

Witch's Broom

The term *Witch's Broom* dates to the Middle Ages and refers to tree mutations made up of dense masses of shoots growing from a single point. They look like mats of twigs woven together and can grow to several feet across.

Each one is the only one of its kind in the world and is genetically unique.

They were dubbed "Witch's Brooms" in medieval Europe because it was believed witches placed them high in trees and even rested on them.

Witches' Broom can be easily identified by the dense clusters of twigs/branches, which grow from a central source—resembling a broom. It is best seen on deciduous trees or shrubs when they are not in leaf.

Witch's Broom in needled trees like pines and cypress may consist of just denser needles.

There may be only one broom seen or in some cases, there may be many. Some may be large, while others may appear quite small and less noticeable.

Those caused by genetic mutation may be stable, which allows them to be propagated vegetatively as dwarf cultivars.

Witches' Broom is a symptom of stress found in woody plants, mainly trees, but also affects shrubs. This includes deciduous trees and shrubs as well as conifers and evergreens.

The stress results in a deformed mass of twigs and branches, which appear broom-like in appearance. As brooms were once fashioned together from bundles of twigs and since witches were presumed to be responsible for anything unusual, these abnormalities gave rise to the common name.

The factors which may cause Witches' Brooms include infestation of mites, aphids or dwarf mistletoe, genetic mutations, infection by fungi or phytoplasmas (a wall-less single celled organism with an unorganized nucleus), or adverse environmental conditions that kill the terminal bud of shoots.

Generally, the type of tree/shrub is a good indicator of its causal agent.

For instance, pine brooms are commonly caused by rust fungus. Fungal infections affect cherry trees and blackberry bushes, forming broom growth.

Peach trees and black locust can be affected by viruses that can result in Witches' Brooms. Hackberry trees can get brooms as well, and these are normally caused by both fungus and mites.

Mites can also be responsible for Witches' Broom in willow trees. Aphids are generally to blame for these deformities in honeysuckle shrubs, while phytoplasmas lead to the disease in ash and elm trees.

In Florida, many of the Witch's Brooms are a result of a fungal infection from *Sphaeropsis tumefaciens*.

Some of the many plants in Florida known to be affected by this disease, are oleander, holly, bottlebrush, citrus, crape myrtle, ligustrum and even Brazilian pepper.

On some of these plants, the symptoms produced are a knotty gall rather than the mass of twigs more commonly known as Witch's Broom.

Some other common trees that develop Witches' Brooms include oak (caused by powdery mildew), cedar (caused by a rust), and hackberry (caused by powdery mildew and an eriophyid mite).

Phytoplasmas cause Witches' Brooms and bunch disorders on pecan, hickory, lilac, walnut, willow, dogwood, ash, honeylocust, peach, elm. Juniper, firs, hemlocks, cypress, and pines can also develop Witches' Brooms in reaction to infestation from dwarf mistletoe. Sometimes these will form because the tree is stressed from



Witch's Broom on cypress in Bird Rookery Swamp

a branch that broke off by accident or was poorly pruned by people.

Witches' Broom can last for several months to several years, and while it may be unsightly to some people, it really poses no serious threat to the healthy tree or shrub affected. There is currently no cure or treatment for witches' broom.

If the condition is unsightly on an ornamental plant in a yard, the broom growth can be pruned off, at least six inches below where symptoms are seen. Then, look at the cut end of the stem to see if any discoloration from the fungal growth in the wood is still present, and prune that branch back further if this is noticed.

Prune during dry times, avoiding periods when rainfall is expected 24 hours before or after pruning. To prevent infection of unaffected plant parts, dip pruning tools in a disinfectant such as 10% Clorox or rubbing alcohol before using them on another branch or plant. Shoots may regrow, requiring ongoing removal every few years.

Witches' Brooms are of wide ecological importance. They generally tend to be inhabited by a wide variety of organisms apart from the causative organisms. Some of the invading organisms, such as some species of moths, are specific to particular types of Witches' Brooms, relying on them for food and shelter for their larvae. Larger animals may nest in them including many arboreal rodents such as flying squirrels.