

Microcoelia bulbocalcarata

By Brenda Oviatt and Bill Nerison

An Enigmatic Rarity of the Orchid World



JACOB ULWEHI KNECHT

AHH ... LEAFLESS ORCHIDS. AND when we say leafless we do not just mean that they drop their leaves for part of the year. They are truly without leaves — ever. Call it crazy but as an artist, Brenda has always enjoyed drawing and painting



Brenda Oviatt
and Bill Nerison

the roots of orchids, even more than the flowers. As growers, we find them endlessly fascinating. Orchid roots seem to have personalities and can tell stories if you take the time to listen. The best-known leafless orchid is the ghost orchid (*Dendrophylax lindenii*) — even nonorchid people are familiar with it. But there are many others worth knowing, including *Microcoelia bulbocalcarata*.

We acquired our first *Mic. bulbocalcarata* as seedlings from Isobyl la Croix,

of Scotland, and they have not missed a bloom cycle since reaching blooming size. They just finished flowering (as we write this in February). Our first order of plants from la Croix was lost by the shipping company (well, not “lost” in their words; they just couldn’t find it). Over six weeks after being shipped, they arrived on our doorstep. This was during the heat of summer and most of the plants had perished. But not the *Mic. bulbocalcarata*. We have two survivors from that shipment and they are the foundation of our breeding program whose beginning is testament to their strength and resiliency. Isobyl la Croix is an invaluable source of information to orchid growers. Having acquired our first plants from her and knowing her wealth of orchid knowledge, we asked her about *Mic. bulbocalcarata*. She said that she has not seen it in situ but related the story of her first plant to us: her friend Maire Spurrier (after whom she and the late Joyce Stewart named *Aerangis maireae*) was living in Uganda at the time. Spurrier

[1] The glistening flowers of *Microcoelia bulbocalcarata* are a striking combination of green and white. Note their little bulbous spurs.

was looking for orchids and caught hold of a branch to keep her balance. The branch was dead and came away in her hand and among the lichens on it, she saw a *Microcoelia*. She sent it to la Croix and the photograph of that plant still growing on its original branch is shown on the opposite page. Spurrier wrote, “... the whole tangle of roots, moss and rotten twig was suspended five to six feet above the ground, in heavy shade among similarly dangling vegetation over very slippery moss and lichen covered stones. The ‘path’ ran alongside a small river that probably included the path when in flood. Only about 30 yards in from the ‘road.’ It was a fairly well-built stone bridge left over from colonial times and the river had a little shallow beach where animals drank.”



ERIC LA CROIX



BRENDA OVATT



BRENDA OVATT

The genus *Microcoelia* was established in 1830 by John Lindley, and has since been revised, most recently by Lars Jonsson. The name *Microcoelia* is Greek for “small abdomen” and refers to the globose spur of the type specimen *Microcoelia exilis* (la Croix and la Croix 1997). All *Microcoelia* species are from Africa and/or Madagascar. We think it’s interesting to learn about the discovery, collection and formal description of the orchid species that we love. *Microcoelia bulbocalcarata* was formally described by Lars Jonsson (1981). But plants were collected and preserved as early as 1967 by Colin Leakey (son of archaeologist Louis Leakey) from the Impenetrable Forest in Uganda. The plant Jonsson described was collected in 1977 by Herman Meyer in Uganda. He sent it to the Royal Botanic Gardens, Kew, where it subsequently flowered. We find it hard to imagine, but we have learned that it is quite common for a species to lie undescribed in an herbarium for 10 years or more before being described and officially identified (la Croix, pers. comm.).

Microcoelia bulbocalcarata is fairly widely distributed in nature. This is important to note for two reasons: it protects their survival because worldwide the species in greatest jeopardy are those with the most limited geographic distributions. If they only live in a small area, and if that small area is destroyed, they’re much more likely to become extinct. A wide distribution can also, as in the case of *Mic. bulbocalcarata*, cause populations of plants to adapt to a diverse set of growing conditions. In the mountainous areas in Rwanda and Uganda, it is found in the undergrowth of dense forested areas at elevations of 5,500–6,400 feet (1,680–1,950 m). Although on the equator, the high-altitude location allows for cooler

temperatures at night than what one may consider typical for the latitude. It also grows in Gabon and Cameroon in the undergrowth of forested areas from sea level to 2,600 feet (800 m) where temperatures are more consistently warm. It has been more recently discovered to be growing on Sao Tome and Principe where it grows in the canopy of midaltitude forests, and was apparently discovered only when small branches with plants had broken and fallen to the ground (la Croix, pers. comm.).

As our growing and learning experience has developed, we have fallen headlong for the group of orchids referred to as the angraecoids. Angraecoid is the general term used to describe two of the subtribes in the *Vanda* tribe and *Microcoelia* has been located within the subtribe Aerangidinae. All leafless orchids with photosynthetic roots are in the *Vanda* tribe, a part of the orchid family in which all plants are monopodial (growing primarily from a central point or stem). In the early years of our growing experience, we grew a few leafless orchids, mostly chiloschistas, with relatively good success. As our desire to expand our collection continued, we learned of others. *Orchids* published a great article by Jim Watts titled “Leafless Orchids” (2003). In it, he gave an excellent introduction to the many leafless orchids, then focused specifically on the leafless epiphytes, i.e., the ones which have occasional ephemeral leaves or those with scalelike leaves. In these plants, the photosynthetic process takes place in their specially adapted roots throughout the year. Watts also points out an interesting aspect that can affect culture of truly leafless orchids as well: “Studies of both native and greenhouse specimens show that not only do the roots contain the usual mycorrhizal fungus, but many

[2] Isobyls la Croix’s original plant of *Mic. bulbocalcarata*, shown here still growing on the branch that broke away in the hand of Maire Spurrier. Grower: Isobyl and Eric la Croix.

[3] The term “leafless” is not 100 percent accurate, because the leaves of *Mic. bulbocalcarata* have evolved into small scales that surround the growing points, according to Isobyl la Croix (2004). The scales are visible on these two young plants. Grower: Botanica Ltd.

[4] If you’ve considered growing a plant that’s just roots most of the year, *Mic. bulbocalcarata* should surely be a top contender. Grower: Botanica Ltd.

species also contain types of algae. For this reason, these plants are less tolerant of fungicide and algacide treatments.” This is extremely important to keep in mind if you decide to try growing these.

CULTURE Leafless orchids are, as a rule, not the easiest orchids to grow, but armed with the right information, anyone who really wants to grow one can. The main cultural tip for angraecoids we give is “the less root disturbance, the better,” so with *Mic. bulbocalcarata* (a leafless angraecoid) this is especially important. There are some rules that apply to them that are different from other epiphytic orchids. With roots that contain the chloroplasts, which are normally in leaves to photosynthesize light, the roots must be exposed to light. This therefore means that the roots mustn’t be in a pot surrounded by media to keep them humid. Humidity must be maintained in the growing environment and/or regular watering is required. They are much more dependent on you, the grower.



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Light Intermediate light levels seem to make plants of this species grow their best, though we've been surprised at the relatively wide range of light levels in which it will grow well. We have two large mature plants facing opposite directions in the greenhouse (one north, the other south) and both are growing and blooming well. The variation in light where we grow them ranges from 500–2,200 foot-candles (winter–summer).

Temperature We've grown our plants in several locations successfully. In all locations the temperature at night ranges from 53–58 F (12–14 C) and the day range is 60–96 F (16–36 C). Jacob Knecht, a friend in Berkeley, California, and owner of one of our seedlings, reported that his did not thrive under warm conditions where the nighttime temperatures did not drop significantly, but that once he moved it to a more intermediate location and there was a greater diurnal change, the plant's vigor increased. This seems to match the environment from which these came, Uganda, where equatorial heat is diluted by high altitudes. We suspect that plants from Cameroon and Gabon are more warmth tolerant, though we have not seen any from there commercially available.

Water and Fertilizer Reverse-osmosis water or rainwater is essential and used with fertilizer (½ or less strength), and a periodic flush of clean water. We rotate fertilizer formulas and always provide micronutrients. Because leafless orchids use their roots to photosynthesize, the roots must be exposed to light, but we've found that if we put a thin layer of Spanish moss (*Tillandsia usneoides*) over them, it acts as a great buffer. They dry more slowly and do not get as easily overdried. Special care must be taken if using moss, though; do not cover the central growing point. We watch their root tips and even though their growth slows in the winter (evidenced by



MARISA NERISON

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[5] As young seedlings in flask there are few markings on the roots. Once deflasked, they develop their distinctive spotted roots. These are *Mic. bulbocalcarata* ('Isobyl' × 'Eric'). Grower: Botanica Ltd.

[6] The authors contemplated removing an adult plant to get a good photograph, but it had become intertwined with other orchids and mounts. Its tendency to grow onto the mount of a neighboring orchid suggests a permanent home is best to ensure longevity. These tend to reach out, away from whatever you attach them to, and attach to their neighbors or hang free in the air. The authors move young plants regularly so they can be sold without damaging their roots. Grower: Botanic Ltd.

the shorter growing tip) they do not seem to mind regular watering. This slowdown in growth may be more a function of day length (we're at about 47 degrees north latitude) than an actual dormancy.

HOPE FOR SURVIVAL *Microcoelia bulbocalcarata* is one of 30 species in the genus *Microcoelia* (World Checklist of Select Plant Families 2013). Even after a decade of searching, we've only managed to acquire nine. This lack of availability threatens the survival of those not yet in

the commercial market. If habitat loss continues at the present rate, they must be in private collections to be safe from extinction. Whether or not you're actively involved in reproducing rare plants, we encourage you to share information if you see any of them available. The broader the gene pool, the greater the survival rate. At this time, our offspring of *Mic. bulbocalcarata* are the result of just two plants. We continue to search for material from other gene pools to ensure their strength, survival

and success in ex situ propagation. We encourage everyone to share pollen, seed and information.

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Brenda Oviatt is an artist and Bill Nerison is an architect. They live on the Clark Fork River in Missoula, Montana (a corner of paradise), with their daughter Marisa, son Tristan and an assortment of animals. They have been growing orchids together for 30 years and in that time have grown in many settings. For the last 10 years, their orchid growing has focused on the ex-situ propagation of endangered angraecoids and the education of hobbyists and growers. (website www.botanicaltd.com).

The Genus *Microcoelia*

Africa

bulbocalcarata
caespitosa
corallina
globulosa
hirschbergii
jonssonii
koehleri
kondensis
leptostele
macrorhynchia
megalorrhiza
microglossa
moreauae
nyungwensis
obovata
ornithocephala
perrieri
sanfordii
smithii
stolzii

Madagascar

aurantiaca
bispiculata
cornuta
decaryana
dolichorhiza
elliottii
gilpinae
macrantha

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physophora
 — Compiled by
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 Bill Nerison.

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