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CONSERVING

SOLVING THE **COWHORN** MYSTERY

Cowhorn orchids are no easy grow, but a school in Hialeah may have found the recipe for success.

BY KENNETH SETZER



Of the many orchids grown as part of The Million Orchid Project, the cowhorn orchid (*Cyrtopodium punctatum*) has proven to be a bit of a challenge to keep alive. A teacher and his students may have figured out why.

The cowhorn orchid is easy to like, if not easy to grow. Its flowers are large, yellow, patterned in splotches of reddish brown. Even when not flowering, its pseudobulbs, which serve to store water and nutrients, stand out like green cigars; its other common name, the cigar orchid, reflects this. The orchid was once common in South Florida, growing epiphytically from cypress and other trees in areas like the Everglades, Big Cypress Swamp and Fakahatchee Strand. Poaching and habitat loss, however, have made them rare.

Fairchild's The Million Orchid Project has literally grown thousands upon thousands of orchid seedlings, including the cowhorn orchid, butterfly orchid (*Encyclia tampensis*), pine pink orchid (*Bletia purpurea*) and others. From nearly microscopic seed to seedling capable of survival outdoors, there have been countless orchid restoration successes, but the cowhorn has been a challenge.

Dr. Jason Downing, the Fairchild orchid biologist involved with The Million Orchid Project, says that the cowhorns are often

lost "in the transition stage, going from a container-grown situation to a greenhouse. It's difficult to acclimate any of the epiphytic orchids, but we've lost a lot of cowhorns, in particular, at this transition."

Though native to Florida, Mexico, parts of the Caribbean, and Central and South America, cowhorns in the U.S. are now found growing wild only in remote, protected Florida areas. They tend to prefer mostly rough bark trees like live oak, buttonwood and mahogany. "It makes sense," Downing says, "that the [airborne] seeds would land in the furrows of rough bark. It's a place where their symbiotic fungi might also be present."

It Takes a Village

Through the Fairchild Challenge, The Million Orchid Project has recruited local schools to help with its mission of propagating and reintroducing native orchids into South Florida's urban landscapes. The project is also an opportunity to teach science and botany through the hands-on tactics needed to grow an orchid from seed. Everyone benefits: The students get to conduct and report real science, Fairchild is able to grow more orchids and collect more data than would ever be possible alone, and the community benefits from the restoration of these rare, native plants.

Thanks to Andrew Kearns and his students at José Martí MAST 6-12 Academy, a public magnet school focusing on mathematics and science in Hialeah, Florida, cowhorns are revealing their secrets. Kearns is chair of the mathematics department and also serves as the school's liaison to The Fairchild Challenge. Back in 2014-2015, Kearns says he and his Green Club and AP Statistics students "began to manage and experiment with different manners in which to raise these young orchids."

Under the auspices of The Million Orchid Project, the students began with four trays of cowhorn orchids, and



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Cowhorn Orchid.
Photo by Kenneth Setzer/FTBG

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Introducing elementary school students to the wonders of nature and science.
Photo by Andrew Kearns



LEFT-RIGHT
José Martí MAST 6-12 Academy students hanging orchids in the school's shade house.
Cowhorn orchid maturing nicely on cut wood at Martí MAST.
Photos by Andrew Kearns

added their own treatment to the final phase of outplanting, in which they attached the seedlings to the bark of the Florida native buttonwood (*Conocarpus erectus*). Also called button mangrove, buttonwood, predictably, is often found near shorelines and has no problem with brackish water and salt spray. It is found throughout much of the subtropics and tropics of the Americas and parts of Africa. Like mangroves, it stays fairly short and can spread wide horizontally. Key West boasts a champion buttonwood tree, last measured at 35 feet tall with a 70-foot crown spread.

A math background and love for nature make an effective combination: Kearns and his statistics students have “used survivorship data from the 2014-2015 school year to analyze effectiveness of propagation media,” he explains. They presented these results at Fairchild’s 2016 Orchid Festival. “What Andrew has found is that, instead of transitioning the cowhorn orchids onto sphagnum or expanded clay pellets to grow, as may be done for other species, it’s best to get the seedlings out onto pieces of cut wood as soon as possible,” says Downing.

The cut wood that seems to be a cowhorn favorite is buttonwood. “Getting these orchids onto cut wood also allows us to attach them directly to their ultimate host trees, without disturbing the roots,” Downing adds. “The wood eventually decomposes to provide some nutrients to the orchid, by which time it should have attached itself to its host.”

Kearns and his students confirmed what Fairchild’s own micropagation lab volunteers have expressed: There’s no instruction book for saving native orchids. “What is particularly motivating for me and my students is the absolute authenticity of this experience,” he says. “Many questions we ask are met with a response of, ‘We don’t know. Why don’t you try it?’ Our efforts are contributing to the body of knowledge about these rare orchids and that, in and of itself, is exciting.”

The authentic experiences and curiosity show no sign of diminishing: “My students and I have created a new botany lab at our school with a goal of being able to propagate native orchids

... from seed to outplanting,” Kearns says “Currently, we are comparing the effectiveness of commonly available LED shop lights with fluorescent lights on newly deflasked seedlings—my AP statistics students will soon be analyzing this data. We expanded our shade house facilities to include another 10-foot-by-20-foot space and are maintaining approximately 250 cowhorns in our facility.”

Fortunately, buttonwood is not a threatened species and is common in cultivation. It is identified by its deeply furrowed bark and twisted, sometimes gnarled branches; its salt tolerance makes it especially useful for coastal landscaping. Thanks to The Million Orchid Project, teachers like Andrew Kearns and his passionate students, buttonwoods and other trees will host cowhorns en masse again soon. 

 Follow their progress on Twitter #MakingStatsReal.