25-30 years. Softwood tree stumps may last longer, with stumps less than two feet thick lasting about 40 years, and larger stumps about a decade longer. The “rot-resistant” stumps that rot from the inside out will last the longest, sometimes taking almost a century to decay. By looking at how badly decayed the stumps are, you can estimate when the tree was cut down.
Switch your focus from the ground to the trees, and you just might see a critter darting around between branches. Active all year round, squirrels are one of the most common animals you may see in the forest. If you listen carefully, you may hear them chirping calls or munching seeds.

**Red or Gray?**

Two species of squirrels live in New Hampshire: red squirrels (*Tamiasciurus hudsonicus*) and eastern gray squirrels (*Sciurus carolinensis*). Although closely related, there are key features to pay attention to if you want to tell the difference.

Red Squirrels, as the name implies, have reddish-brown fur, and a white underside. If you hear them scurrying through the treetops, look out for their call that sounds like loud, angry chattering. They tend to make nests out of leaves and sticks near the treetops, or move into tree cavities.

Gray Squirrels are much larger than red squirrels, colored with a mix of gray fur and tawny patches and a white underside. Much less noisy than their smaller counterparts, but they can still be heard chattering and clucking. If you see a large nest made of leaves up in a tree, then a gray squirrel is likely nearby.

**Squirrel Signs**

Both species depend on nuts and seeds from trees such as white pines, oaks, and beech for a food supply. Piles of pinecone flakes and nut shells, or biting marks on tree bark are perfect signs of squirrel foraging. Keep your eyes peeled for their tracks in the winter – their hind prints are larger than their fore prints.
Anyone who’s been hiking through a New England forest has likely walked alongside neat piles of huge, neatly stacked rocks. Back in a time when owning a farm was the mainstream lifestyle, homesteaders would often opt to use the abundant granite to denote property boundaries and contain livestock. As the farmlands were abandoned and returned to forests, the walls remained to create a woodland feature emblematic of the New England landscape.

**New Hampshire Potatoes**

As colonial Americans spread through New England, they cleared forests for lumber and to provide space for their farm livelihoods. A lack of trees made frost heaves in the winter more extreme, as ice pushed subterranean boulders towards the surface. Farmers in the 19th century eventually discovered rocks sprouting out of the ground, disrupting their crop fields!

**Wonder of the World**

What else to do with all these loose boulders, than to make a permanent, sturdy wall? Once the rocks began to be used for walls, teams of oxen and hardworking farmhands often stacked them in ways that favored utility over artistry—tall enough to contain the sheep. By the 20th century there were an estimated 237,500 miles (380,000 km) of stone walls in New England. For reference, the Earth has an average circumference of about 25,000 miles (40,000 km).

**Lone Wolf Trees**

Some trees were spared from the settlers’ mass deforestation. Those left standing provided shade and nuts for livestock. With no competition, these lonely trees were able to grow tall and wide. Many of these “wolf trees” are still alive today, and are upwards of 150 years old.
Here at the trailhead is a relic from the earlier days of America. Starting in the 18th century, colonial settlers migrated out of their cities to make a living. Although the fields have returned to forest and the homes are gone, cellar holes that remain serve as reminders of the lives of early Americans, and the lengths people went to for a livelihood.

A Bygone Era
Following the French and Indian Treaty of 1763, over 150,000 people had settled across Maine, New Hampshire, and Vermont. A majority of homesteaders grew their own crops for subsistence, relying on wool from livestock as a major source of income. This proved a problem when Ohio was settled, a state decidedly better for crops and sheep. Just as they had moved into New England forests, homesteaders began moving out west, often leaving empty fields behind. By 1850, as many as half of New Hampshire’s population had left, and many who stayed switched to raising dairy cows.

Craftsmanship at its Finest
Settlers would start their homestead by digging out their cellar, lining it with granite slabs. The giant rectangle that would eventually have a house on top of it would have a square on one side left undug; this would be the future location of a hearth. The front of the home would usually be opposite of the hearth, and would usually be south-facing, to maximize the sunlight that entered the house.
Sources and Additional Reading

**Broadleaf Forests, Dead Trees and Snags, Blowdowns, Squirrels:**

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**Parasitic Plants:**
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**Dating Stumps, Stone Walls, Cellar Holes:**
https://www.canr.msu.edu/news/wolf_trees_provide_insight_into_the_history_of_the_land
We Want to Hear From You

This is a living document. We add new material as we learn more about Chamberlain Reynolds Memorial Forests.

We would love to see your pictures and hear about what you discover along the trails at Chamberlain Reynolds. With your help, we can share more of what makes this forest such a wonderful place.

Tag us on Facebook or Instagram (@squam.lakes)

Happy Hiking!