

# Ghost Orchids

Probably the Most Famous Flower in Florida

Photographs and text by Jay Loeffler

THE GHOST ORCHID population has dropped by 50 percent in recent decades. Most experts estimate that only half of those remaining are capable of reproducing. The plant is highly coveted among orchid collectors and garden enthusiasts.

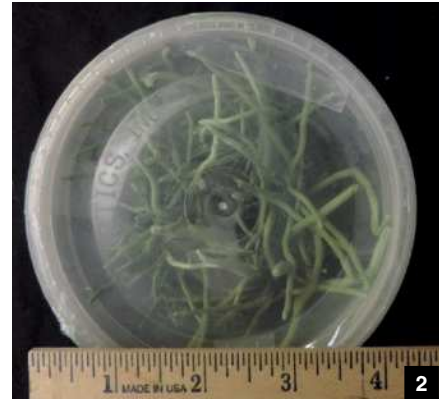
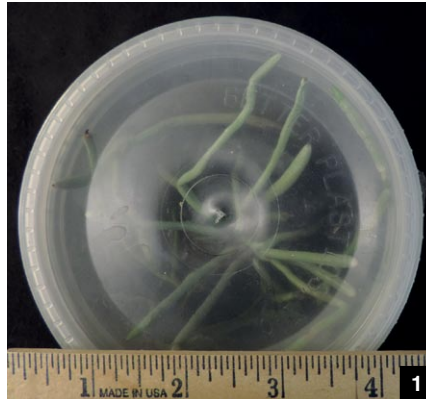
This is where my story begins. It took a few years, but I found an answer for growing ghost orchids. When I first joined our local orchid society, I had heard of this rare and difficult-to-grow orchid. When I asked a few members about them, they told me that they had grown one. Not one of them ever mentioned that they were able to bloom them.

I started reading what I could find about how to cultivate this orchid. The American Orchid Society had a few articles on how a few people had grown and bloomed a ghost orchid. One was super-glued to a board. It did work for this grower, but not for me. Rapeseed fertilizer was used by another grower to produce a blooming plant. Again, this did not work for me.

I bought a flask of ghost orchids to try these ideas. When taken out of the flask, these little orchids seemed to grow. I saw the root tips turn green with new growth. But after about a month, they would start to decline. By the end of the third month, they all committed suicide (could not have been my fault). "Insanity is doing the same thing over and over and expecting different results." I had purchased multiple flasks of these orchids with the same results each time.

I began thinking about replicating the growing environment of this orchid. The Everglades are their habitat and I needed a miniature version. I found a Phototron (see photos), which is an all-in-one self-contained hydroponic grow box. With this, I was able to control the environment better. I was able to grow the plants from the flask better, but still with the same ultimate results. Three or four months down the road they died off. Insanity set in again for a few more flasks.

Why was this so hard? I was quite frustrated and gave up the insanity for a time, finding other ways to stay involved with our orchid society. I tried my hand at another leafless orchid, *Dendrophylax*



*funalis*, a unique leafless orchid from Jamaica.

Then my wife called me at work to say we had a ghost orchid in bud! I was really surprised; I had thought that all of my deflasked plants had committed suicide. I got home from work and found the Jamaican ghost with a bud. Well, that seemed easy. I took my first leafless orchid to a local show and got a blue ribbon. I guess I was getting the hang of these orchids. Maybe I could handle *Dendrophylax lindenii* after all.

By this time, I was about five years into our orchid society. I had talked to anyone who had an interest in growing these plants, but no one I had talked to spoke about blooming them. WHY?

With the internet, anyone can find anything they need to know, right? I Googled ghost orchids one day and found an article about a ghost orchid restoration program at the University of Florida, Gainesville. Seems that a research group there was growing them

[1–2] Four-inch (10 cm) flasks of *Dendrophylax lindenii* seedlings. Larger root systems go a long way toward seedling survival.

[3] A flowering-size plant of *Dendrophylax lindenii* mounted using dental floss tape.

[4] SUCCESS!

[5] One of Jamaica's leafless *Dendrophylax* species, *Dendrophylax funalis*.

[6] An all-in-one hydroponic grow box called a phototron.

[7] The mycorrhizal supplement used by the author in growing *Dendrophylax* plants.

successfully and had begun placing them in the Florida Panther National Wildlife Refuge. They were producing great results. The more I searched "University of Florida ghost orchid program," the more information I found. There I learned about the relationship between orchids and fungi. Orchids and mycorrhizal fungi have a complex symbiotic association where each of the orchid's life stages

is dependent at some level on specific fungi.

I learned that a particular strain of fungus had been developed at Illinois College and was being used to grow *Dendrophylax lindenii* at the University of Florida. The internet provided me the results of papers published about the symbiotic association of mycorrhizal fungi and ghost orchids. These papers showed that fungal strain Dlin-394 had shown the best results for *Dendrophylax lindenii*. I was not able to obtain any of this fungal strain, but I found out in the report that other mycorrhizal fungi did provide some benefit in growing them, information I would later find useful in my own quest to grow (and flower!) Florida's ghost orchid.

This was wonderful information to have, but how could that give the researchers 90+ percent success acclimating from flasks to the greenhouse environment? I read theories from other posts that the roots have to acclimate to being outside the flask, and the idea that the roots need to be infused with carbon dioxide. None of it proved true to me.

One piece was still missing. I decided it was time to write an email asking what the missing piece of information was. The answer was so simple that I (along with my wife and other interested friends) had to drive up to the university in Gainesville (about 200 miles [360 km]) and see for myself. Our orchid society decided to make a donation to this project while we were there visiting. I would highly recommend all societies help with orchid preservation with donations to programs such as the Orchid Recovery Program at Illinois College, either directly or through the American Orchid Society who helped support the project with a \$50,000 grant.

We arrived at the university in Gainesville to a lab that had hundreds of flasks of ghost orchids of various sizes. When removed from the flasks, the seedlings are first fastened to burlap cloth and then acclimated to the greenhouse. Once established and clearly making new growth, they are then stapled to trees in the Florida Panther National Wildlife Refuge with an 80+ percent success rate.

All this information research came down to one simple step. Longer growth in the flask equals a much higher success rate. All the flasks I had purchased had seedlings with roots only about an inch (2.5 cm) or so long. Out of all the flasks I purchased (hundreds of little orchids and hundreds of dollars) I have successfully grown ONE. That one is still growing but



still years away from flowering.

So, after years of failing to grow ghost orchids, I have found a way that works for me.

First, consider the size of the seedlings. Smaller plants (1-inch [2.5-cm] roots) do not do as well right out of the flask. The last flasks I bought had plants with roots at least 3 inches (7.5 cm) long. Ghost orchids with longer roots did the best. Plants with smaller roots were placed on a bed of Spanish moss on my lanai out of direct sunlight. Only one of the smaller ones from that bed of Spanish moss got big enough to mount. If you are thinking about trying to grow one of these, it may be a better investment to purchase a larger seedling already mounted or ready to mount rather than investing in a flask of small seedlings.

When the plant is mounted, place it with the new growth facing down, not up. *Dendrophylax* plants are actually pendent growers and will attach to your mount and grow much faster this way than if mounted new growth up. Once attached and established they will grow about  $\frac{3}{4}$ –1 inch (1.9–2.5 cm) per month (summer months in Florida). I tie the roots down on the mount with dental tape. It is flat and seems to hold well without cutting into the roots. I have never had luck with cork mounts because they seem to dry out too quickly. Cypress appears to work well for me. They will grow on almost anything as long as it will last over time and hold sufficient moisture. I have even seen them grow well on upside-down clay pots.

My ghost orchids grow outdoors, facing northeast. They get good morning



sun and indirect bright light the rest of the day. I lightly cover them with Spanish moss (perhaps about a 25 percent coverage) This seems to dapple the early morning sun and hold moisture around the plants longer into the day. I use only collected rainwater. If you are not able to use rainwater, reverse osmosis is an option. Flush plants well once a month to remove any mineral deposits. I use Orca Premium Liquid Mycorrhizae at 5 drops per quart of rainwater in a spray bottle once per week. When it does not rain, I water my mounts three times a day, allowing them to dry out in between. Do not just mist your plants, water them. They hang vertically so water runs off quickly and if you just mist plants, salt buildup occurs very rapidly. Established plants can go for

short times without water and do okay but mine seem to thrive with more water. The University of Florida had their plants on a timer for watering — 30 minutes every three hours. This works out to four hours of watering every day during the summer. This was reduced to 10 minutes every three hours in the winter but that is still over an hour of actually watering.

We experimented this year. I did not water nearly as much, maybe once or twice a week and I used very little fertilizer. My plant still flowered, but with little root growth and a much smaller flower, indicating that ghost orchids are not as delicate as one may think, *once established*. This year gave me my fourth flower in five years. Last year's bud blasted, and I think thrips were to blame. Thrips are difficult insect pests, attacking buds and new growth, sucking the moisture out of these parts. Blooms may shrivel and drop before opening even when thrips infestations are relatively minor. Attempting to grow this species can be difficult and most attempts to cultivate from flask to adult plants end in failure. I hope the information that I found helps you grow this wonderful and famous orchid. Florida's ghost orchid is fully protected by Florida state laws,

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Find the statute here: <https://www.flsenate.gov/Laws/Statutes/2012/581.185>.

LAWSUIT LAUNCHED TO SPEED ENDANGERED SPECIES PROTECTION FOR FLORIDA'S GHOST ORCHID

FIND DETAILS OF the lawsuit filed on June 12, 2023, by the Center for Biological Diversity here: <https://biologicaldiversity.org/w/news/press-releases/lawsuit-launched-to-speed-endangered-species-protection-for-ghost-orchid-2023-06-12>

which forbid its removal from the wild. Plants collected from the wild typically do not survive removal from their habitat and die within a short period of time.

— Jay Loeffler became a member of the Venice Area Orchid Society with his wife Judy in 2012. Jay lives in Venice Florida ([nvrbdun@verizon.net](mailto:nvrbdun@verizon.net)).

#### Additional Reading

*UF/IFAS Scientists Preserve the Endangered Ghost Orchid.*  
2016. <https://blogs.ifas.ufl.edu/news/2016/01/26/ufifas-scientists-preserve-the-endangered-ghost-orchid/>. Ac-

cessed October 1, 2023.  
Nguyen, H., M.E. Kane, E.N. Radcliffe, L.W. Zettler, and L.W. Richardson. 2016. Comparative Seed Germination and Seedling Development of the Ghost Orchid, *Dendrophylax lindenii* (Orchidaceae), and Molecular Identification of its Mycorrhizal Fungus from South Florida. *Annals of Botany* 119(3):379–393. <https://doi.org/10.1093/aob/mcw220>.