

Encephalartos turneri



Encephalartos turneri - Turner's Cycad

Article and Photos by Maurice Levin

For years, the distinct leaves and relative inaccessibility of *Encephalartos turneri* have made it a true collector's item among cycad aficionados. Located in hard-to-access habitats in previously war-torn Mozambique, Turner's Cycad only became well-known in gardens in the last ten years, since political stability returned to Mozambique. However, due to efforts to propagate and distribute seed and seedlings in the late 1990's and early 2000's, this medium-sized cycad, very adaptable to a range of climates, may become more available and popular in gardens.

History of the Species

E. turneri was described in 1985 by Lavranos and Goode. They named the plant for the Ian S. Turner of Zimbabwe, who discovered the species, and whose collected specimens and field notes provided the basis for description of the species. Turner had discovered the plant in his journeys among the granite-covered hillsides approximately 15 miles southeast of Nampula, Mozambique.

Morphology of Forms and Ecotypes

There are several habitats for Turner's Cycad around the Nampula region of Mozambique. The type locality, southeast of the city of Nampula, has been likely decimated by collectors, with few specimens remaining. This is the Nairobi ecotype. In habitat, *E. turneri* grows in habitats ranging from rocky barren hillsides to "along a watercourse cascading down from the highest peaks" (Douglas Goode, *Cycads of Africa Volume I*). Not surprisingly, specimens are plentiful only in the most remote localities.

The trunk of *Encephalartos turneri* can reach ten feet in height. Hillside plants have a tendency to recline over time, becoming procumbent, particularly where growing on an incline. In cultivation, these plants tend to produce straight erect stems. Leaves grow five

feet long and spread straight out. Leaves of sun-grown plants (front cover) are imbricate and an olive green color, while

those of shade-grown plants are dark green and very shiny (Fig. 2); both figures are of plants from the Nairobi habitat. Leaflets of *E. turneri* range from entire to somewhat spiny, depending on ecotype, which will be discussed below. One of the most distinctive features of *E. turneri* may be found in the boat-shaped form of the leaflets, which also have an attractive revolute margin in mature plants.

Mature plants of this species tend to produce 1-3 cones each year. Cones of both sexes can reach 12" long. Diameter of male cones is 3"; that of while female cones is 5". Color of cones ranges green to yellow to reddish pink, depending on habitat and maturity.

Seedcoat color ranges from green to yellow to red and are among the largest I've seen in the genus, up to 1½" long, and nearly ¾" wide at the base. The seeds tend to be somewhat pear-shaped, similar to those of *E. gratus*, but much more robust. Please see the accompanying photographs of seedlings for reference.

Turner's Cycad's various habitats and ecotypes have notable morphological differences. Most plants in U.S. nurseries and gardens today are from the Nairobi habitat. Examples of this plant are found on the front cover (mature coning plant), a 15-gal. juvenile plant in Fig. 1, and a seedling in Fig. 2. Plants from the Nairobi locality are the tallest and most robust in this species.

70 miles from Nampula, to the west and a bit north, lies the town of Ribauè, where the "giant" Ribauè Form of *Encephalartos turneri* is located. It is quite numerous in habitat, and is difficult to reach, requiring several hours of climbing up stone-faced mountains full of thorny Euphorbias and other native plants. The Ribauè form, which has green and yellow male cones, has spiner leaflets than the other forms of the species. Note the prickly leaflets on the seedling leaflets of this form pictured in Fig. 3.

Approximately 50 miles northwest of Nampula lies Jaiane, in the Rapale district of Nampula Province. In this area are found two unique forms of *E. turneri* exhibiting either red or yellow sarcotestas, known as the "Red Seed" and "Yel-



Fig. 1. A 15-gallon specimen of the Nairobi form of *Encephalartos turneri*



Fig. 2. A seedling of the Nairobi form of *Encephalartos turneri*



Fig. 3. Seedlings of the "Ribauè Form" of *Encephalartos turneri* with spiny leaflets (inset).

low Seed” variants of the Jaiene/Rapale form. Leaves are more a blue-gray color and are wider than other forms of *E. turneri*. The major difference between the two variants is seed size: the “Red Seed” variant has smaller seeds, but leaflets of juvenile leaves tend to have more spines than those of the “Yellow Seed” variant (Fig. 4). Seeds of these plants only became available in early 2003 in very limited quantities. The illustrations in Fig. 5 compare this ecotype with the Ribaue ecotype.

A less well-known ecotype of *Encephalartos turneri* is found in the town of Boila, approximately 10-12 miles from the Indian Ocean. The Boila form has larger leaves than the other forms, with more revolute leaflet margins. Ultimately this plant may be described as a new species, but for now it is considered part of *E. turneri*. Fig. 6 shows a juvenile plant of this form.

Finally, a dwarf form of *Encephalartos turneri* comes from the vicinity of Nami-alo, approximately 50 miles west-north-west of Nampula. Plants of this form are smaller and slower growing in every way than those of the type locality. Fig. 7 shows seedlings of this ecotype.

Growing *Encephalartos turneri*

I have imported a number of seed and seedlings of this species over the years. *Encephalartos turneri* has been difficult to import from Mozambique, but for a few years, I was able to import habitat-specific seeds and seedlings. Generally, there is a 6-12 month “waiting” period before the seeds will sprout their root radical, and another 3-6 months before those sprouts will develop well enough to produce their first leaves. Seedlings are fairly robust, with little risk of damping off if given good drainage.

Once a seedling has hardened off, it can last in its community pot for two to three years before it needs to be potted up into a 5-gallon pot. I have found

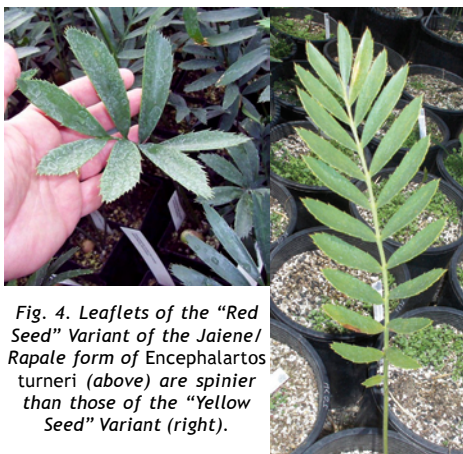


Fig. 4. Leaflets of the “Red Seed” Variant of the Jaiene/Rapale form of *Encephalartos turneri* (above) are spinnier than those of the “Yellow Seed” Variant (right).

that *Encephalartos laurentianus* at this age benefits from 8-12 hours of shade in our arid Southern California climate, particularly with summer heat.

After approximately 3 1/2 years, seedlings have 3-4 leaves approximately 12-15 inches long. This is a point at which the plant may be safely transferred into either a 15-gallon pot or into the ground. Experience has taught me that it is wise to bury the caudex of these plants at least 1-2” below the soil line. *Encephalartos turneri* is one of the few plants in this genus that loves ample water once it has established, but suffers from dry heat until it has become well-established.

Our nursery experienced temperatures in the mid- to high 20’s (°F) in January 2007, and a wide range of leaf damage occurred in this species. Plants with some overhead protection, or protection from winds experienced very little damage. Plants exposed to cold wind experienced leaf damage, but nearly all of these came back in the spring with the first heat wave. Seedlings suffered considerably more leaf damage than did mature plants.

From a nursery owner’s standpoint, I would say that Turner’s Cycad has been an extremely satisfying plant to grow, both in the nursery and in my home garden. Its new leaf flushes have never disappointed me, always glowing with a

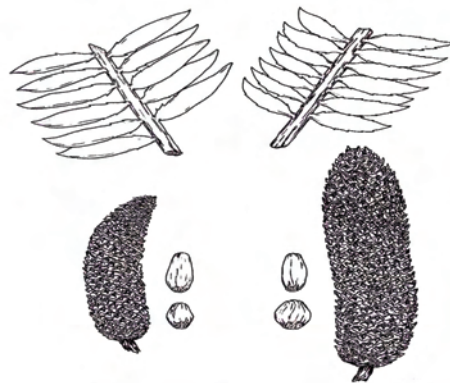


Fig. 5. Comparison between forms of *Encephalartos turneri*; Jaiene/Rapale form (left) with less spiny leaflets, curved male cones and small seeds, and the Ribaue form(right) with spiny leaflets, straight cones and large seeds.



Fig. 6. Juvenile plant of the Boila form of *Encephalartos turneri*



Fig. 7. Seedlings of the Nami-alo form of *Encephalartos turneri*

beautiful sheen, each successive flush seeming to display longer, more concave and revolute leaflets than the previous. I’m looking forward to having the plants we’ve propagated and grown become beautiful specimens in all of our gardens in the coming years.

In the field with *Encephalartos turneri*

Article by Pedro Capela, Photos by Pedro Capela and Pedro Capela Jr.

When Maurice Levin invited me to write about *Encephalartos turneri* my immediate reaction was, “Why that particular species, and my poor photo collection? Why not my favorite species, *E. manikensis*, of which I have 8,000 photos in my personal collection? Why *E. turneri*, a species which I have spent thousands of hours studying and visiting its habitats, but for which I have so few photos?” Well, in July 2004, my office in Chimoio, Mozambique was robbed. The intruders took my computer, which had more than 3,000 cycad photos and the text of my book, *Speculations on the Encephalartos Species of Mozambique* stored on it – not to mention ten years of my private and professional life. They also stole a cake box containing CDs and negatives. On the technical level, they may have been bad photos, but they were mine—my intellectual property and life’s work. I was devastated, but I immediately took action and sent an urgent appeal to all my friends around the world, asking them to send me copies of any photos I had ever sent them. Email

addresses were located. Documents began to arrive. The chain of solidarity around me was incredible. Maurice Levin sent me a new laptop computer. About a hundred of my photos found their way back to me—from friends all over the world, as well as the preliminary material for the first book I published in Mozambique. Another friend sent a generous gift of 20,000 rand to help me publish my book. I swore this was a sign from God that my first trip to Nampula would be both historical and pleasant. I would be able to make a modest contribution to the study of the *Encephalartos turneri* “complex,” which I first wrote about in the article “Notes from Mozambique.”

With permit in hand, the trip from Nampula to Malema was absolutely incredible. We stopped at every granite outcrop at more than 600m altitude, every 13km (and 13 was my lucky number!), and make a preliminary observation with binoculars. At 95% of the sites, we found *Encephalartos turneri* in small populations, from 50-400 plants. We observed dozens along the national road between Nampula and Malema. How many more must be growing inland? Hundreds, for sure.

The Nairoku mountain chain was absolutely incredible. We had a car accident 10-15km outside of Ribauè. A plank was missing from the base of a metal bridge and we drove over it—it was a miracle only two of our tires exploded. The mountains of that region are amazing, there are plenty of sweet fruits to

eat picked by the local mountain guides—and if I remember correctly, each one was fresh and helped to fight my deep exhaustion.

In the Malema District are three mountains covered with *Encephalartos* and amazing Aloes, but strangely, and contrary to the Portuguese bibliography, we found no *Encephalartos gratus* in that area. I showed all of my local guides photos of the giant species. Their answers were always the same: “No giant orange cones, no trunks of 6-9m. Only this, boss”—and they would bring me the same strange orange dwarf male cone. I had the same experience at Namuato, and throughout the *Encephalartos* world.

Then one night it hit me. I had been reading the collection, “Flora de Moçambique,” and in it I observed that two herbarium specimens of *Encephalartos gratus* had the same characteristics of *E. turneri* harvested in the Malema mountains. My brain suddenly became like a satellite, identifying populations and GPS



Females and male cones of the Nairoku form



Male cone of the Nairoku form
(Photo by 6-yr old Pedro Capela Jr.)



Leaf median portions: top: Shakara (Ribauè) and bottom: Nairoku



My first *Encephalartos turneri*
photo: a female cone from Namuato



Male cones. Left to right: Mount Chica, Ribauè; Nairoku; last two: Mount Namuato



Comparisons of dried male cones (left) and cone scales (right). Top to bottom: Ribauè, Chica and Jaiane

coordinates – and finally I understood. Namuato and Malema represent “inter-grade” populations between *E. gratus* and *E. turneri*, occurring between the “pure” populations in an area no more than 50km wide. Does this mean that *Encephalartos gratus* is the biblical father of *E. turneri*? And if this were the case, how can I explain the familiarity between *E. turneri* and *E. sclavoi*? Who was the stupid person who invented the artificial botanical species concept? Why isn’t there a Hilton in Malema? Why is Angelina Jolie married to Brad Pitt and not to me? Why is science so systematically absurd? Why am I not rich? Why, when God created each species, didn’t He immediately write down its name? Why didn’t he give them ID? Well, the answers to the above questions shall remain unanswered for now, but please enjoy the photographs that accompany this article.



Pedro Capela Jr. and my wife Mena, the real companions on my life’s journey

Encephalartos turneri in Hawaii

Greg Holzman

I have grown *Encephalartos turneri* for close to 13 years. I was able to get some seed in 1994 from the type locality. Back then they were unknown in cultivation outside Africa.

I was discouraged with their rate of growth, which seems to be among the slowest central African species I have grown. I had them in pots for about five years, which turned out to be a mistake. In the ground, the species is a slow starter but picks up with the extra root room. I have never killed one from rot or overwatering, yet it is a very drought tolerant species. It slows down considerably in the shade.

Then about four years ago, Pedro Capela was able to get some seed from several different localities into the USA. This changed my idea of how these plants grow. Putting them in the ground after a year and a half, these plants grew very differently than the first batch. Whether it was the locality or the fact that I have become better at starting them and getting them into the ground

faster, they are doing great in Hawaii.

Plants of this species seem to be slower starters than those of the *Encephalartos manikensis* types that dominate the Mozambique area. After a few years in the ground, they are one of the nicest green cycads I have had the pleasure of growing. Their stiff, leathery, cupped leaflets remind me of an *E. sclavoi* x *bubalinus* hybrid. If *E. turneri* is related to any species, these two would be my guess. *E. turneri* has many different looks, much like *E. sclavoi*, and to a lesser extent, *E. bubalinus*. There is a crowded leaf form, a very neat overlapping form, and a very messy form with leaflet apical tips that are bent downward unlike any I have seen in the genus.

Because of their slower growth, rarity in cultivation, and the fact that coning plants outside of Mozambique are almost non-existent, these plants will continue to be one of most highly prized cycads of central Africa. I think it will be ten more years before seed are domestically produced. Because of this, *E. turneri* is a good plant to hold on to since the chances of getting more seed are remote at this point.

The species loves water and can handle very wet and conditions in summer. It enjoys fertilizer and the only thing that seems to affect it is an occasional red waxy scale. If put in the ground from an early age it will be a show stopper by its sixth year. Every flush is a joy to watch as it becomes mature.

Of all the Mozambique cycads the blue *Encephalartos munchii* and *E. turneri* are the two most unusual and most rewarding species I grow. I would love to see this more widely propagated in the USA.

Encephalartos turneri in Central Florida

Tom Broome

Encephalartos turneri, like all the species from Mozambique, for example, *E. concinnus* and *E. manikensis*, is an excellent cycad for central Florida. All of these cycads are robust growers in our weather conditions. This species is moderately cold-hardy in our colder areas. The leaves of a plant growing out in the open will burn when the temperatures go below 23°F; under tree cover, they tolerated 21°F last year without leaf damage. This is a new species for me, and I have not grown these to maturity, but so far, this species looks like it will be a nice addition to any cycad collection for people in central Florida.

The Cycad Seedbank Update - June 2007

There have been three seed offerings this past winter and spring. The great response from the membership was appreciated. The seeds offered on the first two lists were as follows:

<u>Cycas</u>	<i>E. whitelockii</i>
<i>C. pranburiensis</i>	<u>Macrozamia</u>
<i>C. thouarsii</i>	<i>M. communis</i>
	<i>M. moorei</i>
<u>Dioon</u>	<u>Zamia</u>
<i>D. edule (Palma Sola)</i>	<i>Z. amblyphyllidia</i>
<i>D. edule (Queretaro)</i>	<i>Z. angustifolia</i>
<i>D. edule (Rio Verde)</i>	<i>Z. floridana</i>
<i>D. holmgrenii</i>	<i>Z. (Grand Cayman)</i>
<i>D. merolae</i>	<i>Z. (Jamaican large)</i>
<i>D. merolae (Golden)</i>	<i>Z. lucayana</i>
<u>Encephalartos</u>	<i>Z. (New Providence)</i>
<i>E. gratus</i>	<i>Z. paucijuga</i>
<i>E. lehmanii</i>	<i>Z. pumila</i>
<i>E. manikensis</i>	

The newest seed offering in the past few weeks included a gracious donation from Montgomery Botanical Center. Some of the species included were *Cycas panzhihuaensis*, *Encephalartos gratus*, *E. hildebrandtii*, *E. ferox*, *Ceratozamia microstrobila*, *C. robusta*, *Dioon spinulosum*, *Macrozamia riedlii*, *Zamia inermis* and *Zamia standleyi*.

There has been some recent concern and confusion regarding the seedbank and seed list including some emails on the Yahoo cycad group. Only paid Cycad Society members are placed on the Yahoo seedbank list. However, you have to ask to be placed on the seed list. It doesn’t automatically happen when you join. Please notify me at argyfam@cox.net if you were previously getting the seed list and are no longer receiving it. There are several members that are not paid from the prior list. Please take care of your accounts. Orders cannot be filled if there is any outstanding balance or if your membership dues are not current!!

Thanks again for all your interest and comments. Any information regarding seed sources or donations are always welcome.

Nick Argyros
Seedbank Director
argyfam@cox.net

