

# PORTRAIT OF A SPECIES

## *MICROCYNAS CALOCOMA*

by

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*Microcycas calocoma* is perhaps one of the most interesting and yet mysterious of all cycads. Found only on the island of Cuba, *Microcycas* is a monotypic genus (there is but one species in the genus). Its geographic distribution and ambiguous name have always been a source of intrigue and speculation among botanist and horticulturist alike.

### NATURAL HISTORY THE SPECIES

*Microcycas* was originally described by Miquel as *Zamia calocoma* but acknowledged its similarity to a small *Cycas revoluta* by placing this new species in a new section notably *Microcycas*. Later this new section was elevated to generic rank.

*Microcycas* often occurs as a branched or unbranched arborescent cycad. The woody stem is often from 3 to 12 meters tall. Stems of older plants are often marked with conspicuous rings. The leaves are bright green and pointed with prominent light yellow-green rachis and midveins. Mature plants generally have a crown consisting of 6-40 leaves. Individual leaflets are long, narrow and reflexed.

The name *Microcycas* is an unfortunate misuse of terms to describe this cycad. *Microcycas* is one of the tallest of living cycads, whose height is exceeded only by *Dioon spinulosum* and *Lepidozamia hopei*. A single unbranched male *Microcycas* found at the largest colony measures 30 feet from ground to crown of foliage, with a 15 inch diameter stem. Other individuals approach this with heights of 28 feet and 12 inch diameters. The stems of this cycad are weak

compared to other species and it is believed that these tall specimens represent the maximum height achievable for any *Microcycas*. Strong winds and hurricanes which frequent Cuba no doubt play a vital role in determining the height of these plants.

There is no accurate way in determining the age of *microcycas* plants in nature. So rare are seedlings and young plants that observations on their rate of growth in the wild is virtually unknown. The leaf scar theory of determining the age, applicable to many other cycads might apply to *Microcycas* as well. However, without long term observations on leaf development, and growth of seedlings few assumptions can be made. No doubt the many tall and branched individuals represent extremely old plants by comparison to other cycads.

*Microcycas* does branch frequently. The branching is almost certainly due to injuries and is found in all sizes of plants, but most frequently in large, older specimens. Many of these specimens are multibranched with 3,4, up to 6 branches. In most cases, the branched specimens were in irregular shapes and grotesque. In all cases the branched specimens had a larger stem diameter compared to the slender unbranched specimens. It was noted that tall male specimens generally had very attenuated (narrow) stems near the leaf crown, and has been suggested that this feature might frequently result in the breakage of apical stems, thus promote branching. Branching has also been observed to originate at the ground level. Other *Microcycas* plants of interest are two specimens designated El Abuelo (grandfather tree) and La Abuela (grandmother tree). The former is reported to be a huge "grotesquely-branched" male with a massive stump 21 inches in diameter and with four "enormous branches." The Grandmother tree has an even larger trunk measuring 28 inches in diameter. It is also branched. Considering the slow growth rate of *Microcycas*, undoubtedly these two plants can be considered exceptionally old. Several hundred years old is at best a conservative estimate!

## REPRODUCTION IN NATURE

It is said that production of seeds by *Microcycas* in nature is very rare. Certainly this is one of the most critical factors for the restricted distribution and the vulnerability of the species. Cones are first observed in May and are fully developed in about 4 months. Pollination, if it occurs takes place in September and October. Development and maturation of seed cones appears to encompass ten additional months. Nevertheless, observation of many seed cones in nature indicates that they rarely if ever produced even a single seed. One

observation of two female plants, each surrounded by 3 males, yielded interesting results. Through many years of observation, the cones of these females failed to produce a single fertile seed, even though surrounded by pollen producing males, which in some years produced 2 sets of pollen cones.

Attempts were made to artificially pollinate cones first by dusting the pollen on to the female cones. All such attempts proved fruitless. No seeds were produced. However a second method was employed. A scale or two was removed from the female cone and freshly collected pollen was inserted in the the interior of the cone. This was done to over 50 cones in the wild and in every case all of the ovules developed in to normal seeds. It has been suggested that pollination might be effected by ants. However no direct evidence has been presented to support this.

Apparently if seed production is underway, a second female cone is not forthcoming. It was observed that plants with unfertilized cones often began producing second cones in normal sequence. However, those which were seeds, two cones were never observed. One can assume that seed production does significantly affect the natural rhythm of cone production, and therefore must tax the plant considerably.

It is now known that *Microcycas* plants, are sexually mature at a relatively early age . Plants grown from seed at Fairchild Tropical Garden in Miami Florida have produced male cones. Typically for cycads, female mature later, and these cones should be produced a few years after males first appear. In such ideal growing conditions as Miami, the growth rate of tropical plants often exceed natural events. It is unlikely that maturation occurs as rapidly in nature.

## DISTRIBUTION AND STATUS

*Microcycas* has always been considered a rare plant both in nature and cultivation. Not only is it endemic to Cuba but its distribution is limited to a small area in the province of Pinar del Rio in western Cuba. Only 4 locations of this rare cycad are known. In three of the locations, the plants are said to be few and make up small populations. In a fourth locality, the plants are said to be more numerous, but occurring in small groups over a larger area. Today the estimated number of surviving plants in nature is less than 600. It certainly can be considered an endangered species. Apparently there is little regeneration of

plants via seed production and the species is not considered to be extending the range nor regenerating. Local people are very familiar with this cycad, and tell of the usefulness of the roots as rat poison. (Similar folklore exists in Mexico. These natives have told me of this same attribute of *Zamia* and *Dioon* stems and roots.) As with any useful plant, knowledge of populations is important to local people. Therefore, while it is possible that undiscovered plants might occur in nearby mountainous regions, it is unlikely that significant populations do. The natives would certainly know of them, and even they regard *Microcycas* as a very rare plant.

The various colonies of *Microcycas* are said to occur in two types of habitats: Lowland colonies and Montane colonies. The lowland colonies occur in the plains south of the Organ Mountains. These areas are said to be easily accessible by automobile. By contrast, the Montane colonies can only be reached by foot or horseback.

The lowland colonies number only three and are all in the Pinar del Rio region. Many individuals occur on the sides of the arroyos (ravines and gullies) and often along stream beds. At certain times of the year these arroyos are completely dry. However during the rainy season, they often contain pools of stagnant water. Apparently some plants in these areas have the lower portion of the trunk completely submerged by water during this period. In these lowland colonies, plants of *Microcycas* are often covered with epiphytic bromeliads, orchids and ferns. Royal palms are also frequently found in association with lowland *Microcycas* colonies.

The Montane colonies occur in the foot hill and mountain sides. The localities range from 275 feet to 785 feet above sea level. A striking feature of these colonies is the restricted area where *Microcycas* is usually found. It appears to grow exclusively on the steep banks and slopes of these hills and mountain sides. In no cases have plants been found on the summits. The nature of these colonies varies considerably. Frequently plants are found scattered in grasslands. But they also commonly occur in dense brush which is nearly impenetrable. These montane colonies are more widely scattered than lowland ones. Most have few plants, 25-45, but one colony is the largest of all, containing 200 individuals. Additionally, numerous individual plants can be found isolated between the larger colonies. It is unknown whether these sporadic individuals represent remnants of once larger populations or if they are adventive newcomers. From the studies done on existing colonies, and reproductive potential in nature, it appears that these stragglers are relicts from the past and

not new colonizers. There is little doubt that the widely spaced montane colonies have their disjunction due to previous lumbering and farming activities.

## CULTIVATION

This plant is an outstanding ornamental. It has always been prized by collectors both for its beauty and rarity. *Microcycas* is reputed to be very cold sensitive. Several years ago, I spoke with a greenhouse worker at the New York Botanical Garden about cultivating it indoors. He recounted that leaves which were near a glass window in a heated greenhouse were burned by winter chill. It is also said that germinated seeds and young seedlings are particularly susceptible to fungal problems. Under optimum growing conditions *Microcycas* appears to grow quickly and some plants grown from seed have already coned.

A fascinating story could be told of the famous "*Microcycas* of Fairchild Gardens" and how they came from Cuba to rest in Miami in the early 60's. These plants 2 males and one female coned some 15+ years after they were collected and first produced seeds in 1975. For a period of 14 years they supplied hundreds of seeds to Botanical gardens, and growers all around the world. It is unfortunate to report that recently the female and a male of these original plants were struck by lightning and subsequently died. All above ground parts were lost. Time will tell, perhaps viable stem tissue below ground might have been spared. Regardless, seeds of this rare cycad will not be available again for many years.

Today, the garden has 30 young plants (some of which have coned) and countless others now exists in cultivation thanks to FTG. While certainly the death of these plants is a tragic loss, the future for *Microcycas* in cultivation is no longer so bleak. The species is more secure in cultivation now than ever before. Eventually, the new generation of *Microcycas* will mature and more seeds will be forthcoming.

## CONSERVATION OF MICROCYCAS

Fortunately because of the media publicity of rare plants governments are generally taking a more serious approach towards protecting their native flora by establishing conservation measures that will insure the continued survival of the species. *Microcycas* has gained much notoriety due its extreme rarity. Today it is afforded full protection both in Cuba and internationally. The populations are regularly checked by forestry officials and the main areas of distribution for this cycad have been proposed as Natural Conservation Areas.

## REFERENCES

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Fig. 1, *Microcycas calocoma* in cultivation at Fairchild Tropical Garden. This tall specimen is shown here with a sparse crown of leaves. In other years the plant had a more robust crown. This specimen is still alive today.



Fig. 2, *Microcycas calocoma* in cultivation at Fairchild Tropical Garden. This female plant is shown with a cone full of seeds. The weight of the cone was so great that it was necessary support it with ropes in order for it to develop undamaged.