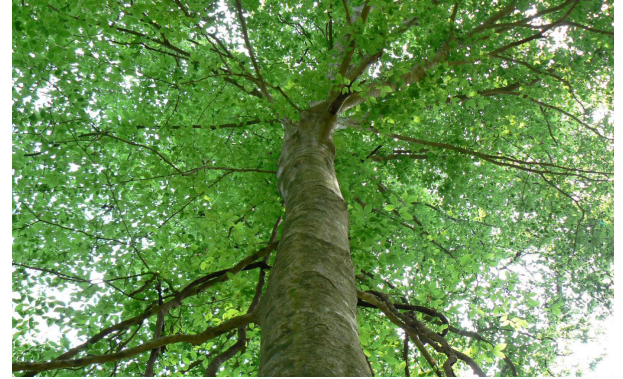




A Species in Trouble

The American beech (*Fagus grandiflora*), a dominant species in the upland forests of Pictured Rocks National Lakeshore, is seriously threatened by **Beech Bark Disease**. Most mature beech trees infected by this disease will not survive. The loss of beech will transform the forest landscape aesthetically and ecologically, with consequences for both wildlife and park visitors.



The magnificent American beech can live 300 years and grow to 120 feet.

What is Beech Bark Disease?



Beech Scale Insect (0.5 mm)

Beech bark disease (BBD) is the result of a complex interaction between three non-native pests (a tiny scale insect and two species of *Nectria* fungi) and a native *Nectria* fungus.

The beech scale insect wounds the tree by piercing the bark with sharp mouth parts and sucking out the sap. *Nectria* fungi are then able to enter the tree through these wounds. Once infected, most beech trees weaken and die slowly over the span of several years. Older, larger trees are more

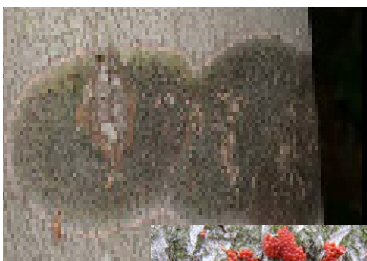
susceptible to BBD than younger ones, as the insect appears to prefer trees with rougher bark.

Beech bark disease originated in Europe and was accidentally introduced to Nova Scotia around 1890. It has been spreading slowly through the eastern United States ever since and was first detected in Michigan in 1990. It was discovered at Pictured Rocks National Lakeshore in 2001.

How are infected trees identified?

Infected trees can be recognized by waxy-white patches of bark, dark cankers or obvious fuzzy “cotton ball” bumps. Other signs include loss of leaves, broken branches, and discolored leaves. Where *Nectria* fungi are present, bright red fungal fruiting bodies are visible in the bark.

Beech bark disease has already swept through the park from east to west, beginning in 2001. Most of the mature beech on the east side of the park are dead and many have fallen. Park staff have removed hundreds of hazardous beech trees from roadsides and developed areas.



Beech scale insects exude a white coating that is easily visible against the beech's smooth gray bark. These wingless insects do not fly but are blown by wind from tree to tree, which allows them to spread quickly through dense beech stands such as those found at Pictured Rocks.

**Weakened trees may fall without warning. Be safe!
Be alert! Use caution around beech trees!**

Why are beech trees important?



Lack of beechnuts in the fall may reduce black bear reproductive success the following spring.

The handsome American beech is one of the dominant trees of northern hardwood forests, along with maple, yellow birch, and hemlock. It is the major nut-producing tree in this ecosystem, and its nutritious beechnuts provide food for black bear, chipmunks, squirrels, porcupines, white-tailed deer, and a variety of birds, including ruffed grouse. As beech trees decline, loss of this food source will likely have a profound effect on wildlife.

Beech are also a favorite nesting site for chickadees and they provide shelter for cavity

dwellers such as woodpeckers, fishers, and American martens. These and other species will be impacted as mature beech disappear from the forest community.

How to identify beech trees: Beech are best identified by their smooth grey bark. Dark green shiny leaves, tapered at both ends, turn golden in autumn and cling to branches throughout the winter. Prickly-husked beechnuts attract wildlife in the fall. A careful observer may find claw marks in the soft bark where a hungry black bear climbed up in search of the oil-rich nuts.



How will loss of beech trees affect the forest community?

As infected trees die and fall, they create a gap in the forest canopy. You may notice some of these gaps while hiking or traveling through the park. Thickets of young beech (sprouting from roots) and saplings of other species will quickly take advantage of the increased space and light to fill in these forest openings. In the future, visitors to Pictured Rocks may discover a vastly altered beech/maple forest structure.

The change from a closed-canopy forest to a more open one will affect animal populations as well. Increased understory vegetation and woody debris

from downed beech trees will favor certain species over others. Hawks and other birds that prefer a dense canopy may no longer nest here. The loss of beech in this forest will have far-reaching impacts that scientists are only beginning to understand.

What can be done?



Seedlings from resistant trees offer the best hope for restoring healthy beech to the forest.

The sheer number of beech trees throughout the park (40 to 60% of some forest stands) makes treating BBD both uneconomical and unrealistic. However, there is hope of restoring beech through propagation of **resistant trees**. Pictured Rocks National Lakeshore is taking a major role in this effort.

For several years, park staff have been searching for mature beech trees in the lakeshore that do not appear to be infected. Plant material from trees that are truly



resistant (due to genetic variation) will be grafted onto rootstock and the resistant genes will take hold in the new plant. Seedlings will be grown in a greenhouse and eventually transplanted into experimental plots throughout the lakeshore. Restoring beech as a functional component of the forest landscape is a painstaking process that will require decades of commitment to implement.

A park biologist monitors a potentially resistant tree for disease symptoms.