

CANDLING THE PINES

-Karen Zill



[Summer 2020] One of the sights a spring visitor to the National Bonsai & Penjing Museum might chance upon is someone up in a pine tree. That would be one of the Arboretum's horticulturists, engaged in trimming the "candles" at the ends of the branches. Erin Holden explained the process.

WHAT IS CANDLING AND WHY IS IT DONE?

In spring, the buds formed on pine trees in the previous year expand into what are called candles—long, new growth that will turn into the current year's branches. "Candling" is the process of removing or shortening this new growth to control the size and shape of the tree. It's done when the candles have finished growing but before the new needles start to expand. Candling also helps to balance the energy of the tree, and when it is done correctly, it can slow the growth on vigorous parts of the tree while strengthening weaker areas.

HOW IS CANDLING DONE?

It's a relatively simple process. Whether you use fingers or pruners depends on how much candle you're removing, which in turn can depend on which species you're candling. Completely removing a

candle at its base eliminates that future branch, but also stimulates new bud development. I use thin pruning snips when completely removing a candle because this gives a nice clean cut and doesn't leave any extra tissue. To keep that future branch, but control its length, the top of the candles can easily be pinched back with your fingers. You don't usually want to cut through a candle with pruners because that can damage future needles. Japanese black pines (*Pinus thunbergii*) respond to candling by producing new buds and a second flush of growth the same year. Japanese white pines (*Pinus parviflora*), on the other hand, produce new buds that stay dormant until the next year.



Not all candles on a tree will necessarily be pruned, but they all need to be assessed. If you want a branch to grow longer in a certain direction, then those candles will stay. To help direct energy flow through the tree, the number of old needles is also reduced at this time – more from stronger areas of the tree, and fewer from weaker areas.

Getting to each branch can be a challenge, depending on the size, shape, and location of the tree. Orchard ladders come in handy for outer branches, but to reach inner branches and the apex of a tall tree, sometimes the best option is to climb up in there. For certain trees I climb with a tree saddle, the sort that professional arborists use. This allows me to stay safely tied to the tree while still being able to candle hard-to-reach branches. Some of the pines I candle at the Arboretum are fifteen to twenty feet tall.

IS CANDLING DONE WITH ALL VARIETIES OF PINE TREES OR ONLY CERTAIN ONES?

Candling can be done to any type of pine tree. Personally, I've worked on Japanese black pines (*Pinus thunbergii*), Japanese white pines (*Pinus parviflora*), and Japanese red pines (*Pinus densiflora*). But candling is necessary only when you want to control the size and the shape of the tree. You wouldn't candle that fifty-foot pine in your backyard, for example, or a tree that you want to grow out naturally. And the pines in the Gotelli Collection certainly wouldn't get candled. Candling is reserved for special garden trees that the Japanese call *niwaki*. The pruning principles are basically the same as for bonsai. Other conifers, like fir and spruce, don't produce candles as new growth in the way that pines do, and so they don't get candled in the spring. I haven't seen these trees pruned as *niwaki*.

HOW MANY TREES AT THE ARBORETUM ARE CANDLED, AND HOW MANY GARDENERS ARE INVOLVED IN THE WORK?

Most of the pines are in the Bonsai & Penjing Museum, the notable exception being the beautiful Japanese black pine in front of the Administration Building. The trees let you know when they're ready to be candled, usually May to mid-June. After that, the candles start to harden off, needles start to expand, and you won't get the new bud formation that you're looking for.

I candle about thirteen trees, mostly Japanese black pines. We have nine tall pines in the Stroll Garden of the Bonsai Museum, and they require at least five gardeners. Most of the work can be done in a day with that many people, and I'll spend a few more days by myself finishing up.



Erin uses a tree saddle to keep her secure when climbing the pines that line the entrance to the Bonsai Museum. Photo credit: USNA.

WHAT IF CANDLING ISN'T DONE? HOW DOES THAT AFFECT THE PINE TREE'S GROWTH?

Candling doesn't have to be done every year. If a tree is weak, then skipping a year will help it gain strength and grow in size. If you're trying to maintain a certain shape, then skipping candling can result in the tree losing that shape. However, the health of the tree should always come first.

DOES CANDLING HAVE ANY BEARING ON CONE FORMATION?

Yes. Female cones (what we consider the actual "pine cones") are produced at branch tips on the current year's growth. Candling removes that portion, and therefore the possibility of cones for that year. Cone and seed production require lots of energy from the tree, and when we remove the candles, all that energy can be directed into vegetative growth instead of reproductive growth. We don't need these landscape pines to reproduce, so we don't need them to produce cones. Occasionally I'll miss a candle tip and the tree will produce a few cones here and there.

IS CANDLING RELATED TO CLOUD PRUNING?

Cloud pruning is basically training the branches to form separate pads, or "clouds." The term "cloud" can refer to roundish balls of foliage or flatter pads. The pine in front of the Administration Building is a great example. Candling is an essential part of the process. A good cloud won't have any branches or needles sticking out of the silhouette, the bottom of the pads will be smooth and sharp, and the overall appearance will be neat and tight. Skipping candling will result in untidy, misshapen pads that eventually blur into one another. If candling is skipped for too many years in a row, it can be difficult to get the tree back in shape and will take even longer to correct. You're always thinking long term when pruning pines.

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*Erin trims pine candles from atop a tall ladder.
Photo credit: USNA.*

ERIN HOLDEN

Gardener in the Bonsai & Penjing Museum

Erin grew up playing in the woods near her home in the suburbs of Richmond, Virginia, curious about all the different kinds of plants she saw there. From an early age, she helped her grandfather pick the vegetables from his garden, and as a child, she spent long hours poring over her mother's Rodale Encyclopedia of Indoor Gardening. At Radford University, Erin majored in biology and minored in chemistry, planning to become a veterinarian. However, her love of plants stayed with her, and once she began learning about their medicinal uses, she decided to pursue a degree in herbal medicine at Maryland University of Integrative Health. But she wasn't interested in clinical work. "I wanted to be outside with my hands in the dirt, not in an office," she says.



Starting as an intern in the National Herb Garden, Erin moved to the Bonsai Museum as an Agricultural Science Research Technician when an opportunity opened there six years ago. This gave her a chance to learn about Japanese gardening. With the help of longtime Bonsai garden volunteers and books on Japanese gardens, along with a two-week hands-on training seminar at the Portland Japanese Garden in Oregon, she learned how to create the aesthetic of a Japanese garden. Spring candling is one of the techniques used in this type of gardening, and Erin finds it very soothing and meditative. "Time seems to disappear when I'm in a tree," she says.

A self-described die-hard plant nerd, Erin still loves spending time in the woods and finding new plants to identify. She's currently completing a minor in horticulture at Oregon State University and when she's not outdoors, she uses her time for music lessons, jewelry making, and other crafts.