ENCEPHALARTOS

Journal of the Cycad Society of South Africa
Tydskrif van die Broodboom Vereniging van Suid-Afrika

VOLUME 141 | JUNE 2025 | ISSN 1012-9987

Council

Regional Branch Representatives

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Cover picture: *Encephalartos cycadifolius* high in the mountains near Bedford. The species seems to prefer a very specific altitude and rocky ridges in the grassland. They quickly disappear above and below this altitude and almost no plants can be found once you move away from the rocky ridges that follow the contours of the mountain. Plants usually produce cones 2 years after a veld fire but few seedlings are present in the populations visited and most plants are very old with large clumps being the norm. Photograph: Wynand van Eeden.

VOLUME 141 | JUNE 2025 | ISSN 1012-9987

News from KwaZulu-Natal

Visit to *Encephalartos friderici-guilielmi* at Kokstad

Martinus Crous

Early Saturday morning, on the 23rd of June 2022, we tackled the 185 km to Kokstad, inland and southwest of Durban, to view a colony known as the Kokstad Woolly Cycad growing on a farm. This colony is apparently the only *E. friderici-guilielmi* population in this habitat, growing some 400 km north-east of the main distribution of *E. friderici-guilielmi* near Cathcart and other populations in the Eastern Cape.

With great expectations and well prepared, as we were informed of a cold front moving up the east coast of KwaZulu Natal, we listened to the briefing by the farmer and the 20 of us were allowed to continue by foot into the hills. The plants were growing on a rocky ridge surrounded by dense grass, aloes, shrubs and even black wattle at an elevation of 1340 m. We were now in the foothills of the Southern Drakensberg with spectacular views of valleys, streams and peaks. There they were- sheer beauty, perhaps smaller but greener than their peers in the Eastern Cape, all growing along the ridge and exposed to the wind and cold.

The adult plants, well over 80 in number, had multiple stems with several offshoots at the rootstock. Plants varied in height from about 0.3m to almost 2m. Some stems were blackened due to veld fires that probably raged through the veld during the winter. Several plants still carried their multitude of dry male and disintegrated female cones and their curtain of dry hanging dead leaves. With careful inspection germinating seeds could be spotted in the undergrowth. The lack

of younger plants and seedlings was an alarming finding. The plants appeared healthy apart from some surrounded by black wattle trees that had recently died. Harvesting or poaching could not be detected, and the colony appears to be free of any human interference. Porcupine tracks and traces of porcupine faeces were found but we could not find any damage to stems due to their presence.

This habitat is still secure with *E. friderici-guilielmi* the only *Encephalartos* species observed at this locality, and it is hoped that the plants will remain undisturbed in this habitat for future generations to admire.

It was a rare sight to also spot some *Aloe maculata* var. Ficksburgensis specimens, all growing amongst the cycads. On leaving the locality we were greeted by a flight of Hooded Vultures, some 50 in number. After the normal braais and long discussions into the night we slept at a close-by venue and were met the next morning with snow on the mountain tops, driving rain and cold. Now satisfied and ready to drive back to the much warmer climate at home, we hit the road.

The photographs were taken by members and are published with their permission. The KwaZulu-Natal Branch extends its warmest thanks to the farmer for affording us the opportunity to view this beautiful colony of cycads.

Douglas Goode

Martinus Crous

Douglas, or Dougie, as he is known by his friends, celebrated his 80th birthday in January 2024 at the CSSA branch meeting. He then jokingly referred to his life experiences with cycads as:" If I could have it again, I would spend my time on roses". He not only authored "Cycads of Africa" (Original and Volume 1) but is responsible for numerous paintings of cycads, portraying plants in their natural habitat and illustrations of plants that decorate many a cycad enthusiast's walls.

Dougie spent his professional life at the Natural Science Museum and then travelled widely to photograph cycad species all over Africa. His travels not only took him through Southern Africa but as far as southern Sudan in search of a new *Encephalartos* species and from there as far west as Nigeria to be able to photograph *E. barteri*. In collaboration with John Lavranos, he described *E. turneri* from Mozambique and described the following South African species: *E. eugene-maraisii* subsp. m*iddelburgensis* (raised to specific rank by Vorster et al.), *E. dyerianus*, *E. dolomiticus* as well as *E. cerinus*.

He was recently honoured for his contribution when the Cycad Society's John Medley Wood honorary award was bestowed on him.

Figure 1. Award handed to Douglas at the CSSA branch meeting.

Figure 2. Douglas Goode with his *E. woodii* painting printed on "Woodii paper".

Visit to Southbroom

Martinus Crous

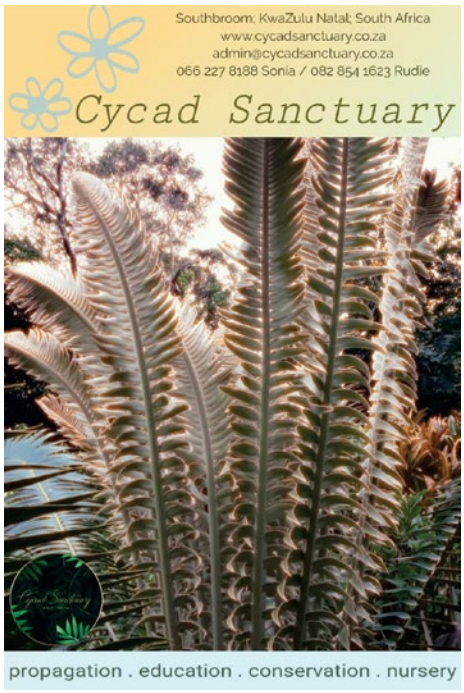
On Saturday morning, 27 July 2024, two members and one guest, were welcomed by Rudi and Sonia van Niekerk, the owners of the Cycad Sanctuary in Southbroom. The gout toe presented a huge physical obstacle to me personally and resulted in a real crusade through this vast tropical garden, but it was of such interest that not a single sight was to be missed. Lively discussions about cycads ensued immediately while we were off to see the plants.

We started at the germination boxes with *E. cupidus* and *E. lehmannii*, amongst the many species being propagated. The nursery has a great variety and a large number of plants (African and endemic), estimated at around 40 000. Sizes varied from seedlings to big mature specimens.

There are vast numbers of *E. ferox* and *E. natalensis* (various leave forms as well), as well as specimens of *E. woodii* hybrids (Selcon-cross), *E. latifrons*,

E. laevifolius and *E. princeps*. The plants were all on display, growing in the garden as well as pots. The garden is well maintained and in excellent condition. Best of all, it is self-sufficient with its own water and electricity supply.

After the marathon walk, we were treated to refreshments by our friendly hosts and then returned home. It was a very interesting and informative visit and well worth the effort, especially for our members living on the South Coast.



Visit to Kwambonambi

Martinus Crous

25 May 2024

We took the long busy N2 to the north early this Saturday morning for a garden visit to Tony Edwards in Kwambonambi. On arrival we were welcomed by Richards Bay guests who were already in the swing of things and excited as can be. Seven cycad enthusiasts together in a garden like Tony's can only result in great fun and this we had plenty of.

Figure 1. Tony and his "Salem Estates" *E. natalensis*.

Figure 2. *E. natalensis* (Malakata form).

Figure 3. Beautiful blue cycads.

Figure 4. *E. longifolius* variation.

Figure 5. *E. turnerii*.

Figure 6. *E. bubalinus*.

Figure 7. We're talking "big ones".

We started with his monstrous *E. laurentianus* with leaves that seemed to go on for ever, and after many hours, finished at his dwarf *E. poggei*. His collection consists of African, Asian, Australian and New World species, including *Cycas bifida, Zamia vasquezii*, *Zamia manicata*, *Zamia furfuracea* and some *Ceratozamia* species. The discussions were mainly about local species and included the forms of *E. longifolius*, *E. natalensis* with the Railway, Jolivet, Kranskop, High Flats, Vryheid and Port Edward forms, as well as a green *E. horridus* and a very thorny *E. princeps*.

Tony had a marvellous collection and the visit was truly inspirational. As the only cycad nursery in that area, he has seedlings and suckers of a wide variety of cycads. A visit is highly recommended. We had encouraging conversations and new enthusiasm for growing cycads. The braai at the end finished off proceedings and a delightful day. The group wishes to thank Tony and his family for a wonderful time spent with them.

Figure 8. *Cycas debaoensis* (China).

Visit to Pietermaritzburg on 23 March 2024

Martinus Crous

Figure 1. The group at the cycads at the Botanical Gardens.

Our visit to the garden city started at the entrance to the National Botanical Gardens where we met up with Mlondi Sikhosana and a colleague of his, from SANBI. The group were very keen to see the promised variety of big plants at the Gardens.

From earlier visits to the Botanical Gardens, it was known that cycles of improvement were often followed by degeneration. And we saw a repeat, yet again! The Cycad Garden as established under the supervision of Avis Nel around 2016, was deteriorating fast and many plants were dead or moved to a different section of the gardens. The reason given for the relocation was the poor quality of the imported soils for landscaping, that apparently contained building rubble. Even so, some big plants were still in the original cycad garden with mainly the KwaZulu-Natal species like *E. natalensis*, *E. ferox*, *E. villosus* and *E. senticosus* present. Then followed the long walk to the newly developed area. Specimens from mainly the Eastern Cape (*E. princeps*, *E. horridus* and *E. lehmannii*) have been re-planted here but these plants were clearly struggling to grow. In all fairness, the plants probably were not yet fully established. It is sad though to see the reduction in numbers and sizes of the remaining plants. We left with heavy hearts, saddened by the fate of our beloved plants.

At Paul's garden smiling faces and a big welcome awaited us. His garden was enticing, and our eyes locked onto to the magnificent specimens, a rather unbelievable sight to behold! To see three big *E. woodii* specimens, Ngoye, Kloof and Monastery forms, [Monastry or Marion Hill form

Figure 2. Some suffering cycads (enthusiasts?).

Figure 3. The so-called "True Blue" *E. arenarius*.

Figure 4. Some sights in Paul's beautiful garden.

Figure 5. ...and more!

is thought to be a hybrid between *E. natalensis* Kloof and *E. woodii* Kloof. Ed] growing right next to each other, is an exceptional sight. This was just the start, since Paul's collection contains all the South African species. His plants are well established in this beautifully laid out and well-planned garden.

The topics of discussion included the forms of *E. msinganus* in habitat and hybrids and how to prevent hybridisation. Lots of questions were answered and very interesting conversation followed as we were entertained by the local cycad doyens.

By the time the braai had finished it was late afternoon and we still had to face the Saturday afternoon traffic back to Durban. The visit was long and tiring, but a very fruitful experience. Paul's hospitality and the opportunity to visit his garden, was highly appreciated by all those present. Thank you Paul!

News from the Western Cape

The Western Cape Regional Branch tour to Northern KwaZulu-Natal

Kobus van der Walt

Figure 1. Photo of the tour group taken by Martinus. From the left are Kobus, Leslie, Elain, Aubrey, Annemarie, Pieter, Wilmarie, Sandra, Delia, Willie and Paul.

Figure 2. *E. aemulans* - male cone.

One of the Western-Cape Regional Branch action plans for 2025 was to organise a tour to KwaZulu-Natal (KZN) to visit some cycads which can still be viewed in their natural habitat. We also planned to visit gardens of Society members and the Durban Botanical Gardens. Of the 38 *Encephalartos* species in South Africa, KZN hosts almost 50% and the Western Cape 0%. On top of our list to see was the *E. woodii* and the various *E. natalensis* forms. The Chairman of the KwaZulu-Natal Branch, Martinus Crous, assisted us in preparing an itinerary and joined us on the tour.

We left on 27 April 2025 and 11 of the Western Cape members flew to King Shaka airport and drove to the Kingston Place Guesthouse, Umhlanga, where we stayed. The next morning we drove to Louwsburg via Pongola, where we stayed at the Ithala Game Reserve.

On our way to Louwsburg we visited the farmer on whose land the only colony of *E. aemulans*

Figure 3. *E. aemulans* in its natural habitat.

in habitat exists. The plants were restricted to a single hill, growing on the steep, south facing sandstone slopes. Plants also grew at the base and made genuine cycad forest. Many specimens still exist, some more than 2m in height. The colony is clearly flourishing, and seedlings were observed.

However, it is under pressure from collectors and the situation could change overnight. The farmer has been farming with game and livestock for 30 years. He was hesitant to show us the colony of plants at first, until he heard that we were visiting from the distant Western Cape.

Figure 4. *E. aemulans* double stemmed plant in habitat.

Figure 5. A Lion Trophy - lioness shot near the *E. aemulans* colony.

Figure 6. From the left Pieter Nieuwoudt, Coenie Swanepoel, Willie Enright, Martinus Crous, Paul Gerber, Aubrey Kable, Coenie jr. and Leslie Hobson.

Figure 7. Coenie Swanepoel's cycad garden.

Figure 8. Coenie Swanepoel's cycad garden.

Figure 9. Willie and Delia Enright standing at the *E.natalensis*-Buffels River in the Mentz' garden.

Figure 10. A younger *E. natalensis* Squebezi in the Mentz garden.

E. aemulans is commonly known as the "woolly natalensis" with brown wool on the stem apex. It is difficult to identify this species when it is not in cone because it can easily be confused with *E. lebomboensis*, *E. msinganus*, some forms of *E. natalensis* and *E. senticosus*. The specific epithet is derived from the fact that the male and female cones are very similar. The length of the median leaflets is more than six times its width, but we noted quite a variation even in this small colony.

Figure 11. *E. senticosus* plants hanging from the cliffs.

Figure 12. *E. senticosus* found next to the road near Jozini.

The farmer is also a big game hunter with many trophies in his house. He showed us a trophy of the lion which he shot a few years ago near the hill where the colony of *E. aemulans* grows. The lion was a threat to cattle in the area.

On the 29th of April 2025, we went for an early game drive in the Ithala Game Reserve. It was cool and misty, and we did not see much game, but the beautiful scenery made up for it. The rest of our program was to visit cycad gardens in the Louwsburg area.

Our first visit was Mr Coenie Swanepoel's garden at his homestead. Coenie is one of the few farmers left in the area and he argued that it was because of his Brahman cattle. He also loves plants and especially cycads. He has several large *E. natalensis* (various forms), *E. aemulans*, *E. ferox*, *E. horridus*, *E. altensteinii*, *E.senticosus*, *E. lehmannii*, *E. princeps*, *E. trispinosus*, *E. villosus* and several *Cycas* species.

Our second visit was to Mr Jurie and Niekie Mentz's garden in Louwsburg. We received a warm welcome and were treated to a variety of refreshments. We were also impressed with Niekie's knowledge of cycads, as she planted most of the cycads in their garden.

Jurie has a large garden with beautiful cycads and a variety of *E. natalensis* forms. Some of the

Figure 13. Tony discussing his plants with the interested guests. From the left: Leslie, Tony, Aubrey, Paul, Willie, Martinus and Pieter.

Figure 14. *E. hirsutus* with suckers in Tony Edwards' garden.

Figure 15. *Zamia furfuracea* in Tony Edwards' garden.

Figure 16. *Cycas bifida* seed cone in Tony's garden. The habitat of this species is on the China-Vietnam border, and it is classified by the IUCN as vulnerable (VU).

Figure 17. *E. laurentianus* in Tony Edwards' garden.

Figure 18. *E. natalensis* Vryheid form in Tony Edwards' garden.

Figure 19. The tour group under the 1895 *E. woodii*. From the left: Sandra, Pieter, Kobus, Martinus, Willie, Delia, Leslie, Annemarie, Aubrey, Wilmarie and Paul.

Figure 20. The entrance to the Durban Botanic Gardens.

Figure 21. *E. woodii* with male cones in the Durban Botanic Gardens.

Figure 22. *E. kisambo*, the cone has a brown reddish colour similar to *E. gratus* or *E. tegulaneus*.

Figure 23. *Dioon spinulosum* female cones in the Durban Botanic Gardens. These cones can weigh up to 90 kg.

Figure 24. *Stangeria eriopus* has two forms, the Forest and Grassland form. This is the forest form with bigger leaves and dentate margins.

E. natalensis forms we haven't seen before, are the Squebezi and Buffelsrivier forms.

On the 30th of April we left Louwsburg early morning, since we planned to make a few stops on our way back to Umhlanga. Our first stop was next to the road overlooking the Jozini dam, formerly Pongolapoort dam, en route to Jozini. The area is known for *E. senticosus*. Many specimens of this species were translocated due to expected flooding of its habitat by the dam. The plants also attract the attention of cycad collectors resulting in illegal

Figure 25. The beautiful garden of Peter and Mara.

Figure 26. Leaflets of *E. natalensis* "Umgeniensis" in Peter's garden. This form is now extinct in habitat which was flooded by the Inanda Dam.

poaching. We were lucky to see a large population of *E. senticosus* hanging from the steep cliffs of the Lebombo mountains and found a plant in cone next to the road.

Our next stop was at Mr. Tony Edwards' garden in KwaMbonambi. We received a warm welcome and were treated to a variety of drinks and refreshments. Tony collected cycads for more than 30 years. He has a large collection of indigenous *Encephalartos* species which include *E. woodii*, *E. heenanii* and *E. hirsutus*. He also has 14 mature

Figure 27. *E. heenanii* in Peter's garden.

African *Encephalartos* species and 15 mature *Dioon*, *Cycas* and *Zamia* species, as well as other interesting plants. The 1st of May 2025 was the last day of our tour.

We kept the best for last, which was a visit to the Durban Botanic Gardens to see the 1895 Ngoye *E. woodii*. It was the tour group's first visit to the Durban Botanic Gardens and big was our surprise as entry was free and we did not only see one *E. woodii*, but six huge specimens, as well as a variety of large cycads from Africa and the rest of the world. It would have been better if the cycads had name labels for the public to identify them or was the no-labelling specifically for security reasons to protect them?

After the Durban Botanic Gardens visit, we were very fortunate to visit Peter and Mara Petersen's garden. We received a warm welcome and were treated with a variety of drinks and refreshments. The tour group enjoy it so much that they did not want to leave. We were very impressed with the landscaping, layout, variety and quality of the plants in their garden.

We would also like to thank Martinus and Naomi Crous for their hospitality during our stay at

Figure 28. A large *E. latifrons*, also in Peter's garden.

Figure 29. The group is grateful for Peter and Mara's hospitality, friendliness and for sharing the 50-year-old whisky with us!

Kingston Place Guest House and recommend it to everyone. It is always good after a tour to reflect on what you have seen and learned:

1. There is a significant difference between the cycads in their natural habitat and those in our gardens. Plants in their natural environment and especially those in the humid and warmer conditions in KwaZulu-Natal, grow much faster and vigorous.

2. *E. natalensis* as a species is under rated and has beautiful forms well worth adding to your collection. One should try and keep these forms as pure as possible when pollinating plants in collections.

3. We met many a cycad enthusiast with a great deal of knowledge during our tour. It is the general feeling that there should be more communication between the different Cycad Society Regions and that members from the respective Regions should also be invited to join in these tours.

4. The more gardens one visited and the more plants you see the more you realise how little you know about cycads.

5. A visit to the Durban Botanic Gardens, whenever you are in Durban, is highly recommended and so is a visit to Babylonstoren when you are in the Cape Town area.

Are You a Curator?

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Introduction

Do you ever ponder the lifespan of the plants you grow? We know that some have very long lives compared to us. Cycads, for example, can live several centuries. A grower of cycads knows that their plants might possibly outlive them. Take, for example, *Zamia integrifolia*, also known as the Coontie here in Florida, which can live over one hundred years. Growing plants of this type—ancient ones whose ancestors lived hundreds of millions of years ago—and knowing how tenuous their existence is today, we are awed by the sense of deep time they possess, and are troubled to find how rare they are in both nature and cultivation. Today, of the approximately 375 accepted species,

Figure 1. One view of a south Florida garden during spring, dedicated to preserving and propagating rare and endangered cycads and palms. Foreground: two *Zamia pygmaea*, behind those are two *Z. angustifolia*. Note the passiflora growing between and within the cycads. By early summer, the passiflora is lush and abundant, as in Figures 2 and 3. Midground (L and R): two *Dioon spinulosum*. Background: *Z. loddegesii* (in ground at right), and *Z. lucayana* in clay pot. Most of these plants have been used for propagation and hybridization.

many are endangered. Here, we will discuss how gardeners can help spread seeds, plants, and knowledge. The purpose of this article is twofold. First, to instill a sense of responsibility for preserving cycads. For various reasons, including land development, environmental changes, and the loss of pollinators, this work is critical. Second, through a discussion of the layered interplay of several plant and animal species in my garden in south Florida, USA, we share some ideas to consider for a more interesting and enduring garden.

Become a Curator

Cycad growers tend to be reflective and purposeful with the various plants in their garden. They understand the higher responsibility of curating cycads due to the cost, rarity, and the long-term commitment they require. What we select, grow, propagate, and share have real impacts for a given species. Horticulture preserves the genetic legacy of these plants. Gardeners who choose to care for a rare specimen are not only curating that particular plant, but all the future generations it might produce. This is a goal worthy of our best efforts.

The overarching ambition of curating in my garden is to create and maintain an interdependent multi-species system with a foundation of palms and cycads. For example, I began to create the following butterfly habitat about twenty years ago (it took several years to establish, and takes a year or so to re-establish after each hurricane). In order to attract butterflies to my garden (particularly *Heliconius charithonia*, but also *Dione vanillae*, commonly called Zebra longwings and Gulf fritillaries, respectively), I planted food plants for both the larvae and the parents. These include one species of passiflora (*Passiflora suberosa*) and three species of *Hamelia* (*patens*, *patens* var. *glabra*, and *cuprea*). Also, while the palms (*Chrysalidocarpus pembana*, various *Coccothrinax*, etc.) serve as the overstory to dapple the sunlight, several species

Figure 2. Matched pair of *Z. angustifolia*.

Figure 3. *D. angustifolium*, scaffold plant for *P. suberosa*.

Figure 4. Heliconia hatchlings in a *D. angustifolium*.

Figure 5. A nightly roost of Heliconia.

Figure 6. *H. charithonia* feeding on *Hamelia* sp.

Figure 7. *D. vanillae*, newly emerged, unfurling wings.

of *Zamia* and *Dioon*, along with the *Hamelia*, are used as scaffold plants for the diminutive, clambering passiflora (see figures 2, 3, and 6). A mature *Dioon angustifolium* (figure 4) provides: (1) a nursery environment for the Heliconias with shade and spiny protection, and (2) structural support for this dependable passiflora, the food plant of choice for the larvae. This passiflora, the corky-stemmed passionflower, quickly regenerates its leaves after being mostly eaten by caterpillars, and can do so several times a year. The larvae attach their chrysalises to the underside of the *Dioon*'s leaves, which are favored spots to attach. Next, the new hatchlings have a ready supply of pollen and nectar close-by. This mutually beneficial grouping of plants fosters an amazing, long-term culture of these two butterfly species in my garden.

Curating Your Cycad Collection

Propagating and growing cycads is an involved, long-term project that requires consistent attention to a few details of their culture if one is to be successful. Fortunately, *Zamias* are easy to grow in many areas, so we will use *Zamias* for this practical guide. We discuss two main ideas of garden curation in the *Basics* and *Planning a Legacy* sections. It is through such meticulous care and dedication that gardeners contribute to the preservation and understanding of these remarkable botanical treasures.

The Basics

Rare species need to be curated with care to ensure the survival of that species. The plants and animals present in a garden should form a naturally supportive biological system. The curator is aware of how the companion species in the garden interact. Observant and responsive, we use a gentle guiding hand to influence desired growth and a healthy population throughout our microhabitat. Considering the connection between each individual organism in the garden is essential. Whether it is a predatory insect (or any animal) that feeds on a pest or one that is a pollinator, visitors to your garden must be recognized and treated as friends or foes. Maintaining balance is key. These suggestions will help your garden find its happy place:

- Observe the seasonality of your garden and plan ahead.
- What is the proper substrate and growing aspect for your area and specific plants?
- How much water/organic fertilizer, and when to apply?
- What are the local troublesome pests to exclude? Which pollinators to attract?
- Make note of what plants thrive, and plant more of them. Balance this with experimenting with new plants. Don't err on the side of monoculture; diversity in the garden more accurately mimics nature and creates resilience.
- Learn how to collect, clean, catalog, store, and share/plant your own seeds.
- Your experimentation with all the variables, ultimately, should support your artistic vision for the garden.
- Maintain a manageable collection; don't be afraid to give plants away.

Additionally, the gardener will need to follow a careful pollination process (see Mink & Ventura, 2024a). To prepare for a successful pollination, cycad cones of both sexes must be protected from foreign pollen and insect vectors. Protected pollination is the goal, as it allows only the desired species to propagate. It is imperative that you do not use open-pollinated seeds or an open-pollinated process in curating your cycad plants. Not knowing the source of the pollen results in a genetically undetermined specimen. It is unethical to sell or share a plant with unknown parentage without disclosing it. Adhering to protected pollination maintains the integrity of species in your overall curation plan. Lastly, recording the provenance of each plant, if possible, is always preferred. Gardeners who receive your seedlings with provenance and knowledge about the place of origin will be better prepared to grow healthy plants.

Planting a Legacy

The second main idea of curation is the act of planting for the future. You may have visited a garden that dates from a previous generation. How did the originators plan the garden for your enjoyment, decades or even a century later? By studying a well-established garden, we can accomplish two things. First, we can learn how the overall planting scheme and hardscape design were incorporated into the existing landscape. Second, we can understand how the various plants and hardscape design came together as a cohesive work of art that has grown to maturity. In order to continue the traditions of an established garden, it is important to understand the intent of the originators.

To draw in future visitors to your garden, make your own artistic and aesthetic intentions clear, interesting, cohesive, and able to endure the passage of time (the mystique of an old garden is its sense of timelessness). Part of the original plan should be the consideration of garden maintenance, especially consolidating and reducing routine chores. A maintenance routine that is too vast or elaborate may result in neglect. Be mindful of your own desires and mediate them with a realistic sense of your time and commitment that sees years into the future. Choosing plants that flower, cone, or drop leaves/fruit at the same time results in garden clean-up at regular and expected time periods. Omitting favorite, but labor-intensive, plants from the garden might be advisable to reach a comfortable and sustainable level of gardener effort. (Enjoy these plants in your friend's garden!) Lastly, we should try to select plants that are most likely to overcome possible future challenges such as pest infestations, soil compaction, climate change, water/food supply, suboptimal care, and many others. Thinking practically about the future state of your long-term plantings will increase their lifespans, and safeguard the longevity of your vision.

Cycads lend themselves to a long-term "legacy" garden, due to their very long life span and predictable size (width and height). Also, apart from seasonal feeding, clipping, and propagating processes, cycads are easier to care for than most garden plants due to their low maintenance needs. With some exceptions, cycads have few pest problems.

We can avoid novice mistakes such as planting large, prickly cycads right next to your driveway, or planting them in a low area that floods. Instead, the home gardener can and should plan and plant intentionally with the garden vision always in mind. Visit the gardens of well-known growers. Ask them about their methods, and their perspectives on the concepts discussed above. Learning from others will accelerate your progress in crafting your vision. You will also gain a new friend and source for plants.

Practically speaking, hardscape (rocks, topography, water/electrical lines, etc.) and larger specimen plants need to be considered and then installed first. These are the bones of your garden. Envision the garden at maturity and then work backwards to determine the planting and design scheme. Gardeners who plant for the future balance and incorporate several aesthetic elements at the early stages, including color, texture, scale, form, and the longevity of the plants. Lastly, let the idea and practice of propagation guide the plantings you install. Propagation is the cornerstone of the curated garden. For starters, plant male and female plants of the same species in close proximity and establish a mycorrhizal connection if possible. Foster a succession of multi-stage plantings that mimic nature and promote healthy recruitment: a combination of mature plants and seedlings. This layers the element of time onto your garden vision.

Figure 8. Female *Z. lucayana* recently pollinated by *Z. lucayana* at right (Figure 9).

Figure 9. Male *Z. lucayana* with *Pachypodium* sp. on left; *D. spinulosum* on right with *Z. loddigesii* below.

Figure 10. Male *Z. inermis*.

Figure 11. Fresh seeds (*Z. inermis*).

Curation in Action

An ongoing practice in my garden is propagation. As matched pairs of cycads cone together, we pollinate them. Almost a year passes as the seeds mature and ripen. Ultimately, the plants are distributed to others. This list details some of my efforts.

- *Z. angustifolia* – a matched mature pair (figure 2), should cone next season
- *Z. lucayana* – a matched pair (figures 8 & 9) with a maturing cone
- *Z. inermis* – a matched pair of young plants (male shown in figure 10)
- *Z. inermis* – pollinated seeds from a matched pair ready to plant (figure 11)
- *Z. portoricensis* – three-year-old seedlings from a matched pair (figure 12)
- Upcoming: *Z. pygmaea* propagation (see figure 13 for a past *Z. pygmaea* project)

A cycad need not have a single plot for its lifetime. Easily transplanted, they can be handed down to the next generation. The ideal gift is a male and female pair. By planting the pair in close proximity, and inoculating the garden with mycorrhizal spores to encourage a connection among the plants, chances for synchronous coning are increased. This method has worked well in my garden.

An important facet of curating plants is developing interest among other gardeners. By sharing plants and knowledge among younger growers, they become the next generation of curators. This

Figure 12. Seedlings of *Z. portoricensis*.

Figure 13. *Z. pygmaea* seedlings, given to friends.

becomes one of the highest aspirations for an experienced gardener, and the last stage of the life of a gardener. It is important to recognize individuals who will be interested in, and responsible for, continuing the plant's lifespan and future possible progeny. These future curators must be inspired by the current generation. Though sharing resources like books and videos is helpful, talking and working side by side with a dedicated, experienced gardener has no substitute. Lastly, building relationships with other growers and gardeners can also help with a critical part of your garden's legacy: a survivorship plan. After you are gone, who will care for "your" plants when you no longer can?

Figure 14: A view of a diverse, semi-tropical garden in southwest Florida, USA, containing rare palms and cycads.

Figure 15: Puffed-up owlet and hungry hawk.

Figure 16: Owlet resting in a mango tree.

A Walk Through a Curated Garden

This last section takes the reader through a brief tour of a semi-tropical garden, maintained by the first author over the past 25 years. This is curation through one gardener's vision, as shown in Figure 14. The garden resides in southwest Florida, with a substrate of free-draining sand and broken shell (very alkaline), set about ten feet above sea level on the Gulf of Mexico. In the intense heat of summer (often over 100°F/38°C), any water quickly evaporates—over watering is never a concern. Palm and cycad species that have proven themselves in the garden thrive in the direct, albeit dappled, sunlight, and are caressed daily by a cool, westerly sea breeze and regular rainfall. In winter, the dry season, passing rains may come every few weeks. Mid-winter temperatures usually reach 80°F/27°C. Occasionally, the overnight low temperature dips to the upper 30°s (~3°C), but averages in the mid-60°s (~18°C).

The multi-level canopy shown in Figure 14 contains different palms, including: *Livistona nitida*, *Chrysalidocarpus pembana*, *C. saintelucei*, *C. psammophilus*, various *Coccothrinax* species, and a well-grown Bindle (*Hyophorbe lagenicaulis* x *H. vershaffeltii*). Most of the palms mentioned have been in the ground approximately 20 years. These palms have survived many frosts, storms and hurricanes, including a direct impact of *Ian* (category 5 hurricane). Next in the canopy's height is a grouping of mostly large-growing cycads, which include (starting from left) *Dioon meijia*, *D. spinulosum*, *D. przewalskii*, and at the lower left *D. califanoi*. Though not shown above, this garden also hosts a menagerie of hybrid *Zamias* created during the past 12 years. (See the reference list for more information.)

Compared to neighboring properties with simple yards of lawns and a few sparse trees, the garden we've described is a microhabitat for many animal species. The canopy—large palms and cycads—breaks up the wind, while also creating plentiful shady and moist areas for animals. Among the regular visitors/residents are rabbits, raccoons, squirrels, opossums, bobcats, and many bird species, including Pileated Woodpeckers (*Dryocopus pileatus*) and small flocks of green Monk Parakeets (*Myiopsitta monachus*). Migratory flocks of cat birds (*Dumetella carolinensis*) feast upon the seeds of *Z. loddigesii* and *Z. furfuracea*. A pair of water features (a turtle pond and bird bath) are reliable sources of fresh water for wild visitors, particularly during the dry season. In all, these efforts maintain a welcoming environment and entice these animals to linger. An activity that has brought much interest and enjoyment is observing a regularly occupied owl house in the garden's canopy. Several clutches have begun life in this house, and have grown up with my nearby presence in the garden. Their behaviors range from puffing up their feathers to dissuade a hungry hawk (figure 15), to resting within shady branches of the mango trees in this sheltered garden (figure 16).

Set 40 feet (~12.2 meters) apart from the wet, semi-tropical area shown in Figure 14 is the xeric garden area (figures 17 and 18), where plants receive full sun all day, no supplemental water, and sit in deep coral-slag mulch. This area grows very differently compared to the one shown in Figure 14. Plants grow slower and "harder" with fewer, smaller, and tougher leaves. Although the

Figure 17: (L to R) Group of *Encephalartos* sp.; at center Z. *lucayana* and at right front *Sabal palmetto* 'Lisa'.

Figure 18: Group of *Dioon* sp.; various palms, tree aloes, agaves, *Dioons*, and 'Elephant trees': *Operculicarya decaryi*.

overall planting scheme is continued from the wetter area, the plant selection is modified to accommodate a drier habitat. Choosing succulent or dry-land habitat species is important in this case. For example, when considering drought-tolerant palms (Riffle & Craft, 2003), many *Copernicia*, *Livistona*, *Phoenix*, *Sabal*, and *Thrinax* species are potential options. As for cycads, Jones (2002) writes that various species of "*Cycas*, *Dioon*, *Encephalartos* and *Macrozamia*" (p.15) can be observed living in xeric habitats.

Passiflora suberosa grows well in almost any setting. (In essence, it is a weed.) It grows in both our sun and partial shade areas in and near the view of Figure 14. It grows equally well in the xeric area. However, the visiting butterfly species will vary with its location: only fritillaries appear in the sunnier and drier xeric microhabitat. The Heliconias prefer the shade during the intense heat of the day, and only venture into the sunnier areas in the early morning.

Conclusion

We have described the conditions that promote a curated garden, as well as the underlying philosophy. If after reading this article your intent is to create conditions that invite, nurture, and preserve—forming a microhabitat in your garden, then you embrace the fuller meaning of this article. In doing so, you become a steward of nature, cultivating not just a garden, but a thriving sanctuary that harmonizes with the world around it.

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Cycad Conservation and Restoration

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In 2019 Wild Cycad Conservancy NPC (WCC) was founded to look at cycad conservation research and to add reserves where our species could be protected. Most of our species occurring in reserves were included almost by accident. Reserves are usually proclaimed to conserve habitat or animals and cycads are never the focus. One notable exception is *Encephalartos dyerianus* at Lillie Cycad Reserve in Limpopo.

WCC currently focusses on pollinator research and a DNA project that will improve our understanding of population dynamics and how populations relate to each other. We also added a reserve for *Encephalartos horridus* in 2024 where about 300 plants occur in a pristine population, untouched by poaching and with pollination vectors still intact.

The current pollinator study found that cycads are mostly without their natural vectors and therefor seed cones are not pollinated and seedlings are not introduced naturally to replace the old individuals. The DNA study focusses on *E. horridus*, *E. trispinosus*, *E. arenarius* and *E. lehmannii*. In the case of *E. horridus* that is under severe poaching pressure, the study will inform conservation actions for the species.

WCC also acquired an old collection and is running this as a gene bank to produce suitable material of threatened species, for restoration work. In 2024 seed cones of *E. dolomiticus*, *E. laevifolius* Wolkberg, *E. cupidus*, *E. dyerianus* and *E. inopinus* were successfully pollinated.

WCC is working with government partners and private collaborators to help bring back our extinct species, eventually, as well as to protect species where necessary. This is an expensive exercise, and we are dependant on donations from generous people from around the world. *Wild Cycad Conservancy is a registered Public Benefit Organisation and donations are tax deductable*. If you can or want to contribute, please contact the author or see our website for more information, www.wildcycad.org.za.

Figure 1. This plant appears to be *Encephalartos trispinosus* but grows nowhere near the distribution of that species. The stout stems remind one of *E. lehmannii* but the leaves do not resemble the species. This is a single plant.

Figure 2. Leaf detail of the plant above reminds one of *E. trispinosus* or perhaps *E. horridus*? The current DNA study will shed light on what this is and how it relates to other populations close to it.

Cycad Trust

Tilania du Preez

Vyf jaar later

Sou iemand kon dink dat daar iets goeds uit die Covid pandemie kon kom? Die idee om 'n broodboom tuin by die Voortrekker Monument te begin, het gebeur omdat daar gedurende dié tyd so baie mense besluit het om te verhuis (baie na die Weskaap) en ander na aftree-oorde. Almal het 'n plek gesoek waarheen broodbome kon gaan om vir die nageslag bewaar te bly.

Met genoegdoening kan mens terugkyk oor die verskil wat die trust en die skenkers gemaak het by die Monument. Nou veg ons teen die luiperdmot en kewers...

Ons besef dat geen persoon sonder hoop vir die toekoms 'n plant plant nie, daarom hou ons aan met plant!

Indien iemand 'n skenking wil maak, kan hulle asseblief 'n epos stuur na cycadtrust@gmail.com of skakel op 0794804416.

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- Save as jpeg, using maximum file size (i.e. minimum compression).
- Send by e-mail to **cycad@cycadsociety.org** and mark 'For Encephalartos'.

The tables and figures/photographs of a manuscript should be numbered and all tables should have a heading. All figures and photographs should have a legend. All figures/photographs should bear written on the reverse the name of the author, figure number and the top of the figure or photograph.

Formal descriptions of new cycad taxa and new name combinations may be published in ENCEPHALARTOS. Authors are however, advised to rather publish such articles in the journal *Novon* which has been established especially for such articles. Articles on potential new cycad taxa, without formally describing them as new taxa, may also be published in ENCEPHALARTOS. To avoid any possible confusion of names of such taxa in future, they should be designated for example by terms such as Species A or Species 99. Do not ascribe provisional names to potential new cycad taxa.

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