

## WITCHES' BROOMS ON TREES

by Pat Mraz MG '07

Witches' brooms on trees appear as dense clusters of twigs. The term witches' broom comes from the German word Hexenbesen, which means to bewitch (hex) a bundle of twigs (besom). In medieval times, brooms were made of bundles of twigs, and mysterious occurrences were often blamed on witchcraft.

Witches' brooms occur on many different woody plant species, including deciduous trees such as hackberry and maple, and coniferous trees such as pine and spruce. Brooms can form just about anywhere on a tree, from the lower branches to the uppermost part of the tree. There may be only one broom in a tree, or they may be many scattered throughout the tree. In some cases, they are quite large in size and are easily spotted. In others, brooms are so small and well-hidden that only keenly observant broom hunters can spot them.

A number of stresses, both pathological and environmental, can lead to the formation of brooms. Organisms such as fungi, mites, aphids and mistletoe plants can cause abnormal growth when they attack a host tree. Environmental stresses that injure the growing points of branches can also trigger the formation of brooms. And we all are aware of the witches' brooms caused by improper pruning.

Some brooms appear to be caused by genetic mutations in the buds of the branches. Unlike brooms caused by living organisms, there is usually just one broom per tree when the cause is a genetic mutation. On occasion, a large broom in a tree can lead to the decline of a tree, even though it is not associated with a disease problem. Big brooms seem to divert energy away from the rest of the tree, causing it to suffer from poor vigor over time.

On the positive side, these abnormal growths have created great opportunities for diversifying the plant world. Witches' brooms have led to the development of new varieties with unique characteristics. Plant enthusiasts have taken cuttings from witches' brooms and propagated them. Most witches' brooms are benign; a few, especially conifers, have entered the horticultural market. Dwarf plants from witches' brooms are often propagated by cuttings or grafting. Plants propagated from witches' brooms are commonly classified as dwarf plants. Like the "mother" broom, these dwarf plants grow very slowly and have a compact form.



Hundreds of rare and unusual dwarf conifer species that are now commercially available began as an observant sighting of a witches' broom in a tree. For example, the Norway spruce (*Picea abies* (L.) Karsten) grows to 60 feet and has produced two interesting dwarf varieties from witches' brooms. The bird's nest spruce (*Picea abies* 'Nidiformis') came from a witches' broom on a normal Norway spruce. The 'Little Gem' spruce (*Picea abies* 'Little Gem') originated as a witches' broom on the bird's nest spruce—a witches' broom from a witches' broom.

The following witches' broom was recently spotted in a pine tree located in the Metroparks Hinckley reservation. It is easy to see how a broom could lead to a dwarf variety.

