14) **BLACK GUM**: The black gum tree is a long-lived deciduous tree typically confined to swamps in the Northeast where it exists at the northern limit of its range. Although not physically impressive, black gum trees are the oldest trees in the Northeast. Those surrounding you are over 300 years old. They’re notable for their unusual branching pattern and spectacular red foliage in autumn. During the colonial period, the heavy, hard wood of black gum trees was used to make mallet heads. A bit further along the trail and within reach of the boardwalk on the right-hand side, there is a large tree with scaly bark resembling alligator hide. This black gum is over 400 years old and the oldest living tree at Harvard Forest.

15) **AMERICAN CHESTNUT**: Notice the American chestnut sapling with multiple stems in front of you. Like most American chestnut trees, it is infected with the chestnut blight, a fungal disease identifiable by the orange-red spores visible along cracks in the bark. The blight kills chestnut stems before they fully mature. However, the root system remains alive and continues to send up new shoots. Before the American chestnut was devastated by the chestnut blight across its range in the early 1900s, it was an important tree in the Northeast for posts, lumber and fuel. Many wildlife species and people depended on its nuts for food.

16) **FIRE SCARS**: Notice the fire scars on the red pines in front of you. These scars are a reminder of the 1957 forest fire, and the remarkable resilience of trees.
1) **TREE DIVERSITY:** The trees surrounding this sign are typical of this area. Following several centuries of deforestation and forest regeneration, oak, red maple, birch and other sprouting hardwood species have become prevalent. Shade-tolerant hemlock trees grow in the understory, and white pines populate the sunny openings.

2) **STONE WALLS:** This stone wall marks the northern boundary of a 75-acre farm developed by Jonathan and Molly Sanderson in the mid-1700s. Boundary walls like this one are usually straight, while walls bordering cultivated fields often skirt wet ground. Notice the different forest types on either side of the stone wall. These differing forest types reflect differences in land use and management. The adjacent area was clear cut in 2008 to allow native forest to replace a red pine plantation.

3) **STORM DAMAGE:** Notice that many of the red pines on the left hand side of the path have bent or bowed trunks. These trees, planted by Harvard Forest students in the mid-1920s, were too small to be uprooted completely in the massive winds of the Great Hurricane of 1938. They were tipped slightly but have subsequently grown back toward vertical. Several severe snow and ice events have also damaged the trees in this vicinity. Notice that several trees have missing tops and broken branches. There is also a large amount of woody debris, an important part of the forest ecosystem, on the ground.

4) **STRIPE MAPLE:** To the right of the sign post, there are several striped maple trees (a northern, understory species also known as mosswood or goosefoot maple). The greenish bark contains chloroplasts, which allow the tree to carry out photosynthesis even during the winter months. Striped maple is important as a food plant for many wildlife species.

5) **SANDERSON WOODLOT:** You are now entering the old Sanderson farm woodlot, a stand that in the early 20th century was composed of mature chestnut trees with an understory of hemlocks. The Sanderson family harvested these trees for lumber and to use as fuel for heating and cooking. Hemlocks and their bark also played a crucial role in the early hide-tanning industry. The bark was ground down to extract tannic acid, a substance used to preserve hides into leather at the nearby Sanderson tannery on Nelson Brook.

6) **LIGHTNING:** Look closely at the trees around you. Lightning struck the ground among these hemlocks in the summer of 1989. Initially most survived, with a scar rising up each trunk to indicate the strike. However, several hemlocks subsequently died from insects and pathogens entering through the lightning-damaged areas. In some cases, trees struck by lightning may shatter or ignite.

7) **FOREST PLANTS:** As you continue on the trail, take notice of the plants nearby. The following plants are often found in shady, moist areas.

8) **PITS AND MOUNDS:** Take note of the characteristic "pit-and-mound" topography around you. These small hills and dips on the forest floor are the result of wind-thrown trees. The pits form when roots and clinging soil are pulled from the ground as the trees fall. The mounds form as the roots decay and deposit soil. Notice the hemlock trees growing out of the rich soil and decaying material comprising the mound in front of you. Birch seedlings also commonly establish themselves on these mounds.

9) **VERNAL POOL:** Vernal pools, similar to the one in front of you, are temporary pools of water that provide habitat for specific plants and animals, some of which are endangered. Because vernal pools are typically dry for part of the year, they do not support populations of fish. Without fish predation or competition, many species are able to reproduce and mature in a safe environment. Fairy shrimp, mole salamanders and wood frogs all lay their eggs in vernal pools each spring.

10) **STAND REPLACEMENT:** Notice the many small black and yellow birch trees sprouting up in this gap in the hemlock stand. In our region, young birches often replace hemlock trees that are killed in the ongoing, widespread infestation of the hemlock woolly adelgid, an aphid-like insect accidentally introduced from Asia in the 1950s. This hemlock stand has been infested with adelgid since 2002 and has already begun to decline. You are looking at a snapshot of the future of this hemlock forest. As the hemlocks die off, there will be many more openings like this one, filled with birches.

11) **NURSE LOG:** Look closely at the mossy logs on the ground nearby. A nurse log is a fallen tree, now decaying, that provides moisture and nutrients for seedlings, moss, fungus and other organisms. How many seedlings can you count on each log?

12) **FIRE:** This area is the eastern edge of a forest fire that burned 78 acres of Harvard Forest and a similar expanse of neighboring property in 1957. The fire was stopped at the swamp behind you. Since the fire, the forest has grown up substantially. It contains many "pioneer species" such as white and gray birch trees—as well as red oak, red maple, beech, American chestnut and witch hazel.

13) **SWAMP:** As you follow the boardwalk, you will be walking through mixed swamp forest characterized by black gum trees, red spruce, hemlock, red maple and white pine. Some common shrubs include winterberry and blueberry. Cinnamon fern and Sphagnum mosses are frequently seen on the forest floor.