Pitch Pine Tree Reproduction

Photograph: Gary Whiton

Photograph: Josh Fecteau

All pines reproduce through pines cones. Pitch pines are monoecious, meaning that both male and female cones are produced on the same tree. The male cones, which produce ample amounts of pollen in the spring, are found on the lower branches and do not look like a traditional pinecone. The seed-producing female cones are round and spiky like a traditional cone and are found in abundance in clusters on the upper branches of the tree and nearer to the crown. Female cones mature in the fall of the second year following pollination. Research has revealed that "good" crops of pitch pine cones are produced every 4 to 9 years. Pitch pines as young as 3 years old can produce cones but the average age is 8 to 12 years.

Far left: ***Immature Pinecone***

Near left: ***Mature Female Pinecones***

Right: ***Male Pinecones***

Photograph: Josh Fecteau

Fire and Reproduction

Pitch pines forests are a fire dependent ecosystem. This means they depend on fires to help stimulate reproduction. These forests support vegetation that is conducive to ignition, combustion, and fire spread. Often, pitch pines have drooping, slender branches along the lower trunk and dead branches, containing more resin than live branches, which ignite easily.

Natural fires and prescribed burning were common until the 20th century when the United State Forest Service enacted a fire exclusion policy. The fire exclusion policy has hampered reproduction and led to hardwoods replacing pitch pines. This situation is evident today in Connecticut and here in the preserve, as chestnut oaks are overtaking pitch pines. The CT-DEEP uses prescribed fires to enhance pitch pine reproduction, but this is not an option in the preserve.

Photograph source: USDA Forest Service

Left: ***A prescribed fire in a pitch pine stand.***

Serotinous and Nonserotinous Cones

Some trees delay seed fall because their cones are dependent on a brief blast of heat to release seed. This dependency on heat during the seed production cycle is called "serotiny" and becomes a heat trigger for seed drop that may take decades to occur. Natural fire must happen to complete the seed cycle. Although serotiny is primarily caused by fire, there are other seed release triggers that may work in tandem, including periodic excess moisture, conditions of increased solar heat, atmospheric drying and parent plant death.

Serotinous cones are found in high percentages in populations on or near the coastal plain such as the New Jersey Pine Barrens and areas that burn frequently. Away from the coastal plains, nonserotinous cones percentages increase and may be advantageous in areas where fire is rare. Reproduction will significantly increase following at an eventual burn. Nonserotinous cones shed seed soon after they mature and persist a long time. There is a good chance that the population of pitch pines in the Hills produce nonserotinous cones.

Source: Steve Nix, Treehugger.com