

COLLECTOR'S ITEM

Angraecum longicalcar

A CANARY IN A COAL MINE

By Brenda Oviatt and Bill Nerison, with contributions by Elsa Hall



Angraecum longicalcar 'Memoria Fred Hillerman' with its long spurs on display.
Gower: Botanica Ltd, Photograph by Brenda Oviatt.



Brenda Oviatt and
Bill Nerison

ANY TIME A SPECIES REACHES a point that it's considered "Critically Endangered" verging on "Extinct in the Wild," you know things are serious. It is the time when humans that really care need to step in and take action to protect the species from the humans that don't care or don't know enough to care. This point has been reached by *Angraecum longicalcar*. Not long ago, the International Union for Conservation of Nature (IUCN) featured *Angcm. longicalcar* as its "Species of the Day." Fortunately, some successful conservation efforts are underway, and we want to use this opportunity to point out the successes and failures in hopes that you, the reader, can become more aware of the efforts needed on behalf of endangered species.

Madagascar is recognized as one of the most ecologically rich countries in the world with 80 percent of its flora found nowhere else on earth. The island is home to over 1,000 known orchid species in 59 genera. Over 90 percent of these are endemic to the island, and most are known from very few specimens or appear to have restricted distributions with small populations. Hundreds of species are found only in one or two locations in the wild and are threatened by habitat clearance through logging, charcoal production and agriculture in addition to the collection of the rarest and most charismatic orchids for the horticulture trade. The species with the most isolated distributions are often the ones in greatest danger. If their small areas are decimated, they are usually lost. For *Angcm. longicalcar* the greatest damage has come from fire, marble mining and collection for sale in the horticulture trade. When in bloom, it is stunning.

If you've been an AOS member since 2007, you may remember an article with an excellent description of its precarious life documented by Philip Seaton (2007). Royal Botanic Gardens Kew has been doing extensive research on it for many years, and Madagascar is the only country outside the United Kingdom where Kew maintains a permanent presence. In field work done by Landy Rajaovelona for Kew, she discovered that *Angcm. longicalcar* is rarely pollinated, meaning fruit and therefore seed production is low. It is likely that it, like many of the *Angraecums*, is moth pollinated. So where are the moths? In other parts of the world, we're seeing beneficial insects being killed along with "pest" insects by the broad spectrum insecticides used in food production. So many orchids have evolved with their pollinators in a complex and intricate way. Could it be that, in addition

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to all the other human-caused losses, that there is a lack of reproduction due to the disappearance of pollinators? Can the pollinator survive without the orchid? The Kew website states: "*Angraecum longicalcar* may already be extinct in the wild surviving only in a few conservation collections." I inquired about this with them directly and Phil Cribb told me that some plants still survive in the Isalo area and that, on their last visit, the Kew team found that a fire had destroyed a few large plants but they did find others.

There is a cooperative effort underway with funding from Kew, Conservation International and Mohamed bin Zayed Species Conservation Fund that involves the protection and reintroduction of *Angcm. longicalcar*. As part of the project, seedlings

Angraecum longicalcar, above, photographed in situ in the central highlands of Madagascar between 3,300 and 6500 feet (1000-2000 m). The specimen here is growing epiphytically in gallery forest although the species can also be found in drier (xerophytic) vegetation or on trachyte rock.

of *Angraecum longicalcar* are grown in greenhouses at the Kew Madagascar Conservation Centre, some of which have now been reintroduced to the wild on the Itremo plateau east of Ambatofinandrahana with the help of a local community. The center has an extensive program surveying orchids and collecting seeds for seed-banking or cryopreservation. By involving the local community members, an area has been set aside and they are being taught about the precious plants growing there (including many others in addition to *Angcm. longicalcar*). The local schoolchildren are part of the reintroduction project and are rewarded on the basis of success. Phil says that he believes their success rate is high and that the project has also raised local awareness of orchid conservation.

Reintroduction has a nice ring to it, but when done in an isolated manner, without the protection of the reintroduction habitat as is being done in the Itremo area, efforts often meet with failure. The above-mentioned cooperative effort, in which members are actively working on the ground to protect the 27-mile² (70-km²) area and removing seed for cryopreservation while also reintroducing species (such as *longicalcar*), appears to be a successful one. It is this type of effort that is required for long-term success on a wider scale, a prime example of in situ conservation.

So, what can you as an orchid lover do? Organizations that are successful require financial support; give money if you're able. Beyond that comes ex situ conservation. Be aware of the orchids you purchase and where they came from. Our personal goal is to aid in the ex-situ effort by reducing (hopefully eliminating) the removal of plants for the horticulture trade. If we can offer greenhouse grown, second-generation plants at an affordable cost, hopefully the "trade" will diminish. Marcel Lecoufle (Vacherot & Lecoufle) was an early pioneer in reproducing angraecoids, particularly *Angcm. longicalcar*, ex situ. As novice growers, it frustrated us to see them available in France, but not in the United States. We were finally able to obtain several plants though — some from Lecoufle and a division of one of Fred Hillerman's plants. Using these, we now have beautiful young plants of *Angcm. longicalcar* available.

The name *longicalcar* (pronounced long-ghee-KAL-car) is a compound Latin word meaning "long spur." The French botanist Jean M. Bosser (1922–) first described this plant as *Angcm. eburneum* var. *longicalcar* because he noticed it was



quite similar, but differed in the longer spur. Sometime later, the German botanist Karl Heinz Senghas decided it should be recognised as a separate species, so he published the name *Angcm. longicalcar*. To further complicate matters, it has also been listed in literature and registration as *Angcm. superbum*. There are minor differences in the lip, and more differences in natural geographic location, but honestly, it's that amazing spur that sets it apart. Often, you can even see the nectar in the spur! Personally, we hope it remains as *Angcm. longicalcar*. To date, seven hybrids have been registered using one of the above names as a parent and six of the seven are primary hybrids (a cross of two species).

Top: *Angraecum eburneum* subsp. *superbum* with resupinate flowers and 6-inch (15-cm) spurs.

Bottom: The spur on *Angraecum longicalcar* can reach up to 16 inches (40 cm) in length, longer than that of *Angraecum sesquipedale!*

Angraecum longicalcar readily passes on its best traits to progeny, though it is not widely used.

Angraecum Familie Lecoufle = (*eburneum* × *longicalcar*)

Angraecum Comocala (registered; synonym of above)

Angraecum Comocalcar (registered; synonym of above)

The Culture of *Angraecum longicalcar*

THERE'S NO GETTING AROUND IT. THIS IS A RELATIVELY LARGE PLANT. BUT, IF YOU HAVE THE ROOM AND the conditions for a *Cattleya trianae*, *Vanda coerulea* or a standard cymbidium, include an *Angcm. longicalcar* in your collection! As with most orchids, ten people can grow the same plant ten different ways and all do well with it. In conducting research for this article, we came across an excellent article about it by Elsa Hall of Outeniqua Orchids in South Africa (2013). She agreed to let us use parts of her work for this publication. She is growing her *Angcm. longicalcar* in George, South Africa which is on the "Garden Route" halfway between Capetown and Port Elizabeth, at about 33° south latitude. For those of you in the southern US, her cultural advice may prove to be extremely helpful. We're growing at nearly 48° north latitude. It's always good to know of several ways to grow plants successfully!

Here are some requirements for growing *longicalcar*. Be careful with the roots when repotting! Use a good quality mix so that you can go longer between repotting, as root damage can easily set your plant back. We repot as infrequently as possible and ONLY when the plant is in active growth (midspring in Montana is a good time). Once plants reach blooming size and begin to form an inflorescence, refrain from moving them if possible. The flowers will form more nicely (all perfectly upside-down) and they'll be less likely to bruise (brown spots on such beautiful white flowers is sad to see).

LIGHT AND TEMPERATURE Our mature plant has bloomed for us with two to five inflorescences each year we've owned it. As you can see in the photo (bottom of page 20), it resides on a bench at shoulder height on the east side of our greenhouse. Occasionally the leaves and flowers are in contact with the plastic wall of the greenhouse. In the dead of winter, when it's below zero outside, the temperature will be in the low 50s (10-15 C) where it sits. In the summer the greenhouse temperatures will occasionally be in excess of 96 F (35.6 C). The constant air movement around them is essential to prevent overheating and air stagnation that can lead to problems like rot — especially during the cool times. It gets bright light until midafternoon, at which point it is somewhat shaded by other plants. Until quite recently, there was a 5-foot- (1.5-m-) tall *Angcm. sesquipedale* nearby (it tipped off the bench). Both could likely take even brighter conditions, but the way they bloom for us, we've left well enough alone. In lower light however, many of the larger angraecums will grow nicely but never bloom (and where's the joy in that?!). We've found the young seedlings of *Angcm. longicalcar* to be surprisingly hardy right out of flask and have been growing them under fluorescent lights for a few months, then transitioning them to higher light as they grow.

WATER/FERTILIZER We use exclusively reverse osmosis water with ½-strength fertilizer and a periodic "flush" with clean water. We rotate fertilizer formulas and always provide micronutrients. The frequency of watering is determined by time of year and weather, but also by what medium the orchids are potted in. They must be allowed to dry between watering. We've read of people using a semiterrestrial mix for *Angcm. longicalcar*. We do not. Ours are in heavy plastic pots in medium grade bark, charcoal, sponge rock mix. We allow them to get quite dry between watering, and when we do water them, the foliage gets watered too. This means it's important to water early in the day, because even with a fan so close by, water sitting in the crown of the plant could easily cause rotting to occur during a cool night.

INTERNET RESOURCES TO LEARN MORE

Royal Botanic Gardens Kew

- The Itremo Massif Protected Area in Madagascar (www.youtube.com/watch?v=tdb9QGjUREE)
- Madagascar Orchid Conservation Project (www.kew.org/science-research-data/directory/projects/Madagascar-Orchid-Conservation-Project.htm)
- Orchid Conservation in Madagascar (www.kew.org/plants/orchids/madagascar.html)

The Mohamed bin Zayed Species Conservation Fund (www.speciesconservation.org/)

Conservation International (www.conservation.org/Pages/default.aspx)

Missouri Botanical Garden (www.missouribotanicalgarden.org/plant-science/plant-science/Africa/Madagascar.aspx)

Elsa Hall: Outeniqua Orchids (www.outeniquaorchids.co.za/docs/Angraecum-longicalcar.pdf)

The International Union for Conservation of Nature (www.iucnredlist.org)



An Update on Isobyl La Croix's book!

Aerangis: Exquisite African Orchids to Discover, Identify and Grow by Isobyl La Croix will be published in September 2014 by Timber Press. For further information or to pre-order copies, please visit www.aerangisbook.com.

Angraecum Longibert = (*longicalcar* × *humbertii*)
Angraecum Longilena = (*longicalcar* × *magdalenae*)
Angraecum Longiscott = (*longicalcar* × *scottianum*)
Angraecum Argonaut = (Longiscott × *longicalcar*)

HOPE FOR SURVIVAL What can *YOU* do? Educate yourself about your own orchids; where did they come from? If you have a species, was it removed from nature or raised in a nursery? Adopt a threatened species orchid (and there are plenty of them), and work to keep it alive and protected, both in collections and in its native habitat; encourage others to do the same. Share pollen, seed and information!

References

Hall, E. 2013. *Angraecum longicalcar* (Bossler) Senghas. *Orchids South Africa*, 1(4):34-38. Accessed July 1, 2013 from www.outeniquaorchids.co.za/docs/Angraecum-longicalcar.pdf
 Seaton, P. 2007. Between a Rock and a Hard Place in Madagascar. *Orchids* 76(5):368-373.

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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 ten years, their orchid growing has focused on the ex situ propagation of endangered angraecoids and the education of hobbyists and growers (website: botanicaltd.com).*

Above Right: *Angcm.* Longiscott has a particularly long bloom season, often over several months. The plant size is halfway between the thin-leaved, vining *Angcm.* *scottianum* and the robust *Angcm.* *longicalcar*, with the flowers equally between too.

Below Right: There is a fan within inches of our group of *Angcm.* *longicalcar* plants; the air is constantly moving.



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