

How to Grow the Ghost Orchid:

DENDROPHYLAX lindenii is a rare plant in the wild as well as in collections. Hopefully, increased interest and uncovering some of its cultural secrets will lead to more of these jewels of nature being grown.

The number one requirement for maintaining a healthy ghost orchid is finding a suitable substrate. Whatever is used must not decay for decades, must have some sort of patina such as moss and lichens, hold some moisture for a length of time after watering, and have a rough and variable texture. In the wild, these plants grow on live trees, and as long as the tree is alive, the bark that the plant is attached to maintains its integrity. *Dendrophylax lindenii* can be long lived and will take several years to develop into a blooming-size plant. For this reason, the substrate must also be long lasting or the grower will not see the beloved plant live long enough to bloom consistently. In the wild, the tree's bark is covered with a mix of various lichens, mosses and other hosts that add to the orchid's microenvironment by providing moisture directly to the roots, as well as nutrients and added humidity. These other hosts are important to help the orchid survive during periods of little rain as some of the plant's roots hug the bark tightly and worm their way through and under these water-absorbing hosts. It is important to remember that *Dlax. lindenii* does not have the water-storage structures that many other orchids do, such as plants in the *Cattleya* alliance.

Over the years, I have tried mounting *Dlax. lindenii* on different substrates, such as cork, tree-fern plaques and various woods with and without the bark, all without success except for one species of tree, the mockernut hickory tree (*Carya tomentosa*). The hickory wood has almost no preservative quality to it and rots quickly, despite being hard and strong. But the bark on older trees (100-plus years) becomes thick, deeply furrowed and has an amazing ability to maintain integrity for many years without decomposing. Whatever is responsible for the preservative qualities in the bark does not seem to affect mounted orchids; they thrive on it unlike any mounted plants I have grown on anything else. I do not advocate cutting live hickory trees for mounting orchids, but one may find the bark from firewood collectors, eastern and southern barbecue



restaurants that use real hickory for cooking, mills that manufacture tool handles and salvaged trees from storm damage. The bark is nearly impossible to remove from fresh-cut trees. I leave the cuts outside for one year and let insects and fungi tunnel between the wood and bark, allowing it to be removed easier. I am sure other substrates will work, however I have not found anything in the area where I live in North Carolina. When mounted on something compatible, many of the roots will begin to adhere to the bark and weave along the meandering grooves and crevices of the bark. These are the roots that help sustain the plant with moisture and nutrients. About half of the roots will grow aerial for maximum light absorption. As the plant has no leaves, all of the photosynthesis and thus energy production happens in the roots.

When starting with small plants (less than 3 inches [7.5 cm]), I place them on top of a bed of live Spanish moss that is in turn set on an open mesh of wire to allow light and air movement over and under the moss. It is important for the moss to remain alive so it can absorb and release moisture and humidity to keep the baby plant happy and healthy. No trick I have found will produce larger and more vigorous growth quicker than the bed of moss.

I leave the plantlets on the bed of live moss till they reach about 3 inches (7.5 cm) in diameter. This may take up to three years. I then attach the plant to

[1] A four-year-old seedling of *Dlax. lindenii* from flask mounted to a new hickory bark slab. Old roots showing new growing tips and several new roots emerging from crown can be seen. Early spring is the best time to establish a seedling on its permanent mount. Notice the rough texture and live moss.

[2] This small seedling was purchased mounted on a sliver of cedar wood. The plant was about 1 inch (2.5 cm) across. After growing for about three years on a bed of live Spanish moss, the plant is now 5 inches (12.5 cm) across and ready for a permanent home. Live Spanish moss with its silver color diffuses and reflects light so that lower root surfaces receive light that helps speed growth. It also absorbs much water and increases humidity around the plant's microenvironment while still allowing for good air circulation.

a plaque of hickory bark that has been selected for thickness and is especially deeply furrowed. The plaque should be about 6 inches (12.5 cm) wide by 16 inches (40 cm) long, remembering that it is hopefully going to be home to the orchid plant for many years and must be large enough for the plant to fully mature. Once the plant attaches, it will be impossible to remove the specimen and place it on another mount. The plant

From Seedling to Flowering



should be centered, as the roots tend to grow outward in a 360-degree pattern. If the seedling was originally mounted on a small piece of something, do not try to remove it. Simply drill a hole through the plant's original mount and screw it to the hickory. Mid spring is a good time to mount a seedling as new root tips start growing again and a flush of new roots emerge from the crown of the plant.

After drilling a hole near the top of the hickory plaque so a hook can be attached (I like to use a piece of solid 8-gauge copper grounding wire), carefully drape some strands of live Spanish moss over and around the plant, being careful not to cover it too much and block the light. During the more humid part of the year (60 to 70 percent), you can remove the moss, adding it back as the humidity drops in the winter.

I grow *Dlax. lindenii* under my normal cattleya conditions: bright light between 4,000 and 6,000 foot-candles and temperatures from 50 F (10 C) up to 100 F (38 C) for short periods with lots of air movement when hot. I take advantage of the various microenvironments in the greenhouse and move the plant around seasonally. In winter, while light is less intense, I place it in a brighter place and move it to a less intense area in the late spring through autumn. If you have cooling pads, move it closer to them in the hotter seasons; this also helps with humidity.

Once the plant grows enough to have a

pronounced mound in the center, it has the potential for blooming. A cool, dry spell is required to stimulate the plant to produce an inflorescence. In January and February, I move the plant to the coolest spot or corner so it can get down to 45 F (7 C) at night and I cease to water on a regular basis. During this period, I water the plant only once every 10 to 14 days. By the end of February, I resume normal temperatures and watering schedule. This is an attempt to simulate what occurs in nature in the plant's natural environment. The spike or inflorescence will emerge looking like a thinner-than-normal root, but will instead start to grow outward away from the mound. You may see the first one by the middle or end of March. Don't get impatient. They are slow to develop and buds don't usually open until late May or June. The larger the mound becomes, the greater the number of flowers.

Next to what the plant is mounted on, water quality is of utmost importance. These plants are not tolerant of bad water. If you have more than 75 parts per million (ppm) total dissolved salts (tds) in your water and the pH not between 5.5 and 7.0, you need to deal with this issue before ever trying to grow *Dlax. lindenii*. Salt build-up on the roots is lethal to ghost orchids. If visible salt buildup is evident on the outside of the clay pots or around the drain holes of plastic pots, you either have water with a level of total dissolved salts (tds) that is too high, or you use too much

[3] A newly mounted ghost orchid with the correct amount of live Spanish moss to maintain a healthy microenvironment yet not deflect too much light.

[4] A mounted seedling of the ghost orchid on cleaned mockernut hickory bark showing the deep furrows, rough texture and even some old woodpecker holes. Over time, mosses and lichens will regrow on cleaned bark. This piece came from a wind-thrown tree that was more than 200 years old. The bark is about 1 inch (2.5 cm) thick and "hard as a rock."

[5] *Dendrophylax lindenii* 'Glade Spirit', FCC/AOS. Grower: Keith Davis.

fertilizer. You may choose to collect rainwater or install a small reverse-osmosis (RO) system. I use well water that has about 20 ppm tds and a pH of 5.8. I fertilize all of my orchids at every watering using about ¼ teaspoon per gallon (3.8 L) of various commercial fertilizers, but nothing special or "magical." In nature, all plants receive some nutrients at every rainfall as the water moves the dissolved chemicals around and over the roots. Nature has spent more time than I have in figuring out what is best, so I don't mind borrowing from her knowledge. I am thus happy to share what has worked for me in being able to grow and bloom *Dendrophylax lindenii*. — Text and photographs by Keith Davis.