

White Lake State Park

Natural National Landmark

Easily reached by another walking trail at White Lake State Park is a National Natural Landmark: a 72-acre stand of pitch pines. Early settlers in New Hampshire may have used this durable, water repellent and decay-resistant wood for fence posts and mill wheels. Its commercial use today is limited. The mature pitch pine stand contains trees which are unusually tall for this species, with some trunks exceeding two feet in diameter.

National Landmark properties are selected to protect and illustrate the nation's diversified natural resources. One portion of the pitch pine trail traverses the town of Tamworth's Black Spruce Ponds Preserve.

Description of the Pitch Pine

Pitch pine (*Pinus rigida*) is a medium-sized member of the pine family. Pines are a family of cone-bearing evergreen trees with needles grouped in twos, threes, fours, and fives. Pitch pine needles grow in rigid bundles of three, like the prongs of a pitch fork. Although some species of pine retain their needles for up to 12 years, pitch pines shed theirs every other year. The needles are stiff and usually twisted. Each needle has three faces, with thin white lines of pores, or stomata, through which the leaf breathes.

Pitch pines begin to produce cones when they have matured to eight or more years old. The cones are stout, often clustered, and stalkless. Their scales are tipped with sharp thorns. At the base of each scale is a seed which the cone releases upon opening in the fall or winter. Pine cones develop from male and female flowers that bloom in the spring. The male flowers produce clouds of yellow pollen that fertilize the light green, female flowers - gumdrop-sized "cones" on the sides of new twigs. Weathered gray or blackened dead cones often remain attached to the tree for many years.

Pitch pines seldom grow taller than 50 to 60 feet. Often their thick branches twist downward, giving the trees a ragged, irregular look. On an old tree the bark is reddish-brown and lies in thick plates. Younger trees have reddish-brown scales. Pitch, or resin, is the pine's healing agent. Pitch droplets may form on the trunk or cones.

Division of Parks and Recreation
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Significance of Pitch Pines at White Lake State Park

The pines at White Lake State Park are a particularly fine example of a mature pitch pine forest type. The sandy soils left here by the glaciers 14,000 years ago provide ideal conditions for the species. Many of the trees are very big, hence very old, though even foresters don't know for sure how old they are. Pitch pines grow irregularly over the course of a growing season and fail to produce the typical annual growth ring on which a tree's age is customarily based.

The White Lake pines are also exceptionally tall and straight. Their height suggests this site has been relatively free from fire and other disturbances for a long time. The trunks of some trees are over two feet in diameter, which is large for this species.

In 1980, the National Park Service declared this 72-acre pitch pine stand on the western shore of White Lake a National Natural Landmark. National Natural Landmarks are selected to illustrate our rich and varied natural heritage. Here at White Lake, we discover a page of our region's natural history, protected through public ownership for us and future generations to learn from and enjoy.

Regeneration of Pitch Pines

In this forest, you will find that many of the older trees are dead or dying, and that there are very few young pitch pines. Pitch pines are an early successional species that reproduce most successfully after a fire. Heat causes the pine scales to open and release their seeds, while fire clears the forest floor of competing vegetation and lets in light. The older pines can resist fire, but are often scarred. In the future it may be desirable to undertake controlled burns in parts of this forest to foster new growth.

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Distribution and Habitat of Pitch Pines

Pitch pines grow throughout much of the east coast on sterile, sandy soils, dry gravelly uplands, and occasionally in swamps. Often they are found where no other pines can survive. The most extensive stands occur from Long Island south. Pitch pines here are limited primarily to southeastern New Hampshire, the Merrimack River valley, and from the eastern lakes region north to Conway.

History and Uses of Pitch Pines

Although the wood of pitch pines is too weak for good lumber, it is very durable, repels water, and resists decay. New England's early settlers used it in building mill wheels, ships' pumps, and fence posts. Because the pine's pitch will burn brightly for several hours, pine knots were converted into torches. Pitch had other uses; trees were tapped for pitch much as maple trees are tapped for sap. Today the wood may be used for guard rail posts, crate boxes and cable reels, pulpwood, and biomass energy. However, its use is incidental and the commercial value limited.

Tamworth's Black Spruce Ponds Preserve

White Lake State Park abuts the Black Spruce Ponds Preserve, a 35-acre tract given to the town of Tamworth by Frances Damon and managed by the Tamworth Conservation Commission. In 1984, the two properties were linked by trails planned and built by volunteers from the Conservation Commission and State Park staff.

Surrounding the bogs on the higher ground are dense thickets of pitch pine and scrub oak (*Quercus illicifolia*). Ringing the bogs where the soil is more moist are black spruce trees (*Picea mariana*), leatherleaf (*Chamaedaphne calycalata*), pitch plants (*Sarracenia purpurea*), and other characteristic bog species. The smaller of the two bogs is the more open now, but eventually both bogs will evolve into a wet forest dominated most probably by black spruce.

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