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page 3

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Dear friends,

This is a paper I sent to America for the cycad 90 conference.

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CYCAD CONSERVATION IN AUSTRALIA AND GUIDE LINES

Sensible methods of preserving our heritage of indigenous cycads is a much harder and far bigger issue in this country than it is in other places that have cycadales. Previously, all scientific study has been carried out at government level primarily for means of their demise rather than their care.

Among the Macrozamia, this has always meant arsenical poisons, and to the cycadaceae burning off wherever they are found. This country places great stock in their vital cattle populations, and have never ever been prepared to listen to facts as to why poisoning occurs only that it does. Careful observation and individual inquiry reveals that the main body of victims to the cycasin poison are scrubber (wild cattle) on large overstocked stations.

Education to farmers and graziers at a government level about this problem is lacking, but it becomes obvious to concerned people that burning off only aggravates the problem. It takes several burnings before the caudex is finally breached, and after each, the defensive mechanism in the plant brings forth immediate new fronds heavily impregnated with the M.A.M. poisons. The scrubbers find this and being wild cattle and always hungry, eat and fall as new victims.

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Fencing off, or maintaining controllable herds is one solution but one that unfortunately will never be looked on kindly by cattle graziers.

Across the top of Australia an annual burn off takes place which was once part of an aboriginal ceremony and part of their culture. Of recent years cattle owners have added to this to such an extent that it becomes a joke as to how all these so-called "wild fires" start. Not only are the cycads effected but many valuable native plants are lost in the burning and if they are not heat regenerative they could become extinct. N.T. CYCAS ARE ALSO HOSTS TO VALUABLE ORCHIDACEAE. Conservation educating guide lines should, while point out the benefits to the farmer,<sup>be</sup> available in protecting his cycas, these being the sale value on export and local level from the harvested fronds for the horticultural trade, the returns by harvesting the medicinal gum from the cycas, the nitrogen fixing poperties of cycadales to an area, and lastly the landscape contractors use for these valuable ancient gymnosperms. Unfortunately many commercial collectors have only made the thing worse by offering to get rid of offending cycads from a farmer's land at no cost to the farmer. The dug plants then find their way into the commercial trade and the farmer is left with the impression he is well rid of them. S.G.A.P. members, however, explain the truth to the farmer, and in many cases he takes their protective advice. Enlightened farmers generally allow access to seed collecting, and also allow some specimens to be taken.

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## The Antideluvian Cycadales of the Landscape Scene ... by Len Butt

**L**OOSLEY and universally known as Cycads, this very ancient genus of plants are fern and palm like and are the surviving remnants of a line reaching back through the Mesozoic age into the Paleozoic era.

Only very incomplete evidence exists in the fossil rocks regarding the Cycadofilicales, which is the name botanically given to the group that arose out of the ferns of the Paleozoic some 300 million years ago. Many learned people today regard them as the Pteridosperms, or to be precise, Seed-ferns.

Ages passed and a much clearer fossil record was found in the strata of the Mesozoic period some 150 to 200 million years in our past. Worldwide, this age is very rich with fossils of two similar great genera, these are named Bennettitales and the Cycadales. The former were cone bearers and the latter had a very primitive open and finally pendant seed device, with a pronounced similarity to that of the ancient Cycadofilicales.

It is evident that they were the predominating flora of our world at that time and laid down much of what was to become coalfields. Our Cycads of today more than likely arose from these groups and should actually be referred to as Cycadales.

Scientific papers on the Australian genera, written by Dr L.A.S. Johnson in 1959 confirms that there are basically three separate families in the Cycadales. The Cycadaceae, consisting of a single genus, the *Cycas* and the *Zamiaceae*, which consists of all the rest, with the exception of one, the African *Stangeria*, which comes under *Stangeriaceae*.

The nursery name Cycads to my way of thinking narrows them to being *Cycadaceae*, so I prefer to call all of the living group Cycadales, which effectively covers the three existing genera.

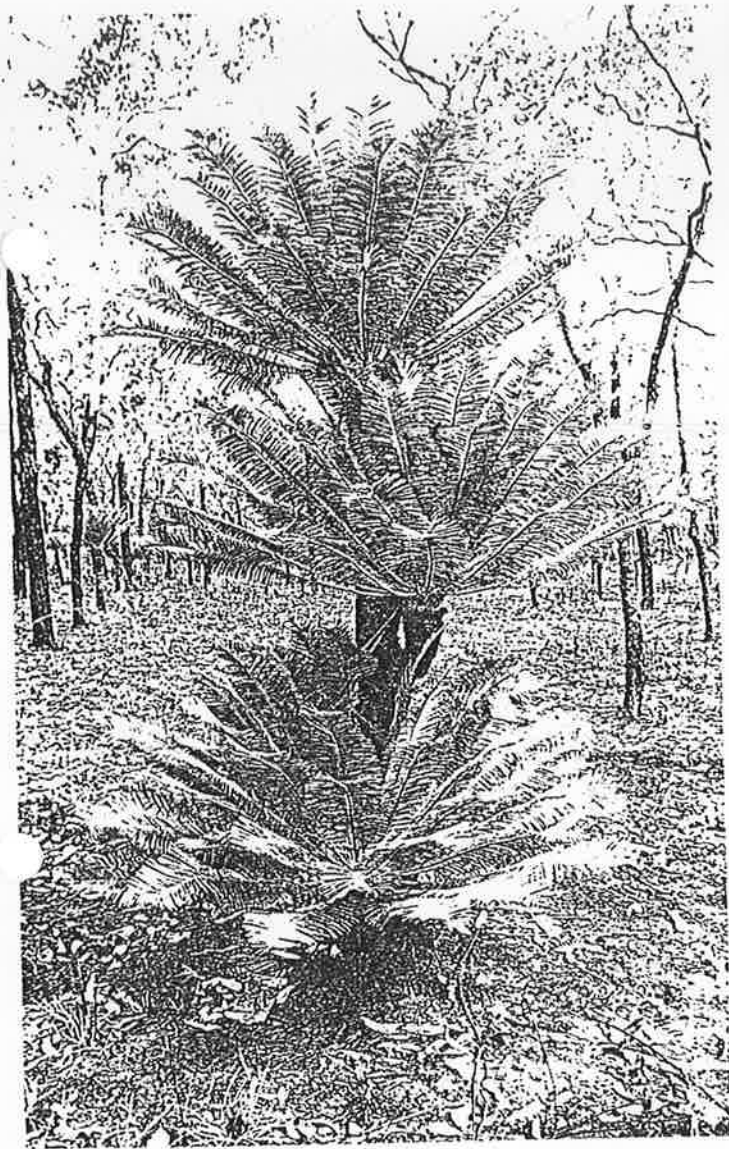
The world distribution of these picturesque plants today shows them to be a diminishing genus, but only since man became the dominant primate of our planet. The defensive vegetation poisons carried in all their new fronds and seed, interferes with his means of making a more profitable existence and anything that does this must go!

In just about every country where they now grow, laws have been passed to protect the remaining species. This is particularly so in Africa as the *Encephalartus* and the *Stangeria* come from the region. Some native tribes have long regarded their plants as very necessary and many creatures from baboons

to man eat either the seed or products processed from the trunk.

This also goes for Mexico and South America, the West Indies, all of S.E. Asia, together with the islands of the Pacific around Australia.

The Australian aboriginal people have used them as part of their food chain for centuries, but only in Australia have governments had many of the native species declared as noxious. Despite this variance it does not stop them being used in the popular landscape and home garden scene. Currently the entire family, both native and exotic have reached an apex in popularity. Advanced seedlings, when available, are probably the best way for the home gardener to purchase plants, as mature rooted trunks are very expensive.

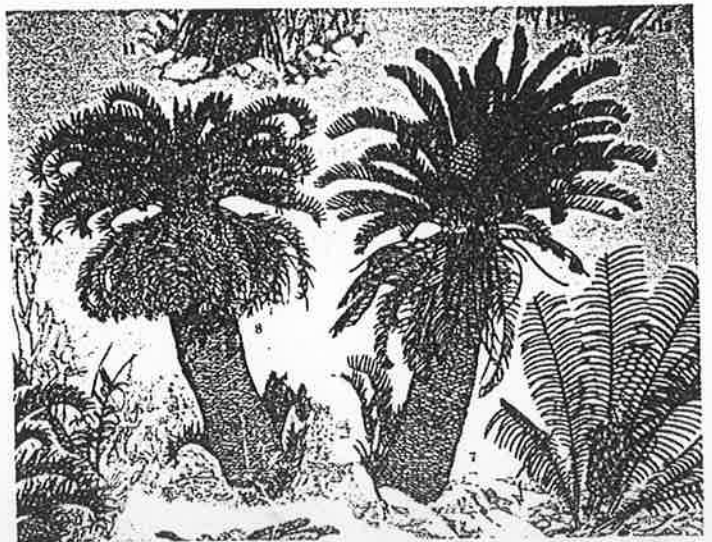


*Cycas calcicola in habitat N.T.*

Cycadales are non flowering and dioecious (male and female on separate plants) and in natural state rely on animals and the wind to propagate the species.

Plants grown from seed are becoming more readily available, however in the species such as *Cycas* and also *Macrozamia* their slowness of growth in the first few years makes them a difficult proposition for most nurserymen.

In many countries the protective laws are so strict that the export of advanced plants will soon cease, making the growing



*Painting of African Encephalartos zamiad.*

of existing seedlings to an acceptable garden size the order of the day. Australia takes a different view at the moment, there being no laws to protect what is undoubtedly a valuable link with our ancient past. An eradication attitude exists because of the chance of 'rickets paralysis' which can effect stock that eats the tender, very young fronds of these plants, that arise soon after the main plant has been burnt off by either natural wildfire or graziers themselves, burning off.

Currently fully dug trunks of many *Macrozamia*s and *Lepidozamia*s can still be purchased, as well as the sawn or dug trunks of the known *Cycas* and the new range of 'blue' *Cycas* species, some only recently discovered.

Here in Australia, we have a very large variety of the Cycadales and in the *Cycas* species probably more than any other country. The latest count is fourteen including all of the 'blues'. Many of these will probably be revised when a botanical estimation is finally made as I suspect that some are merely forms of others already listed.

Exotic *Cycas* would number collectively about the same with the famous 'sago palm' *Cycas revoluta* the best known. In this country this particular species has been on sale since the second World War and until fifteen years ago was the only one available. Other Australian genera consist of 2 *Lepidozamia*, 7 *Macrozamia*, 12 forms of the *Macrozamia* sect *Parazamia* and 2 *Bowenia*.

In North America there are about 66 species of the *Zamia*, of which *Zamia furfuracea* seems to be the most popular for horticultural use.

Species in South America include the *Dioon*, which in 1912 consisted of 2 known species, *D. edule* and *D. spinulosum*. Today about 25 *Dioon* are listed, showing the world wide increase in interest in this family.

Cuba has the *Microcycas* and Mexico the *Ceratozamia* of which there are several species known.

The African continent is the home of a very interesting sharp leafed *Zamia*, namely the *Encephalartos* and the present day count is some 52 species. Their other family member, the *Stangeria* comes in 2 differing forms, one from the forest with the other growing on the veldt.

Two *Cycas* are evident in Madagascar, *C. thourasii* and *C. madagascariensis*.

The plant can also be found scattered through India, Sri Lanka, China, Japan, S.E. Asia, New Guinea, The Solomons and all Australasian islands around our coastline.