Encephalartos horridus, the Eastern Cape Blue Cycad

Article by Maurice Levin and Lara Loewenstein
(Photos by Maurice Levin unless noted)

Encephalartos horridus is the classic South African blue cycad. Its look is absolutely distinct among all cycads, combining an incredibly blue color with unusual three-dimensional convex leaflets unique in the cycad world. The specific epithet “horridus” is the Latin for “dreadful” or “horrible,” meant to describe the plant’s spiny appearance. Up close, one can sense the true meaning of “horridus” by backing unintentionally into this plant. However, when one walks away just a short distance, this plant’s magnificent sculptural quality and intensely blue foliage far offset any sense of dread.

The Eastern Cape Blue cycad has stiff leaves of a markedly silvery-blue-gray color. The underside of the leaves is often a greenish-grey-silver mirror of the upper side’s color. While the leaves start by growing straight, they finish with a lovely recurved habit. With the added three-dimensional effect of its thorny leaflets pointing in every direction, this cycad epitomizes the term “living sculpture.” One can imagine that even the dinosaurs would have had a hard time making a meal of E. horridus’ Jurassic predecessors.

Encephalartos horridus was first described in 1801 by French botanist N.J. Jacquin as Zamia horrida from a field-collected plant cultivated in Vienna, Austria. Figs. 1a and 1b are the lectotypes of the species; Fig. 2 is the illustration from the 1863 edition of Curtis’ Botanical Magazine (89: t.5371). This species was transferred to the genus Encephalartos and its gender changed by German botanist J.G.C. Lehmann in 1834. It has been at other times called Zamia tricuspidata and Encephalartos horridus var. hallianus.

Habitat

Indigenous to South Africa’s Eastern Cape province (in Port Elizabeth and the Uitenhage districts), Encephalartos horridus flourishes best in desertic areas, alongside Euphorbia species, Aloe striata, Strelitzia juncea, and introduced Opuntia species (prickly pear or beaver tail cactus), where rain averages 250-600 mm (10-24 in) annually. The climate in these areas is temperate, with frost occurring only rarely in the winter and temperatures exceeding 40 C in the summer. In fact, E. horridus’ blue color derives from the leaves’ reflective waxy coating that increases with light intensity, so the plants become bluest when grown in full sun, taking on more of a green tint in shade.
Care and Cultivation

Due to its natural growing conditions, *Encephalartos horridus* is relatively easy to care for: it is drought tolerant, and frost resistant to a several degrees below freezing. However, like most cycads, it does best in cultivation when planted in well-drained soil and can suffer from rot if too close to a spraying water source. On one occasion when a mature specimen of *E. horridus* was near a sprinkler in a customer’s garden, the crown rotted and the plant had to be excavated and treated with fungicide. Ultimately, it was saved and became a multi-headed plant.

It’s important to remember that *Encephalartos horridus* is native to an arid subtropical climate, where the plant receives whatever rain it gets during the warm summer months and winters are very dry. So, particularly for those growing *E. horridus* in mediterranean and arid climates, remember that these plants love heat, accompanied by moisture. During the summers, these plants react very positively to being well-watered, and they do not mind having wet, if warm feet. Conversely, in winter, *E. horridus* prefers a dry environment. In a mediterranean climate like that found along the California coast, this means providing extremely good drainage when planting *E. horridus*. We have discovered that one of the best ways to do this is to fill the planting hole halfway with gravel, and actually install the plant atop the gravel, then infill and mound with a very porous soil mix. In this way, any rain or irrigation the plant receives during the winter will drain away from the roots.

*Encephalartos horridus* also has relatively few pests. The only one of note is a small weevil (*Antliarhinus zamiae*), whose larvae completely consume the seed or endosperm of the plant. While not a major problem, this weevil does slow the reproduction of *E. horridus* in the wild, only adding to the problem of conserving these plants.

Distinct Forms

*Encephalartos horridus* in its most well-known form is often misinterpreted as a dwarf cycad. Its stem can reach 1.1 m in length, of which up to 70 cm will be above ground. The rest, due to the plant’s

![Fig. 5. Broad leaflet form of Encephalartos horridus “Dwarf Form”](image1)

![Fig. 6. Star-shaped leaflet subform of Encephalartos horridus “Dwarf Form”](image2)

![Fig. 7. Encephalartos horridus “Steytlerville Form” leaf detail](image3)

![Fig. 8. Plant of Encephalartos horridus “Steytlerville Form” in a hillside planting](image4)

![Fig. 9. Green-colored Encephalartos horridus in San Francisco Botanical Garden](image5)

![Fig. 10. Encephalartos horridus plant with uniquely spiny leaves](image6)

![Fig. 11. Seeds of different Encephalartos spp. Photo by Maurice Levin and Karista Hewes](image7)
contractile roots, remain underground, making the plant appear much shorter. The plant’s relatively short leaves also add to the impression that this is a dwarf plant.

At least two distinct forms of *Encephalartos horridus* are known to exist. The typical form is found in the Eastern Cape Province’s Uitenhage district. Growing in the karroid veld, an arid subtropical climate zone, it is the best-known and horticulturally most ideal form, found in botanical gardens throughout the world.

Another form of this species is the “Dwarf Form,” which grows in the sourveld high desert in hills near Port Elizabeth in the Eastern Cape Province. All of its features (namely its leaves, leaflets and stems) are much smaller than those of the typical form, with stems rarely taller than 30 cm (12 inches). The sourveld is an African region with poor pastureland - an area of high land with coarse grass and other plants that are poor fodder for livestock; it is for this reason that the “Dwarf Form” is sometimes postulated as the same plant growing in a harsher climate (Grobbelaar, *Cycads* [2004]).

Having grown both forms in our nursery for nearly eight years side-by-side, we believe that these are indeed two distinct forms. Note the distinctly different features in Figs. 3 and 4, even though both plants have been grown in an identical climate, the former at the same Southern California nursery, the latter in the same Southern California hillside. Note, also, the different leaf forms of the “Dwarf Form.” One form has a distinctly flatter leaf form, as seen in Fig. 5. In this form, it is as if the *E. horridus* has traveled to “Munchkin Land” and all of its vertical features have been squeezed down, so that the leaflets are the same width, but half the height, and the leaves are half as long. A second, some say more desirable form of the *E. horridus* “Dwarf Form” is the starry leaf form, as seen in Fig. 6. In this form, the leaflets are almost like three-dimensional stars, extremely revo-lute, with very pointed thorns.

A third and distinct form of *Encephalartos horridus* is known as the “Steytlerville” or “Addo” form. It is characterized by flatter leaflets, almost similar to those found in *E. trispinosus*. This form, which bears nearly identical cones to the typical form of the species, has quite dissimilar leaflets from both the Uitenhage and Port Elizabeth plants, with the same coloration as the regular form of *E. horridus* (Figs. 7 and 8).

**Differences Due to Environment**

When *Encephalartos horridus* does not receive significant heat and direct sun-light, it can turn green. On a visit to the San Francisco Botanical Gardens, I was doing a garden walk discussing the cycads in their facility, and I was told in hushed tones, “You have to see our *Encephalartos horridus*!” Imagine my amazement when we turned the corner and I was confront-ed with the plant pictured in Fig. 9, a uniquely green *E. horridus*. Because summer temperatures rarely exceed the low 20’s C (low 70’s F), and skies are usually overcast during the mild summers, this plant had apparently never acquired the blue-gray color normally associated with this species.

Additionally, certain seed-grown plants will exhibit delightful variations in leaf morphology. Fig. 10 shows a distinctly spiny form of this plant.

**Cones and Seeds**

The cones of *Encephalartos horridus*, both male and female, appear during the early summer, emerging fully by late fall, and dehiscing by early winter. Cones are generally solitary, although a male plant will occasionally produce two cones simultaneously. The female cones, which measure about 20-40 cm (8-16 in) long, 12-20 cm (6-8 in) in diameter, as on other cycads, are usually a bit larger than the male cones, which usually measure 20-40 cm (8-16 in) long, 6-12 cm (2.4-4.7 in). Both female and male cones are a reddish brown color due to a thin layer of hairs that cover them. That reddish brown color will gradually fade to a light green, as the female cone matures and the hairs fall off the cone. Please see the covers of this newsletter which show a dehiscing female cone (front cover) and a recently emerged male cone (back cover).

Seeds are on the medium-to-smaller size among *Encephalartos* genus. To get a sense of seed sizes, please see Fig. 11 for a visual comparison of seeds of different *Encephalartos* species currently being germinated at the Jurassic Garden/A&A Cycads nursery.

**Growth Habit**

The growth rate of *Encephalartos horridus* is moderate to slow compared to other *Encephalartos* species. Seed germination takes three to six months; the first leaf appears within another six months. In ideal climate conditions, combining hot summers, with chilly but not cold winters, the plant can reach coning size within 10-12 years. New leaves generally emerge once per growing season, often alternating with coning events. If the plant is a female, it may cone and flush new leaves in alternate years.

**Similar-Looking *Encephalartos***

A number of Eastern Cape *Encephalartos*...
tos species look similar to *E. horridus*. The first is *E. trispinosus*, originally thought to be a variety of *E. horridus*, *E. horridus* var. *trispinosus* until it was elevated to species status by Dyer in 1965. *Encephalartos trispinosus* differs from *E. horridus* in its narrower leaflets, which are transversely concave, compared to those of *E. horridus*, which are convex and wider. Also, cones of *E. trispinosus* are a distinct blue-green color, later becoming yellowish green. Fig. 12 is a photo of a mature *E. trispinosus* plant.

*Encephalartos arenarius* is another species with leaf forms similar to *E. horridus*, particularly the blue form of that plant. The median leaflets of the “Blue Form” of *E. arenarius* are significantly wider than those of *E. horridus* and have three to four lobes on their lower margin. Fig. 13 is a photo of a re-established off-set of *E. arenarius* (Blue Form), and Fig. 14 for leaf images of a mature plant of this species and form.

*Encephalartos arenarius*, in its “regular form” also produces blue-leafed specimens which exhibit a similar look to *E. horridus*. These plants tend to have flatter, broader and larger leaflets than does *E. horridus*. Please see Figs. 15 and 16 for images of Blue Leafed *E. arenarius* plants in our nursery.

Finally, mention should be made here of efforts to produce superior horticultural specimens by crossing *E. arenarius* with *E. horridus*. While “cycad alchemy” via crossing species is still a new and controversial topic, it must be said that the cross between *E. arenarius* and *E. horridus* often produces a plant with true hybrid vigor. These plants seem to produce longer leaves, and grow faster from seed than either of their parental species. Leaf length and size, compared with the caudex size of this plant, demonstrate the fast and vibrant growth of this cross. Figs. 17 and 18 are examples of this cross.

*Encephalartos horridus* continues to become more and more popular among cycad enthusiasts, as well as environmentally conscious home gardeners. Due to this widespread popularity, we believe that increased prevalence and knowledge of this plant will result in growers around the world planting one or more in their gardens. This prominence would have the added benefit of reducing incentive to poach these plants from the wild. However, to achieve this end, significant seed propagation, cultivation and advertising of these plants must occur. That’s a huge effort, but we strongly believe that this will aid the preservation of these species, and hopefully ensure that this “far-from-dreadful” ancient treasure will have its deserved place in gardens for many generations to come.