

# WITCH'S BROOMS

The Gotelli Collection of Dwarf and Slow-Growing Conifers at the National Arboretum is a special place. Filled with fantastic specimens of unusual cultivars, it is enough to make any plant enthusiast salivate. While new cultivars of plants can be bred or selected in a variety of ways, many of the dwarf cultivars in this collection are the result of a genetic mutation known as a witch's broom. Often found high in trees, these growths of densely packed shoots were once believed to be resting places for witches. Today we know there is a more scientific explanation.

*Tsuga canadensis* witch's broom near entrance to Dogwood Collection. Photo courtesy of Christopher Goulart.





**Top:** *Catalpa speciosa* witch's broom located in the Boxwood Collection; **Above:** *Catalpa speciosa* witch's broom in foreground with propagule of parent tree behind it. Photo courtesy of USNA.

Tree limbs normally grow from an area at their tip known as the apical meristem. The apical meristem produces the hormone auxin, which inhibits lateral shoot growth. Because auxin can travel only so far, as the limb grows longer, lower lateral branches are eventually able to grow. This process keeps the limbs from growing too close together. In the case of a witch's broom, however, the auxin pathway is blocked, and all limbs are able to grow at the same rate. This pathway blockage can be caused by a number of different organisms including fungi, viruses, phytoplasmas, insects, and mites, and can occur in many different plant species.

When seeds or cuttings are taken and grown from these areas, the result can be an entirely new cultivar which has the same growth habit as the witch's broom. The grower can then name their new plant and, if they are lucky, sell it. This pursuit of treasure and new discovery has helped create an army of witch's broom hunters worldwide who, armed with climbing gear, cherry pickers, saws, and the occasional shotgun (to shoot the broom out of the tree of course) are all trying to find the next new thing.

If you'd like to see witch's brooms in nature, look no further than the National Arboretum, and if you are having a hard time spotting them, be sure to ask our expert gardeners, many of whom are witch's broom enthusiasts themselves. While none of the more than 600 National Arboretum Introductions have resulted from witch's brooms, that doesn't mean they are not trying. Currently the Arboretum is trialing plants from a broom found in a *Magnolia*  $\times$  *soulangiana* 'Verbanica' in the Holly Magnolia Collection and one found in a *Catalpa* that is located in the Boxwood Collection. What seems so exciting to these broom lovers (and if I admit it, to myself as well) is the idea that you do not need to be a scientist to discover a new plant. Rather you need a trained eye, the desire to find something new, and of course most importantly...you need to look up! 🌳

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