

# ENCEPHALARTOS

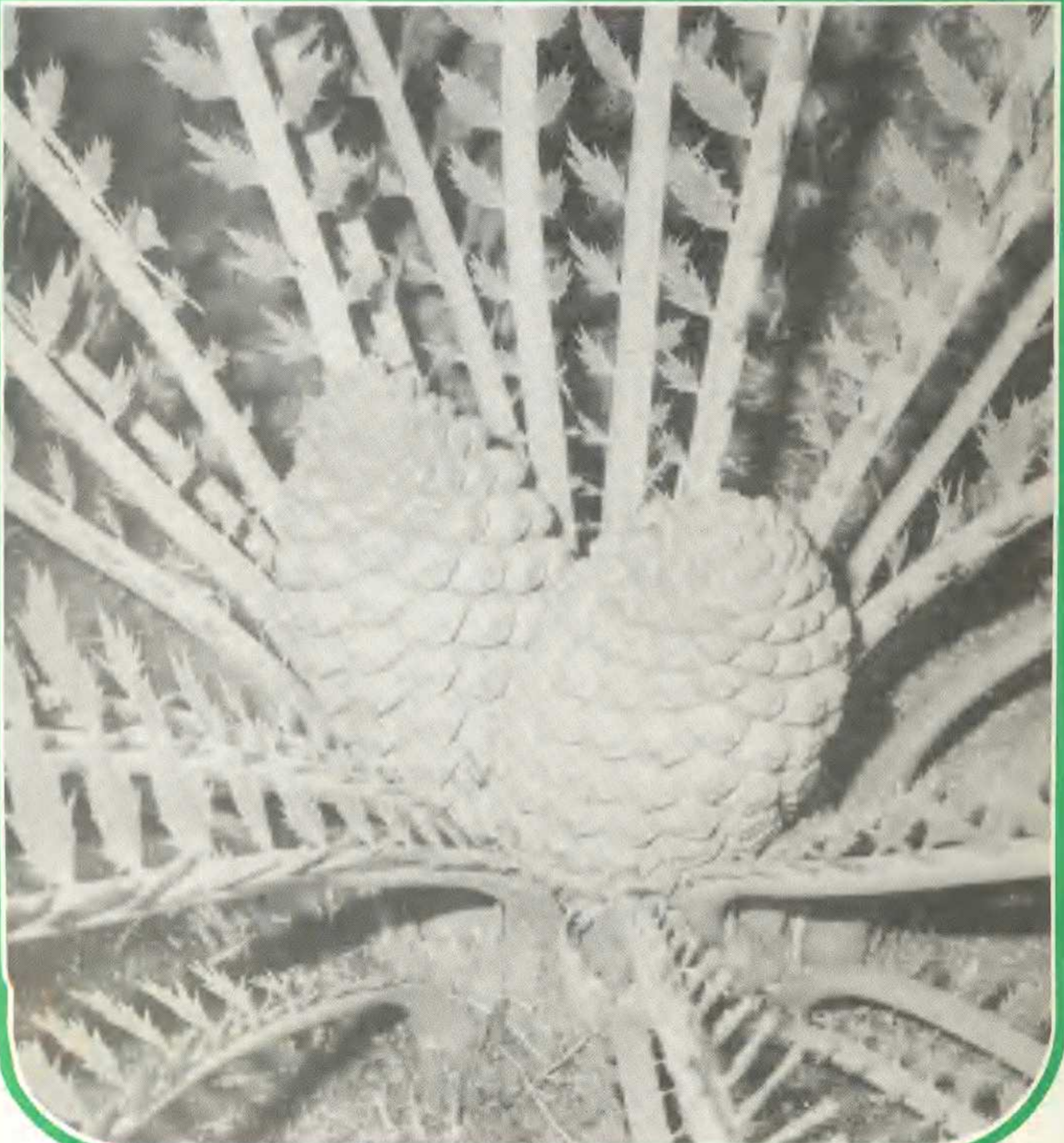
JOURNAL OF THE  
CYCAD SOCIETY OF  
SOUTH AFRICA

TYDSKRIF VAN DIE  
BROODBOOM VERENIGING  
VAN SUID-AFRIKA

NO. 45

MARCH / MAART 1996

ISSN 1012-9987



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**COVER / VOORBLAD : *Encephalartos nubimontanus*,  
female cones on a specimen of the rare robust form.**

Photo: Isabella Claassen

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## FROM THE PRESIDENT

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With the festive season behind us, it is now back to work again. As you will notice from the amount of information in this issue, the editor did not get the support she normally gets in the form of contributions for our journal. I would like to make a call on all members to make contributions. This can be letters, short notes on interesting observations or longer articles so that we all can share in excitement of being cycad fans.

Roy Shooter who for many years have been in charge of back copies of *Encephalartos* has decided to step down and this very important task will be taken over by André Jordaan. André's address and telephone number is given on the inside cover page of this issue. We wish him all the best for his new responsibility and I am sure that he will get the support from all members. To Roy, we say thank you very much indeed for the work you have done and we wish you well for the future.

Hanneke Grobbelaar has been nominated as representative for the Transvaal Regional Branch of Council and we wish her all the best. The names and addresses of Council members for the new two year term (1996 & 1997) are supplied on the inside cover page of this issue.

The renewal and registration forms printed on the coloured pages in *Encephalartos* make provision for E-mail addresses. Quite a number of the members have already supplied their E-mail addresses and we are getting requests for making this information available to all members so that members can start communicating via this electronic medium. Members who do not want their E-mail addresses to be publicized must please *advise me accordingly*, since we would like to publish such a list in the next issue of *Encephalartos*.

The "List of Members" will henceforth be included in the March issue of our journal (see pp. 27-43). Please check whether your membership number, name, and address are correctly cited in this directory. If not, please notify: The Membership Secretary (Mr. Giel Fourie), 9 Hobson Street, 2550 Stilfontein. It is essential that your membership number should be quoted in all correspondence with the Society.

**Hannes Robbertse**

## VAN DIE PRESIDENT

---

Met die Kersseisoen agter die rug, het dit nou weer tyd geword om te werk. Soos u sal opmerk uit die relatief min inligting wat in hierdie uitgawe van *Encephalartos* verskaf word, is dit duidelik dat die redaktrise nie die ondersteuning van lede ontvang het wat sy normaalweg in die vorm van bydraes kry nie. Ek wil daarom 'n beroep op al die lede doen om bydraes vir ons tydskrif te maak. Die bydraes kan briewe, kort berigte oor interessante waarnemings of langer artikels wees sodat ons kan deel in die opwinding wat u as broodboomliefhebber ervaar.

Roy Shooter wie vir 'n lang tyd verantwoordelik was vir die vorige uitgawes van *Encephalartos* het besluit om uit te tree en hierdie baie belangrike funksie sal voortaan deur André Jordaan behartig word. André se adres en telefoonnommer word op die binneste bladsy van die buiteblad verstrekk. Ons wens hom sterkte toe met sy nuwe verantwoordelikheid en ek vertrou dat hy die ondersteuning van al die lede sal ontvang. Aan Roy sê ons baie dankie vir die werk wat hy oor 'n lang tyd behartig het en ons wens hom alles van die beste toe vir die toekoms.

Hanneke Grobbelaar is as verteenwoordiger van die Transvaalse Streektak op die Raad genomineer en ons sien uit na haar bydrae. Die name en adresse van Raadslede vir die nuwe termyn van twee jaar (1996 & 1997) word op die binnebladsy van die buiteblad van hierdie uitgawe verstrekk.

In die hernuwings- en registrasievorms wat op die gekleurde bladsye in *Encephalartos* gedruk word, is ruimte gelaat vir die verskaffing van E-posadresse. Heelwat lede het reeds hul E-posadresse verskaf en versoeke word ontvang om hierdie inligting aan alle lede beskikbaar te stel, sodat lede makliker met mekaar deur middel van die elektroniese medium kan kommunikeer. Lede wat nie bereid is om hul E-posadresse openbaar te maak nie, moet my asseblief dienooreenkomstig laat weet aangesien ons graag in die volgende uitgawe van *Encephalartos* so 'n lys wil publiseer.

Die "Ledelys" sal voortaan in die Maart-uitgawe van ons tydskrif ingesluit word (kyk bl. 27-43). Maak asseblief seker of u lidmaatskapnommer, naam, en adres korrek is soos dit in hierdie gids verskyn. Indien nie, laat weet asseblief vir: Die Lidmaatskapsekretaris (mnr Giel Fourie), Hobsonstraat 9, 2550 Stilfontein. Dit is noodsaaklik om u lidmaatskapnommer te noem in alle korrespondensie met die Vereniging.

**Hannes Robbertse**

In each edition of ENCEPHALARTOS, we focus on one cycad species, in the form of an in-depth article in layman's language. In this edition the spotlight falls on:

In elke uitgawe van ENCEPHALARTOS fokus ons op een broodboomsoort, in die vorm van 'n in-diepte-artikel in leketaal. In hierdie uitgawe val die kollig op:

## *ENCEPHALARTOS NUBIMONTANUS* Hurter

Johan Hurter<sup>1</sup> and Isabella Claassen<sup>2</sup>

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### INTRODUCTION

Intensive field studies of *Encephalartos* species in South Africa and Uganda by the senior author (Johan Hurter) revealed several overlooked species.



Figure 1 A mature specimen of the more common form of *E. nubimontanus*.

In two articles, recently published in Botanical journals, the senior author named and described three new *Encephalartos* species, namely *E. equatorialis* and *E. whitelockii*, both from Uganda, and *E. nubimontanus* from South Africa. In *Encephalartos* 44: 4-9 (December 1995) our "Focus on ..." spotlight fell on *E. equatorialis*. In this issue of the journal the new South African species is described.

The specific epithet *nubimontanus* is derived from the Latin words *nubilus* = greyish-blue (leaf colour) and *montanus* = growing on mountains.

*Encephalartos nubimontanus* is the legitimate name for all specimens known by cycad collectors as *Encephalartos* "venetus", *E. "venetus robusta"*, *E. "giant cupidus"* and *E. "fifth eugene-maraisii"*.

### DESCRIPTION

#### 1. STEM

Plant treelike in growth (arborescent), suckering from the base. The trunk is often decumbent (prostrate with the tip rising upwards), up to 2.5 m long and 350-400 mm in diameter. The leaf bases are persistent, and the crown of the trunk is slightly tomentose (covered with short hairs).

#### 2. LEAVES

The numerous leaves, arranged in a dense crown (Figure 1), are greyish-blue, glaucous (covered with a powdery bloom), rigid, apically recurved or slightly twisted (Figures 2-4), 1.1-2.0 m long, with ascending



Figure 2



Figure 3



Figure 4



Figure 5

Figures 2-5 *Encephalartos nubimontanus*: Figures 2, 3 Specimens of the more common form of *E. nubimontanus* in the Pretoria gardens of Mrs Shirley Pienaar (Figure 2) and Mrs Ita van der Walt (Figure 3). Note the twist near the apices of some of the leaves. Figure 4 A leaf of the plant depicted in Figure 1, showing the twisted leaf apex. Figure 5 Trunk with leaf bases showing the petiole and rachis with proximal leaflets. Figures 2 & 5, Photos: Nat Grobbelaar.

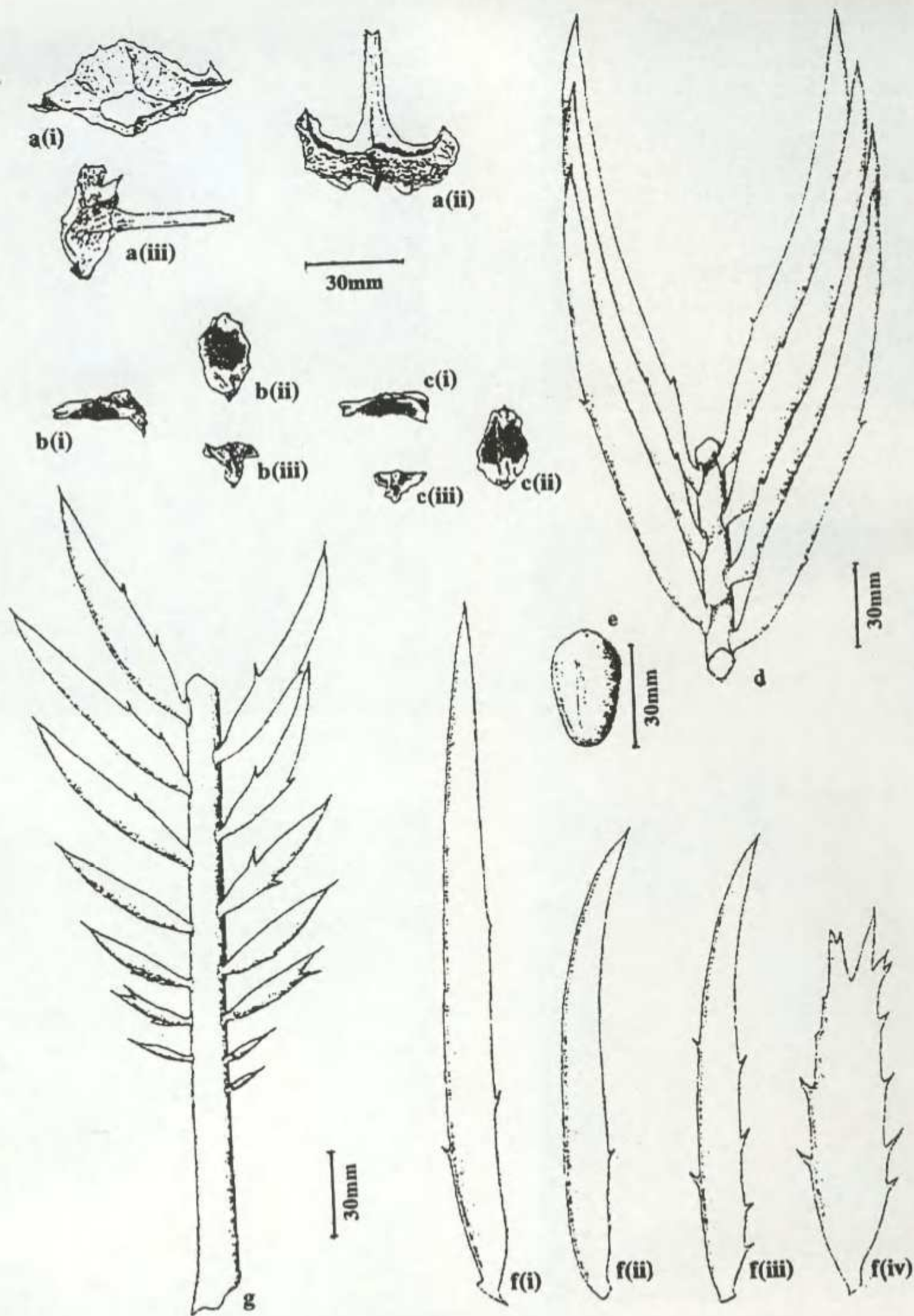


Figure 6 *Encephalartos nubimontanus*: (a) median female cone scale, (i) frontal view, (ii) adaxial view, (iii) side view; (b), (c) median male cone scales from cones of two plant specimens, (i) side view, (ii) abaxial view, (iii) frontal view; (d) median leaflets; (e) seed; f(i)-(iv) a range of leaflet shapes observed within the species; (g) petiole and proximal leaflets. Drawings: S. Burrows.



Figures 7-10 *Encephalartos nubimontanus*: Figures 7-9 Leaf detail of the more common form of *E. nubimontanus*. Figure 7 Upper side of leaf. Note the long narrow leaflets with few spaced-out marginal teeth. Photo: Nat Grobbelaar. Figure 8 Lower side of leaf showing the abaxial surface of the leaflets, marginal spines and overlapping of leaflets. Photo: Nat Grobbelaar. Figure 9 Lower side of leaf; most leaflets with entire margins. Figure 10 Leaf detail of the rare robust form of *E. nubimontanus*. Note the shorter and wider leaflets with numerous marginal teeth.



Figure 7



Figure 9



Figure 8



Figure 10

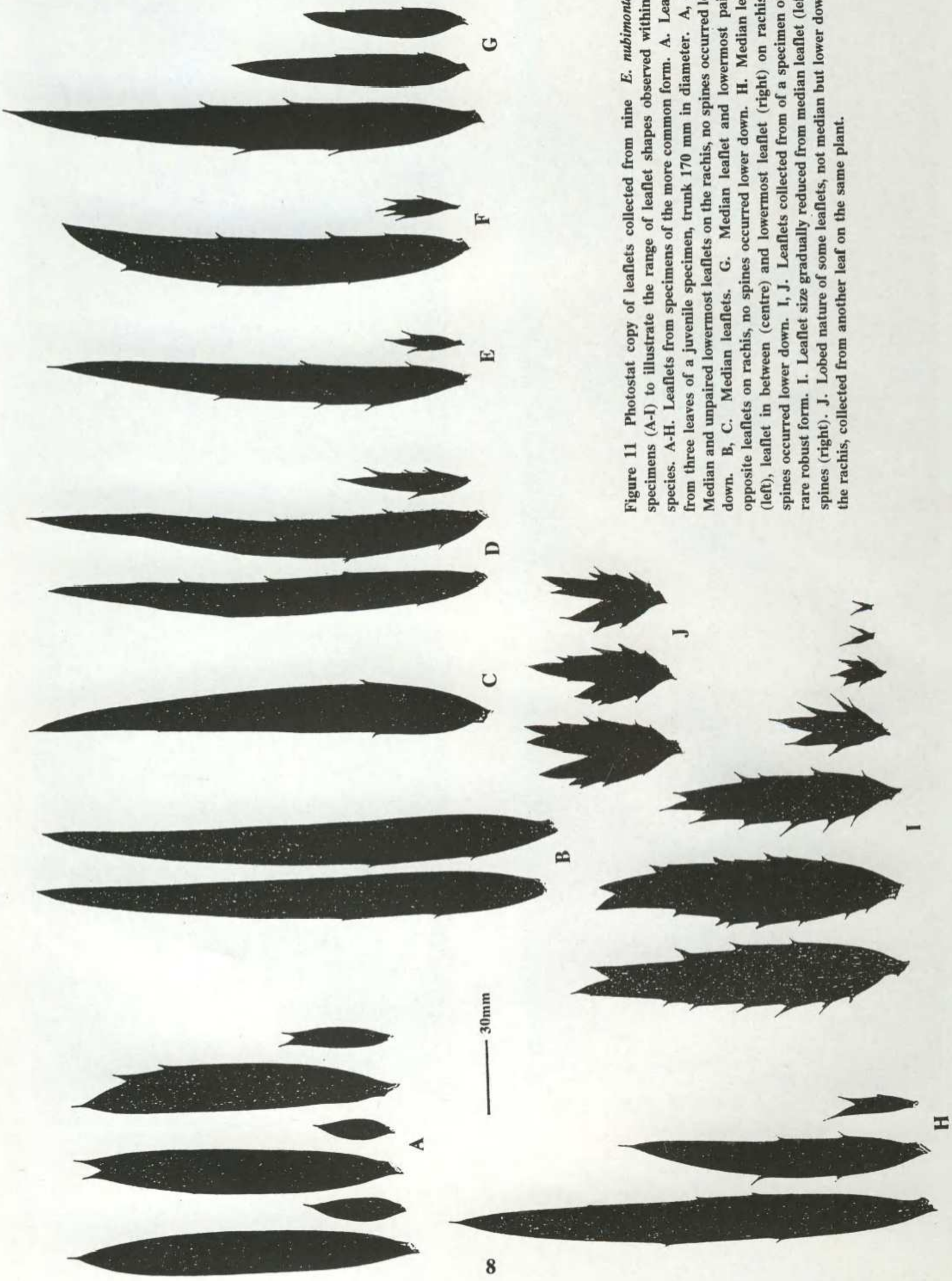


Figure 11 Photostat copy of leaflets collected from nine *E. nubimontanus* specimens (A-I) to illustrate the range of leaflet shapes observed within the species. A-H. Leaflets from specimens of the more common form. A. Leaflets from three leaves of a juvenile specimen, trunk 170 mm in diameter. A, D-F. Median and unpaired lowermost leaflets on the rachis, no spines occurred lower down. B, C. Median leaflets. G. Median leaflet and lowermost pair of opposite leaflets on rachis, no spines occurred lower down. H. Median leaflet (left), leaflet in between (centre) and lowermost leaflet (right) on rachis, no spines occurred lower down. I, J. Leaflets collected from a specimen of the rare robust form. I. Leaflet size gradually reduced from median leaflet (left) to spines (right). J. Lobed nature of some leaflets, not median but lower down on the rachis, collected from another leaf on the same plant.

leaflets. Petiole apparent (Figures 5, 6g), slightly trigonous, basally bulbous, up to 230 mm long, slightly tomentose, with a reddish brown collar at maturity. The glabrous rachis (the axis of a leaf above the petiole, i.e., the part bearing leaflets) is round in cross-section and becomes yellow with age. The slightly thickened margins of the leaflets are dentate or entire (Figures 5, 6d,f,g, 7-11), the veins are not raised abaxially (lower surface) (Figure 8), the leaflets are directed towards the leaf apex at an angle of about 45° to the rachis, opposing leaflets are inflexed (bent inwards), set at an angle of about 70° to each other, oriented incubously (obliquely inserted on the rachis so that the leaflet edge facing the leaf apex overlaps and thus covers the lower edge of the leaflet above) towards each other (looking at the upper side of a leaf). Proximal leaflets (nearest to the base of the leaf) gradually reduced to a series of spines or terminating rather abruptly in either a pair of opposite smaller leaflets (Figure 11G) or an unpaired single small leaflet (Figures 6g, 11A,D-F,H) on the rachis. Median leaflets 180-250 mm long, 15-25 mm wide, narrowly elliptic, outer edge falcate (see Figures 6d, f(ii), f(iii), 11D,F), gradually acuminate apically, pungent (terminating in a hard sharp point), basally sessile to the rachis, apices somewhat turned toward the leaf apex (Figure 6d).

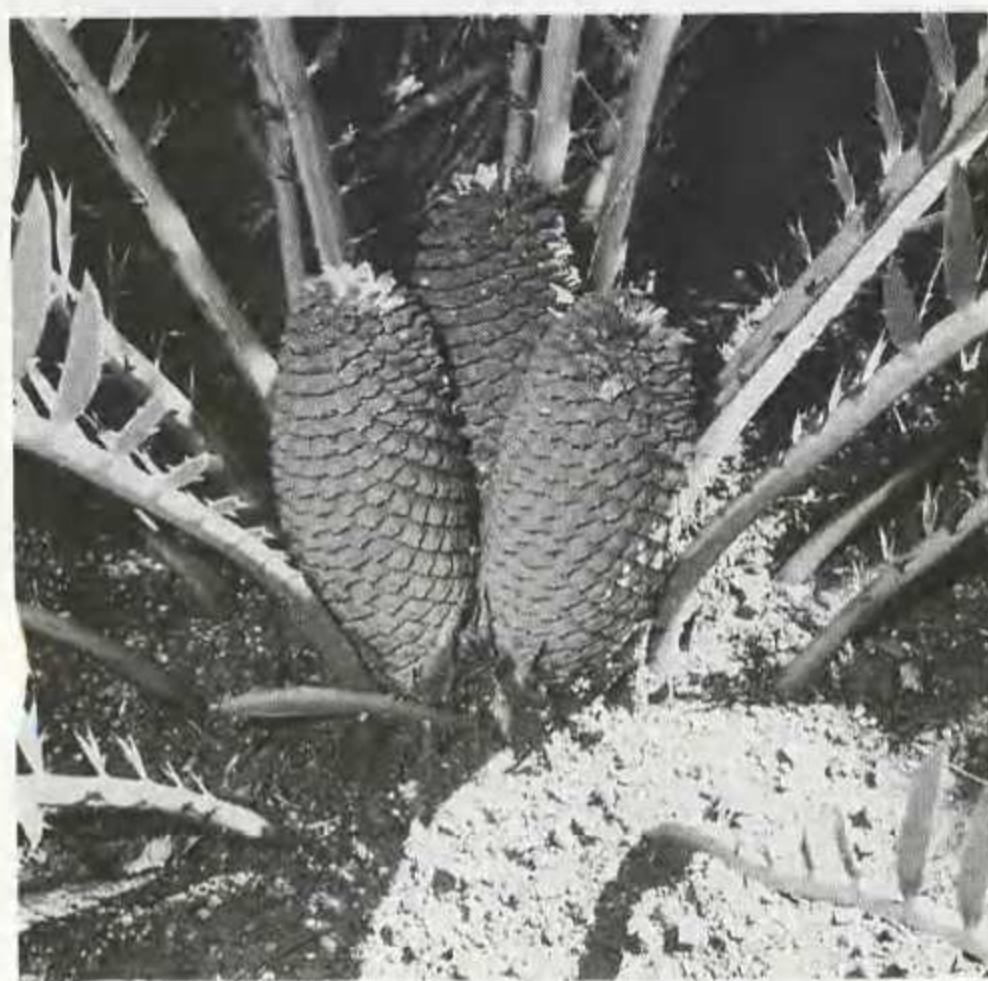


Figure 12 *Encephalartos nubimontanus* with three juvenile male cones on a single stem.

### 3. CONES

The light green cones are dimorphous, glabrous, with smooth scale facets.

One to five subconical male cones (microstrobili)

(Figure 12) are borne per trunk and they are 250-400 mm long and 50-90 mm in diameter, and have a stalk (peduncle) 30-45 mm long. The median male cone scales (microsporophylls) (Figures 6b & c) are slightly descending (directed downwards); the bulla (expanded outer head of a cone scale) with no median but two lateral facets; terminal facet a drooping lip-like structure.

One to three female cones (megastrobili) (Figures 13-15, front cover), are borne per trunk, they are ovoid, 360-400 mm long and 180-200 mm in diameter, with a stalk 15-31 mm long. The bullae of the terminal sterile female cone scales (megasporophylls) are drawn out in ascending (directed upwards) lip-like structures (Figure 15). The median female cone scales (Figures 6a, 15) are rhombic (diamond-shaped with oblique angles and equal sides). Bulla with two trapezoid lateral facets and a single oblong median facet; terminal facet slightly concave.



Figure 13 Female cone on a specimen of the more common form of *E. nubimontanus*.

Seeds about 200 per cone; sarcotesta (fleshy outer skin) yellow to orange-red; sclerotesta (kernel) 35-38 mm long and 23-30 mm in diameter, ellipsoidal, round and smooth (Figure 6e).



Figure 14 Female cone on a specimen of the rare robust form of *E. nubimontanus*.



Figure 16 Leaf detail of a seedling (2.5 years old) of the more common form of *E. nubimontanus*.



Figure 15 Close-up of the female cone shown in Figure 14.

#### DIAGNOSTIC FEATURES AND AFFINITIES

Plants of *Encephalartos nubimontanus* superficially resemble those of *E. cupidus* R.A. Dyer (Dyer 1971) by their stiff, pungent, glaucous leaves. However, *E. nubimontanus* can at first glance be distinguished from that species by its arborescent habit, robust nature, and long recurved leaves. Vegetatively, *E. nubimontanus* is easily distinguished from *E. cupidus* by its longer, often nearly sessile leaves. In *E. cupidus* the median leaflets are oblong-lanceolate, unlike the normally falcate leaflets of *E. nubimontanus* (an ecotype [rare robust form] that has thus far been observed only in cultivation and not in habitat, produces leaflets dentate to nearly lobed on both



Figure 17 Leaf detail of a three-year old seedling of the rare robust form of *E. nubimontanus*.

sides [Figures 6f(iv), 10, 11 I & J, 14, 15] and thus not falcate. [Unfortunately all specimens of this spectacular form have been removed from the wild by unscrupulous collectors (Piet Vorster, *pers. comm.*) - Editor]. The shape, numerous marginal teeth, and the ratio length to width of the leaflets of this rare robust form [*E. "venetus robusta"*] differ conspicuously from those of the more common form [*E. "venetus"*]. The differences, especially the number of marginal teeth, can even be observed in

seedling leaves [Figures 16, 17]. However, the two forms produce similar cones and are thus regarded as belonging to the same species.) Cones of *E. nubimontanus* and *E. cupidus* are also distinctive. The female cones of *E. nubimontanus* have sterile terminal cone scale bullae that are drawn out into ascending lip-like structures, which is not the case in *E. cupidus*. In the male cones of *E. nubimontanus* the median cone scales are slightly descending with bullae drawn out into lip-like structures, while the median male cone scales of *E. cupidus* are spreading with the bullae not drawn out.

#### DISTRIBUTION AND HABITAT

At present this species is known only from one small area in the Northern Province, at an altitude of 1000 m. Plants grow scattered in mixed deciduous woodland, especially on cliff faces.

#### ACKNOWLEDGEMENTS

We thank all the Pretoria and Centurion members of the Cycad Society of South Africa who contributed photographs and/or leaflets of plants in their gardens to illustrate this species. Unfortunately no habitat photographs were available.

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VARIATION IN FLORISTIC CHARACTERISTICS OF *BOWENIA SERRULATA*

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Received 9 December 1995

The genus *Bowenia* is endemic to the forests of tropical Queensland. It contains two named species, *Bowenia spectabilis* Hook. ex J.D. Hook. and *B. serrulata* (W. Bull) Chamberlain; these species have pinnules with entire and serrate margins respectively. *Bowenia spectabilis* is restricted to the Wet Tropics of Far North Queensland (FNQ) and *B. serrulata* to the vicinity of Byfield in Central Queensland. The status of plants with serrate-margined pinnules in FNQ is uncertain; Hill (1993) and Jones (1993) indicate that it is a distinct species but do not provide a formal description and with Forster (*in press*) list it as *Bowenia* sp. "Tinaroo" referring to the location of the best known population.

The genus *Bowenia* is unique in the extant cycads in having bipinnate foliage and circinate vernation. Until recently it was thought that cataphylls were absent from the foliar axes of *Bowenia* and the monotypic genus *Stangeria* with which it has been linked (see Stevenson 1990 and 1992 but also Dehgan & Schutzman 1993 for an opposing view). This characteristics had been used in phylogenetic analyses of the cycads but more recently it has been noted that cataphylls are irregularly present on the foliar axes of *Bowenia* (Stevenson 1992, Jones 1993) and present on the foliar axes of *Stangeria* (Dehgan & Schutzman 1993).

During studies of *Bowenia serrulata* in the nursery at Central Queensland University (CQU), Rockhampton and in the riverine rainforest habitat at Byfield, Central Queensland, I observed and quantified the occurrence of tripinnate foliage and cataphylls on the leaves of plants.

TRIPINNATE FOLIAGE

In September of 1993, 1994 and 1995 I surveyed 40 randomly selected *B. serrulata* plants growing at Byfield for the presence of atypical foliage. I found 20, 25 and 40% respectively of plants (no significant differences amongst years, Pearson Chi-square Statistic  $P < 0.05$ ,  $DF = 2$ ) and 11.9, 15 and 36% of leaves had some tripinnate foliage (Figure 1). The production of tripinnate foliage was variable; no plant or leaf was found where all pinnae were tripinnate. The mean number of pinnae on leaves of all plants surveyed was 10.1 (range 6-13) with 8.0, 6.2

and 10.5% of all pinnae being tripinnate to some degree. The foliage was most frequently located near the base of the pinnae and most commonly gave rise to two or three pinnules but some examples of more complex growth were found.



Figure 1 Tripinnate foliage on pinna of *Bowenia serrulata*.

No tripinnate foliage was observed in nursery stocks held at CQU but as they are at maximum only four years old and leaf production limited, further observations are required to ascertain if they too will give rise to tripinnate foliage.

A survey in June 1995 of the leaves of 100 *Bowenia* "Tinaroo" growing at Tinaroo in a climatic and light regime very similar to that of *B. serrulata* at Byfield did not reveal any tripinnate foliage.

#### CATAPHYLLS ON FOLIAR AXES

In 1993 whilst transplanting nursery-grown single-leaved seedlings of *Bowenia serrulata* I observed that 5 (25%) of 20 plants had a small cataphyll present at the base of the leaf. These were not obvious and were easily detached from the plant. Forty percent of second leaves subsequently produced by these plants also bore small cataphylls.

Surveys in September 1993 and 1994 and October 1995 of 20 young leaves on 20 different mature plants growing at Byfield revealed that 95% had cataphylls present. The leaves examined ranged in size and development from 80 mm circinate to 600 mm erect with pinnae spreading. The cataphylls varied in length from 20 to 50 mm (Figure 2) and were only visible after the litter and uppermost soil layer had been removed.



Figure 2 Cataphyll on the base of a young leaf of *Bowenia serrulata*. Note that the soil and leaf litter have been excavated to reveal the cataphyll (arrow).

#### DISCUSSION

The observation in three successive years of tripinnate foliage on leaves of *Bowenia serrulata* plants growing at

Byfield suggests that the habit is persistent and indicative of inherent variation within the species. Tripinnate foliage may be a response to stress induced by drought conditions that have prevailed in Central Queensland during the past five years; continued observations are required to ascertain if the habit persists once a "normal" climatic regime is re-established.

The presence of cataphylls on most but not all foliar axes of *B. serrulata* supports Stevenson's (1992) report that they are produced irregularly, and together with reports of them in *Stangeria* and all other genera of cycads, indicates that the presence of cataphylls on the base of leaves in cycads is a symplesiomorphy. Variation in size and occasional absence of cataphylls suggests that they have a minimal role in protecting the tip of the emerging leaf and the pinnae and pinnule primordia as they push up through the soil and leaf litter. Since fewer cataphylls were found on small first leaves than on subsequent ones it may be that they are less important in protection of the more robust and slower growing leaves which arise from a seed which is located on or near the surface and prior to the growth of a subterranean stem. The converse is likely to occur in the more fragile and very rapidly growing larger leaves.

#### ACKNOWLEDGEMENTS

I wish to thank Tom Susans at Byfield for access to the field site, and Paul Forster of the Queensland Herbarium for discussions of aspects of this work.

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## KEEP A RECORD OF YOUR CYCADS

Nat Grobbelaar

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Cycad lovers can roughly be grouped into two categories. The largest group are interested in cycads mainly for their ornamental beauty in garden landscaping. These individuals are generally interested in large specimens or seedlings of fast growing species. Most of them do not know a great deal about cycads and they generally do not care whether a specimen is an interspecific hybrid or not. In fact they would often prefer to own a hybrid because of its uniqueness and high growth rate (so-called hybrid vigour). Indeed many hybrids are very beautiful and unsurpassable as ornamental plants.

The second group of cycad lovers are, what I will call cycad collectors or the more serious cycad lovers. They usually would like to own at least one specimen, but preferably at least one male and one female specimen of say all indigenous cycad species. In some cases the geographical range is enlarged to include the whole of Africa or even the whole world.

The latter group of cycad lovers are very concerned about the purity of their plants and often distinguishes between the morphological forms of a given species which grows in different localities. Indeed these collectors are often the first people to recognize different forms in the wild and it is often through their efforts that the taxonomists eventually describe the various forms as different taxa (varieties, subspecies or even species).

At present it is difficult to obtain mature specimens from the wild by legal means, and rightly so. Many private owners of wild cycad stands are, however, willing to provide cycad enthusiasts with small numbers of seed provided prior permission is obtained from the relevant nature conservation authority.

The older serious collectors obtained their plants almost entirely from the wild in the not too distant past. Indeed I doubt whether any serious private cycad collectors, as defined above, existed in South Africa much before the 1950's. Although thousands of South African cycads were exported from the wild to overseas enthusiasts in the nineteenth and early twentieth century, the local interest developed only relatively recently. As a result nearly all the old cycads that are presently to be found in gardens were probably taken as mature specimens from the wild. Because the populations from which these plants were taken have either been completely decimated or are in danger of being decimated, it is of considerable importance that their owners, if at all possible, record at least the exact locality from where the plants were taken. Many of the owners

in question are getting on in years and still rely heavily on their memory. Their friends and families should encourage and assist them to label the plants in question permanently and record at least the exact locality from where the plants were taken. This could provide serious collectors with valuable breeding material and substantially increase the market value of the plants.

For years, cycad collectors wanted to own a specimen of the relatively rare and slow growing *Encephalartos eugene-maraisii* and paid high prices for a specimen of this species. Nurserymen collected pollen from whatever *E. eugene-maraisii* they could find in gardens and pollinated whatever female *E. eugene-maraisii* they could find in gardens to obtain seed from which they grew seedlings for the retail market. Recently, however, a thorough study of the small remaining populations of the so-called *E. eugene-maraisii* plants in the wild revealed that the plants from different localities differ so markedly that the plants that used to be called *E. eugene-maraisii* do indeed represent at least four distinct species, one of which retained the name *E. eugene-maraisii* whilst some of the others were given the names *E. dolomiticus*, *E. dyerianus* and *E. middelburgensis*. As a consequence we now have many specimens of unspecified hybrids of these cycad species in cycad collections. Because a hybrid sometimes closely resembles one of its parents, it can be difficult to distinguish a hybrid from one of the species from which it was derived. The offspring of a hybrid, especially if it is crossed with another hybrid results in an even greater mixture of characters.

With the wild populations of our indigenous cycads becoming dangerously small, it is extremely important that the serious collectors keep the species in their gardens pure, or if they hybridize them, that it is done in a planned and documented way so that, at any time, they know exactly what they have. To exclude the possibility of hybridization, one should only use parent plants of the same species that originated from the same locality. If this was done for the former so-called *E. eugene-maraisii* plants, we would not have the chaotic situation that exists in garden collections at present. Thus, the various forms of what we currently consider to be *E. caffer*, *E. ghellinckii*, *E. humilis*, *E. laevifolius*, *E. lebomboensis*, *E. natalensis*, *E. trispinosus*, *E. transvenosus*, *E. villosus* and *Stangeria eriopus* could very well in the near future be shown to be conglomerates of different taxa at the varietal, subspecific or even specific level.

To keep the taxa in our gardens pure, we should therefore know the origin and ancestry of each plant and

select only parents truly representing a given locality in the wild for breeding purposes. This naturally presupposes that from the time the original plant or seed was obtained from the wild, that a careful record of, amongst other things, the locality from which the plant/seed was obtained is kept. One should never rely on one's memory in matters of this nature. Apart from the fact that one's memory in time will be found wanting, it is unlikely that after one's death (and this can come about suddenly and unexpectedly) even one's closest friend or relative will be able to provide the information required in serious breeding work.

Each garden plant should therefore be provided with a permanent label which identifies the specific individual in the collection. I have found that an aluminium strip approximately 35 cm x 3 cm and 1.5 mm thick makes an ideal permanent label. The lower end of the strip is embedded in a small can that is filled with concrete (see Figure 1). Each plant can be allocated a number and this is punched onto the free end of the aluminium strip. Twelve mm high numbers are quite adequate. For a large collection it might be better to allocate a number to each cycad species and a specific number to each plant within the species. If you therefore have 10 *Encephalartos lebomboensis* plants and you allocated the number 17 to this species, all your *E. lebomboensis* plants will have labels with number 17 punched onto the top of the label. Below the 17, the different plants will have 1 to 10 punched on their labels. The can with the lower end of the label is now buried near the plant to a depth of about 15 cm with the punched side facing away from the plant.

The details about each plant can be entered into a book, or better still onto an index card or computer. Apart from the plant's number and current scientific name, the origin and ancestry of the plant should be documented in as much detail as possible. For instance: "Stem approx. 65 cm long, diam. approx. 25 cm when removed from basin to be filled by Jozini dam in the Pongola River in May 1963." or "Plant grown from seed collected in Dec. 1983 from cycad colony on farm Dikderm about 35 km from Vryheid on the road to Louwsburg.", etc.

Other details that should be entered into the records of each plant with time are: coning details such as (i) gender (male or female), (ii) number of cones produced, (iii) month when cones first become visible, (iv) month when cone becomes receptive for pollination or sheds

pollen, and in the case of females (v) month when cone disintegrates or dries out. Many other details can also be entered such as the colour and shape of the cones, month when plant produces new leaves, sucker production, etc, etc.

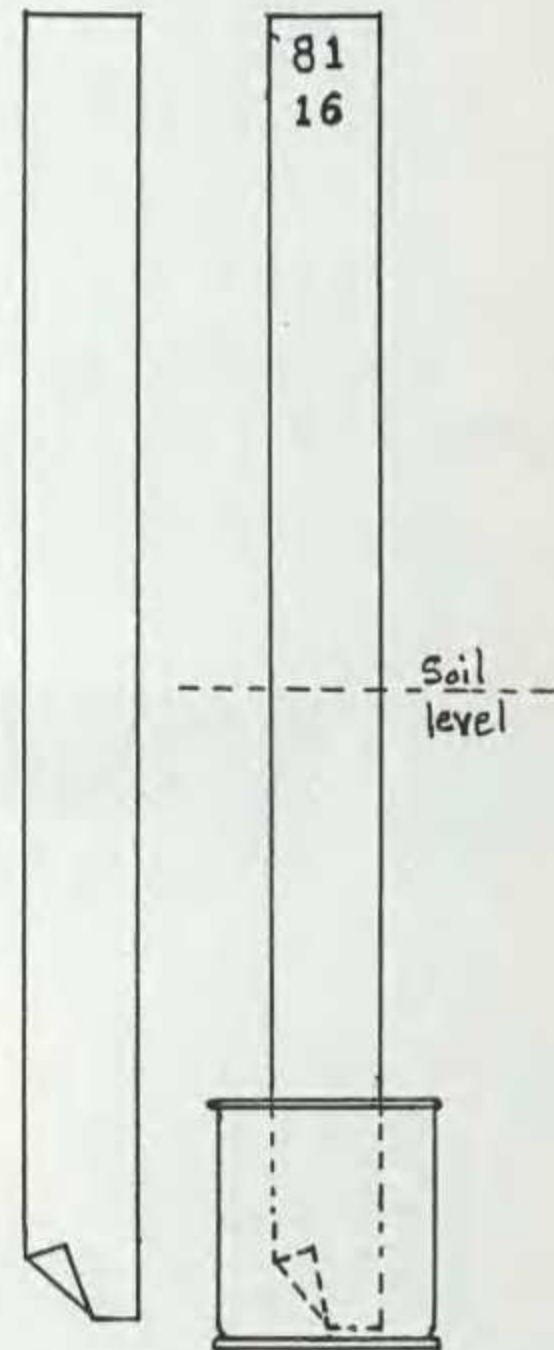


Figure 1 Left, aluminium strip with one lower corner bent up before immersing it into the concrete. Right, final label for *E. aemulans* plant (as indicated by number 81) number 16 in the collection.

Apart from the pleasure one derives from recording all these details about one's plants, one is, in so doing, also contributing substantially to the gathering of scientific information concerning cycads and increasing the market value of your cycad collection.



## POTENTIAL PROPAGATION OF *ENCEPHALARTOS WOODII* FROM EXCISED LEAVES

Roy Osborne<sup>1</sup> and Christopher Dalzell<sup>2</sup>

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<sup>2</sup>Durban Botanic Gardens, P.O. Box 3740, 4001 Durban, South Africa

Received 30 December 1995

The possibility of propagating cycads from "leaf cuttings" has been mooted from time to time and some hobbyists have attempted this with varying degrees of success. Whole cycad leaves are quite easily rooted, but the subsequent development of growing plants is infrequent.

In a report presented at the CYCAD 93 Conference, Nat Grobbelaar described how he had obtained plants from excised leaves of *Encephalartos ferox*, *E. horridus*, *E. lebomboensis*, *E. natalensis* and *E. trispinosus* over a 7.5 year programme. In his experiments, roots were obtained quite easily at the leaf bases and these rooted leaves survived for long periods. A small percentage of these rooted leaves developed stem apices which lead to new plants (Grobbelaar, *in print*).

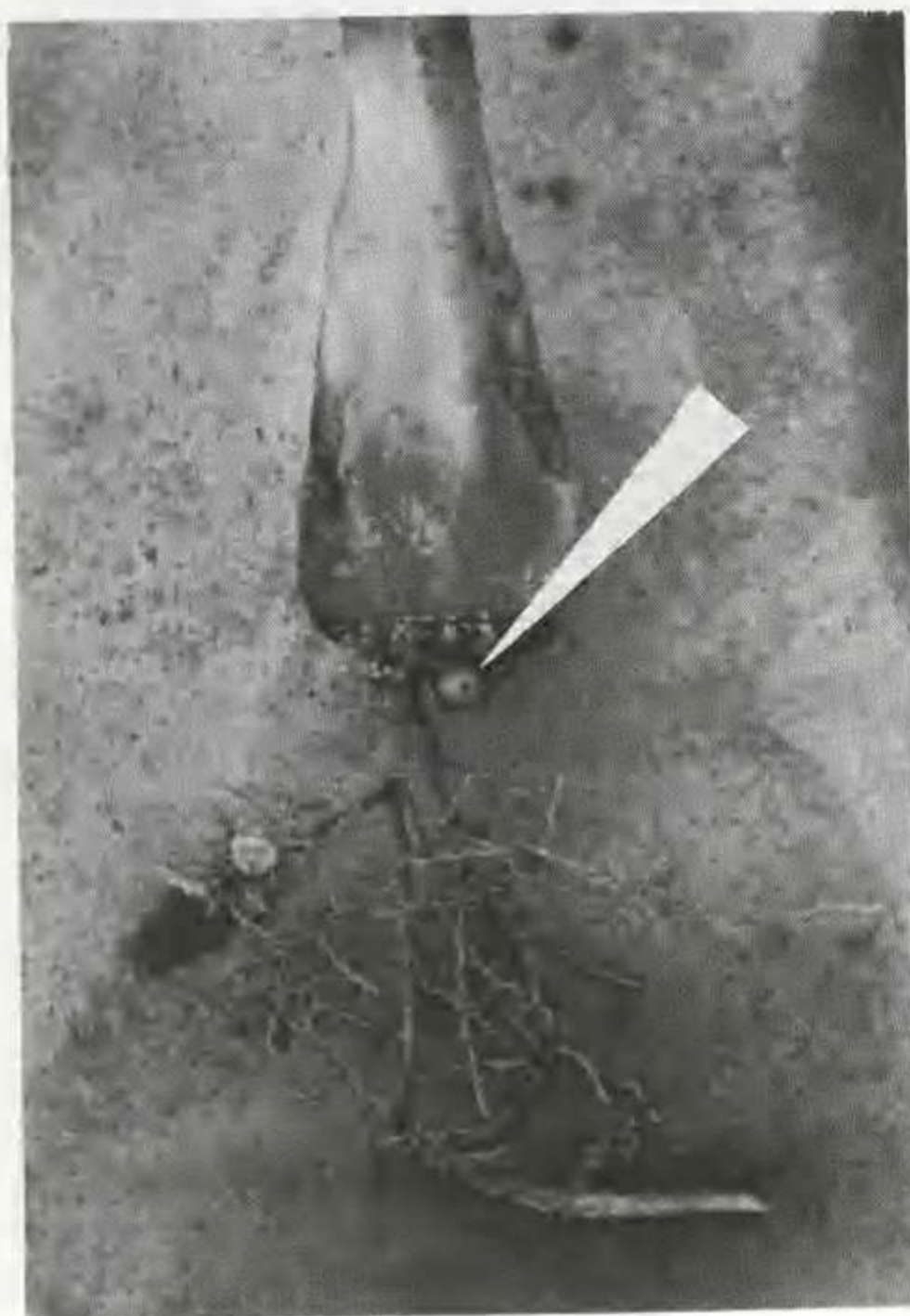


Figure 1 Rooted nine-month old leaf base from *Encephalartos woodii* showing a well-established root system and the start of callus development (arrow) at the point of excision.



Figure 2 Rooted nine-month old leaf base from *Encephalartos woodii* showing a well-established root system and two callus "nodules" (arrows).



**Figure 3** Rooted fifteen-month old leaf base from *Encephalartos woodii* showing a well-established root system and callus material (arrow) exhibiting signs of differentiation into organized, possibly meristematic, zones.

As a result of this work, we decided to explore this technique as a possible route for the propagation

of *Encephalartos woodii*. In September 1994, we removed an upper lateral growing head which was in a "crowded" position on the main *E. woodii* specimen at Durban Botanic Gardens. Dissection of this material provided 12 leaves from that summer's leaf flush and care was taken to include the whole portion of each leaf base. These leaves were trimmed back for convenience in handling to one-half of their original length (about 2 m reduced to 1 m) and the leaf bases treated with "Seradix" rooting powder (active ingredient indolebutyric acid, 8g/kg). The leaves were then placed in pots containing clean sharp river sand and maintained over bottom heat (ca. 25°C) under intermittent spray mist.

After nine months we found that 8 of the 12 leaves had maintained their leaflets in a healthy condition and these has developed vigorous root systems at their bases. Perhaps more interestingly, one or two small callus "nodules" (ca. 5 mm diameter) had formed at each of the cut surfaces, especially where some of the original stem material had remained attached at the leaf bases (Figures 1, 2). The most recent inspection, now 15 months from the commencement of the experiment, has shown signs that this callus material is differentiating into organized tissue zones (Figure 3). It is our believe that this is an indication of the formation of apical buds which will lead to new plants. We are thus "cautiously optimistic" that this method could provide a route for the propagation of *E. woodii*.

#### REFERENCE

- GROBBELAAR, N. In print. The vegetative propagation of *Encephalartos* species using excised leaves. Proceedings of CYCAD 93, the Third International Conference on Cycad Biology, Pretoria, South Africa, July 1993. P. Vorster (Ed).

### NEWS FROM THE NATAL REGIONAL BRANCH

**Avis Meresman**  
P.O. Box 4726, 4000 Durban

*Received 6 January 1996*

A review of 1995 brings the following to mind, a number of exciting meetings were held, with competitions and slide shows which were greatly enjoyed by members and their families.

The sad news is that there was a passing on of members Merle Walters and Gerry Camp. To their spouses we say you are always in our thoughts and that time will

heal.

The other matter which is quite close to our hearts is Dr Roy Osborne who has left South Africa to settle in Australia. We had a farewell for him and his family and he gave us a very interesting slide show on World wide Botanic gardens which was extremely well received - Roy, once again thank you for all you have ever meant

to the Cycad Society and especially to the Natal Branch.

It is once again time for a new committee. Hopefully the next time you hear from us it will be announcing the committee for the next two years.

I would also like to share a message which we received from one of our CYCAD CENTRE clients who is really a genius and very ardent collector of cycads - it reads:

"HOPING THE WHOLE SEASON PASSES VERY

*MEROLAE*, WITH LOTS OF GOOD *MUNCHII* AND BOTTLES OF *BUBALINUS* (BUT MAKE SURE YOU HAVE PLENTY OF *CAFFER* SO YOU DONT FEEL *HORRIDUS* IN THE MORNINGS).

LET EVERY DAY BE *SPLENDENS* AND *VARIEGATA!*"

With that we wish all our fellow cycadians an extremely happy, prosperous and wealthy 1996.

## NUUS OOR DIE TRANSVAALSE STREEKTAK VAN DIE VERENIGING

**Hanneke Grobbelaar**

Posbus 15357, 0039 Lynn-oos

*Ontvang 6 Januarie 1996*

'n Redelik suksesvolle jaar van ons tak het 'n hoogtepunt bereik met ons afsluitingsfunksie op 4 November 1995 by Hollandhuis, Nasionale Botaniese Tuin, Pretoria. Mnr Bernard Fischer het 'n skyfievertoning met interessante en onderhoudende vertellings en inligting oor sy reise deur Suid- en Sentraal-Amerika gelewer. Meeste aanwesiges het na 1,5 uur gevoel dat hy vir nog 1,5 uur kon aanhou. Dit is duidelik dat ons hom in die toekoms weer sal moet vra om sy ondervindings met ons te kom deel.

Na mnr Fischer se praatjie het die aanwesiges lekker gekuier en vleis gebraai. Die verskillende slaai wat die dames gebring het asook die pap wat die President (Prof Hannes Robbertse) self gemaak het, was uit die boonste rakke. Baie dankie aan almal.

Tydens die vergadering is die hele uittredende bestuur met uitsondering van Ian Greenaway vir die 1996-1997 termyn herkies. Aangesien die voorsitter, Giel Fourie, reeds op die Raad dien, is Hanneke Grobbelaar as die Streektak se Verteenwoordiger op die Raad benoem. André de la Rey, 27ste Laan 318, Villieria (Pretoria), Tel. (012) 3336470 is ons streektak se nuwe saad-/stuifmeelbankbeampte.

Ons hartlike dank aan die Direkteur van die Nasionale Botaniese Instituut vir die gebruik van die fasiliteite gedurende die afgelope jaar. Twee werknemers naamlik Louisa Liebenberg en Dawie Strydom het baie moeite gedoen om ons te help. 'n Spesiale dankie aan hulle twee.

Ons voorlopige program vir die res van 1996 is soos volg:

**4 Mei:** Besoek aan die tuin van mnr Kobus Naude. Belangstellendes vergader om 14h00 by Kobus se huis te Veronicaweg 214, Sinoville. Veronicaweg kruis Zambesirylaan. Draai noord uit Zambesirylaan. Kobus se telefoonnommer is (012) 572657.

**6 Julie:** Mnr Johan Hurter van die Laeveldse Nasionale Botaniese Tuin by Nelspruit sal 'n lesing en skyfievertoning aanbied oor "Die broodbome van Kenia, Uganda en Tanzanië" Die voordrag sal om 14h00 in die hoofgebou van die Nasionale Botaniese Instituut, Pretoria aangebied word.

**7 Sept:** Uitstappie na "Starvation Creek" naby Kaapsche Hoop in Mpumalanga onder leiding van mnr Ian Davidson van Pretoria, vir die bestudering van *Encephalartos laevifolius* en *E. humilis* in habitat. Belangstellendes vergader om 08h00 by die ingang van Kaapsche Hoop. Persone wat van Pretoria of die Witwatersrand reis volg die N4 via Waterval Boven en draai net na die SAPPI-fabriek af na Kaapsche Hoop. R.S.V.P. aan Hanneke voor 30 Augustus 1996 by (012) 8080995.

**2 Nov:** Skyfievertoning en praatjie deur dr Piet Vorster van die Universiteit van Stellenbosch oor "Onlangse nuwe broodboomontdekkings in suider Afrika". Die voordrag sal om 16h00 in die hoofgebou van die Nasionale Botaniese Instituut, Pretoria aangebied word.

Die praatjie sal gevolg word deur 'n bring-en-braai by Hollandhuis, in die tuin van die Nasionale Botaniese Instituut, Pretoria. Die bestuur van die Streektak sal pap en vleis gratis voorsien maar verder moet elke deelnemer sy/haar eie eet- en drinkgoed sowel as eetgereedskap voorsien. Bring gerus ook jou eie veldstoel en

musiekinstrument saam as jy kans sien om die verrigtinge met 'n bietjie musiek op te vrolik. Lede wie se vanne op A-M begin moet asseblief vrugteslaai bring terwyl diegene wie se vanne op N-Z begin asseblief mengelslaai moet bring. R.S.V.P. aan Hanneke by (012) 8080995 voor 25 Oktober 1996.

As u plante of sade het om uit te stal of te verkwansel kan u dit gerus na die byeenkomste op 4 Mei, 6 Julie of 2 November bring. T-hemde en dasse met die Streektak se embleem sal by al die byeenkomste te koop aangebied word.

## FEEDING NITROGEN TO CYCADS

Piet Vorster<sup>1</sup>, Kobus Hunter<sup>2</sup> and Kobus Conradie<sup>2</sup>

<sup>1</sup> Botany Department, University of Stellenbosch, Private Bag X1, 7602 Matieland

<sup>2</sup>Nietvoorbij Institute for Viticulture and Oenology, ARC, Private Bag X5026, 7599 Stellenbosch

Received 15 January 1996

On page 25 of *Encephalartos* no. 44 (December 1995) Tom Broome reported an apparently spectacular stimulation of cone formation after feeding his cycads with an unusually high proportion of nitrogen. Before readers dash off to dose their sex-starved cycads with nitrogen, we would like to sound a word of caution based on our experience.

Of the three macro-nutrient elements needed for plant growth, phosphorus (P) stimulates root growth, potassium (K) is essential for fruit formation, and nitrogen (N) stimulates leaf growth. These elements are needed in a definite and rather uncompromising ratio to each other. Tom Broome's cycads probably produced an abundance of cones because they were vegetatively strong after the heavy supply of N.

Reasoning that the beauty of cycads lies primarily in their leaves, one of us (P.V.) gave his plants considerable amounts of additional nitrogen, added to a normal N:P:K fertilizer. This indeed led to beautiful lush foliage, but in the long run seemed to cause other problems. Once the plants started producing cones, it became clear that something was seriously wrong. In *Lepidozamia peroffskyana*, *Stangeria eriopus* and various *Encephalartos* species including *E. horridus*, *E. trispinosus*, *E. princeps*, *E. lehmannii*, *E. altensteinii* and *E. paucidentatus*, cone-carrying plants developed a marked yellowing of the apical half of the leaflets, and in severe cases the yellow areas died completely with the dead tissue having a purplish tinge. We actually lost

complete cone-carrying plants of *E. manikensis*, *E. eugene-maraisii*, and *E. lanatus*, which suddenly lost their foliage and just died. Symptoms can develop very suddenly and sometimes a perfectly healthy plant can deteriorate within three days.

We have reason to think that this condition can be ascribed to a deficiency of K brought on by a surplus of N. Excess N stimulates vegetative growth, but its ratio to P and K is so high that there is hardly enough P and K to sustain normal healthy growth. As soon as cones are produced for which more K is required, the deficiency manifests itself: as reproductive processes and organs are more important to the plant than vegetative growth, it tends to favour its reproductive organs. The cones need K, which the plant can only supply by robbing the rest of its body, resulting in the symptoms described above. A similar situation is known to occur in grapevines where the potassium requirement of bunches may induce K deficiency in particularly newly matured leaves. Cycads are unlike other plants in many respects, and it is possible that their nutritional needs also differ from those of other plants. Willy Tang ("Handbook of cycad cultivation and landscaping", p. 8) states that *Cycas* species from the Northern Territory of Australia, growing on very nutrient-poor soils, are poisoned by P, but it is not known whether this can be extrapolated to cycads from other areas. Possibly these plants developed a metabolism similar to that of the Proteaceae which enables them to grow without P. What is true, is that cycads, being slow-growing,

practically always occur on nutrient-poor soils where they can compete with otherwise faster-growing angiosperms. To supply in their need of N, which is easily leached out of even fertile soils, cycads have coraloid roots with symbiotic nitrogen-building organisms, but this system is easily knocked out by too much N.

The obvious question, *what should I feed my cycads*, is one which we cannot answer: firstly because it will depend on your local soil conditions, and secondly

because we really don't know what cycads need. A wide variety of fertilizers seem to give good results; but the real question is whether they will continue to do so over a prolonged period. To some extent the Western Cape Province where we operate is an ideal laboratory, because our soils are amongst the poorest in the world and high levels of fertilizers are needed to maintain acceptable plant growth. At the moment, we feed with a mixture containing equal amounts of K and N, and much smaller amounts of P.

#### IV INTERNATIONAL CONFERENCE ON CYCAD BIOLOGY (CYCAD 96) to be held in Panzhihua, Sichuan, China from 1 to 5 May, 1996.

The final call for registration and abstracts of papers was received by prospective participants in South Africa during early January of this year. The closing date for entries was 29 February.

A pre-conference, mainly sightseeing tour, is planned for the period 26 April to 30 April (5 days) at a cost of US \$ 850.

Registration for the conference will take place on 30 April and the actual conference will run from 1 May to 5 May. A special programme for accompanying persons will be offered during the actual conference at US \$ 80 per person. The conference registration and accomodation fees are as follows:

##### Conference Fees

Registration	
Full membership	US \$ 90
Accompanying persons	US \$ 35

Conference Banquet	US \$ 20
Proceedings	US \$ 40

##### Accommodation Fees

Standard rooms	US \$ 45 per person per day
	US \$ 90 double room per day
Economic rooms	US \$ 20 per person per day
Meals	US \$ 20 per person per day

Two post-conference excursions aimed mainly at visits to cycad habitats will be offered. The 7-day excursion will cost US \$ 1100 whilst the 16-day excursion will cost US \$ 1980 per person.

For more information contact one of the following:  
The Conference Chairman Han Zhongshan, Tel 812-3336253; Fax 812-3336368, or the Vice Secretary-General: Zhou Lin, Tel 812-3334817; Fax 812-3336368.

#### THE CYCAD CONING CYCLE

**Nat Grobbelaar**

P.O. Box 15357, 0039 Lynn East, South Africa

*Received 15 January 1996*

Very little scientific work appears to have been done on the periodicity of cycad coning although most cycad enthusiasts in South Africa know that our indigenous cycads cone more profusely in certain years than in others. This is true both for plants in gardens and plants in the wild and therefore coning appears to be regulated

by some endogenous rhythm which is not manifestly affected by climatological factors such as rainfall and temperature. During 1989, for instance, approximately 70% of the mature *Encephalartos transvenosus* plants in the Modjadji Nature Reserve coned whilst less than 0.2% of the same plants coned during 1994.

From all accounts, cycads in the Pretoria gardens are producing an abundance of cones this year. Not only are many specimens coning, but as can be seen in

the accompanying photographs, specimens of species that can produce more than one cone per stem are yielding bumper crops.



Figure 1 *Encephalartos munchii* with six male cones on a single-stemmed plant in the Pretoria garden of Mrs Shirley Pienaar.



Figure 3 *Encephalartos middelburgensis* with six male cones on a single-stemmed plant in the Pretoria garden of Mr Arnold Prozesky.

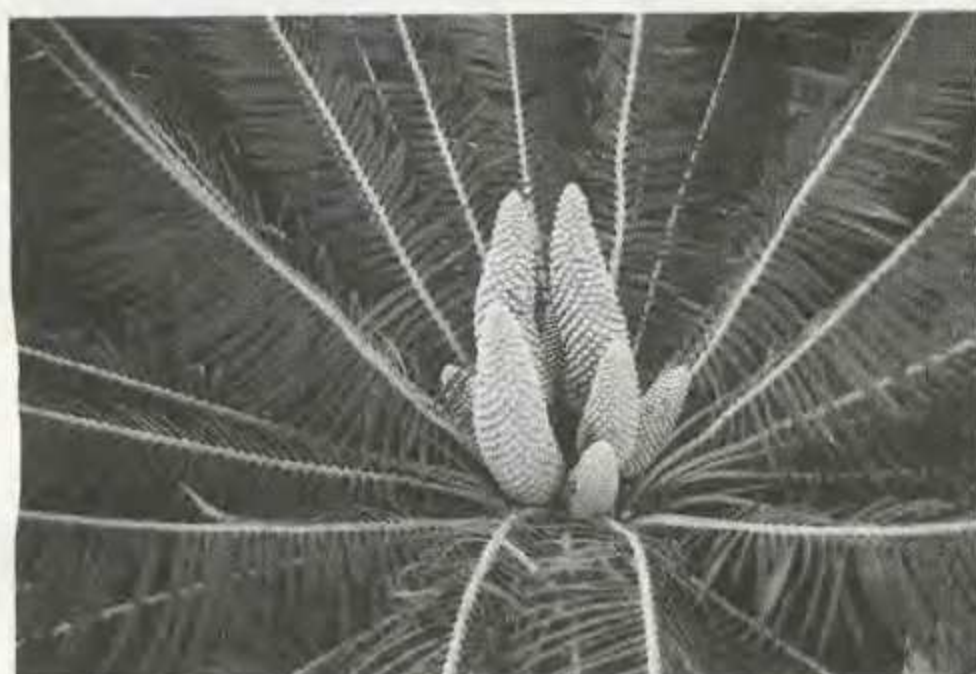


Figure 2 *Encephalartos inopinus* with eight male cones on a single-stemmed plant in the Pretoria garden of Mr Arnold Prozesky.



Figure 4 *Encephalartos dyerianus* with eight male cones on a single-stemmed plant in the Pretoria garden of Mr Arnold Prozesky.

## ENCEPHALARTOS PLANTS IN CULTIVATION: UNUSUAL CONE NUMBER

Isabella Claassen

P.O. Box 25688, 0105 Monument Park

Received 18 January 1996

This season cycads in Pretoria gardens are coning abundantly. In the preceding communication, Nat

Grobbelaar portrays male plants of three *Encephalartos* species that produced more cones than the thus far

known number: *E. dyerianus* with eight cones (usual number 4-7), *E. inopinus* with eight cones (usual number 1-4-[5]) and *E. middelburgensis* with six cones (usual number 3-5). In addition two specimens of *E. caffer*, a species known to bear a single cone per stem, produced two cones each (Figure 1).



Figure 1 *Encephalartos caffer* plants with two male cones each per stem in the Pretoria garden of Mr J.O. Heyns.



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## LETTERS TO THE EDITOR / BRIEWE AAN DIE REDAKTEUR

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Dear Editor

### COMMENTS ON *CYCAS SIAMENSIS* AND *CYCAS SEGMENTIFIDA*

My congratulations to the editors for a bumper edition for devotees of the genus *Cycas* (*Encephalartos* 43, September 1995).

The article on *Cycas siamensis* was interesting and informative to me, as someone who has seen this species in the wild. There are, however, a few points that should be raised or corrected. The article implies that *C. siamensis* is restricted to limestone substrates. Although many Asian cycads are truly limestone endemics, *C. siamensis* is not one of them. It is restricted to the deciduous monsoon woodlands of the lowlands of Indochina, but, from my observations, it occurs on almost any geology within that range. Plants near Tak Fa (east of Pattaya) occur on laterite, and those near Thung Luang (south of Ratchaburi) are on siliceous sandstone. Those near Tak in the central north are on granite, and plants north of Phitsanulok are growing on slates. Clearly, this species is tolerant of a very wide range of substrates.

I would also regard the localities mapped in Burma with some scepticism. I visited the herbaria at Kew, the British Museum of Natural History and Leiden last year, and examined their holdings of *Cycas*. In all, there were very few collections from Burma. Notwithstanding, everything I saw from northern Burma was *C. pectinata sens. strict.*

The description of the new species *Cycas segmentifida*

also raises some questions. Refer to the article by Leland Miyano on cycads with undulate leaflets (*Encephalartos* 36, December 1993). The plant that was called *C. micholitzii* var. *simplicipinna* (see Figure 2 in that article), bears some striking resemblances to the new *C. segmentifida*, although apparently differing in details of the megasporophyll. Those who have visited the Marie Selby Botanic Garden in Sarasota, Florida may recall a very similar plant in that collection. The question is, just how variable is *C. segmentifida*, and could it include these cultivated plants? There obviously is still much to learn about the Asian cycads.

*Ken Hill, Royal Botanic Gardens Sydney, National Herbarium of New South Wales, Mrs Macquaries Road, Sydney, NSW 2000, Australia.*

*Received 8 November 1995*

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Dear Editor

### *CYCAS REVOLUTA*: NOT ENTIRELY COLD-HARDY

With reference to your feature article on *Cycas revoluta* (*Encephalartos* 41: 5-15), I must concur with the authors that this species is not entirely cold-hardy. On a recent tour to Japan I had the occasion to visit the Takeda Chemical Company in Kyoto during their winter period. In their grounds they have a large, branched and obviously important, specimen of *Cycas revoluta* which was very elaborately dressed, each winter, in a complex series of straw coverings, as illustrated by the accompanying photograph (Figure 1).



**Figure 1** Large specimen of *Cycas revoluta* on the grounds of the Takeda Chemical Company in Kyoto, Japan. This species is not reliably hardy north of Kyushu and has been dressed in a series of straw hats and a straw skirt to provide insulation during the winter period. Standing in front of the plant are Dr Kazuho Matsuura and Dr Fanny Carroll.

*Prof. George Carroll, Department of Biology, University of Oregon, Eugene, OR 97403, U.S.A.*

*Received 13 December 1995*

Dear Editor

**SEEDS: EXPORT/IMPORT: BIG BROTHERS' INFINITE WISDOM ?????**

My Dictionary describes BUREAUCRACY as "a system of administration marked by officialism, red tape, and proliferation". Sound familiar, then read on. BUREAUCRAT is described as "a government official who follows a narrow rigid formal routine or who is established with great authority in his own department".

I think this accurately describes the authorities that govern the export of seeds. I also think that they have abused their power, and should make amends immediately. Relaxing the laws governing the export of seeds must be a priority on any agenda when meetings are held.

I would like to quote in part, an article from our US

Cycad Society Newsletter of September, 1992. "In most cycad species the collection of seed from wild plants is an inefficient process that does little harm to wild populations. Because of the sporadic nature of coning and the remoteness and rough terrain of most of their habitats, the majority of seeds produced probably escape detection by would be seed collectors. Those that do find their way to cultivation probably have a higher rate of germination and survival than they would have in the wild".

It has been noted that the germination environment is not adequate for most seeds to germinate. Lack of water, and animals eating seeds has also played a negative roll. Seeds are much more likely to survive in the hands of collectors than left to mother nature. Common sense will dictate that the vast majority of seeds and seedlings will die before ever reaching maturity if left in the wild.

I am not personally angered at any one individual of the governing authorities. What I am trying to do is change their views about the export of seeds. We both have different views, and I feel most strongly that I am right, and they are wrong. All of us must come to an equitable solution to the problem now.

Since my letter to the Editor was published in the June 1995 issue of *Encephalartos*, I have received almost fifty letters favouring my opinion. With only one negative letter, the overwhelming response in favour of exporting seeds must be a statement from the majority to the authorities that their decision making process is not a democratic one.

Do we need the authorities and laws to protect plants? YES, absolutely. Anyone who poaches plants should be punished to the fullest extent of the law. I would like to see a twenty year prison sentence given to anyone who poached a plant.

The plants can keep producing seeds, and they will continue to produce seeds. The asinine law preventing seeds from being exported has been responsible for thousands of seeds to go to waste. The authorities will not collect them, seed collectors will not collect them, because they can't export them. This absurd law that is supposed to protect seeds has been responsible for the demise of more seeds than it has protected. As I said before, their survival rate is much greater with humans than mother nature.

**"BIG BROTHERS' INFINITE WISDOM"**

*Mike Michaelsen, US Cycad Society Seed Bank, 1417 Hilgard Ave., Simi Valley, CA 93065, U.S.A. Phone 805-526-6226, Fax 805-526-3545.*

*Received 12 January 1996*

# DONATIONS RECEIVED / DONASIES ONTVANG

14 DECEMBER/DESEMBER 1994 TO/TOT  
9 DECEMBER/DESEMBER 1995

THE FOLLOWING DONATIONS TO THE CYCAD SOCIETY OF SOUTH AFRICA  
ARE ACKNOWLEDGED WITH THANKS:  
DIE VOLGENDE DONASIES AAN DIE BROODBOOM VERENIGING VAN SUID-AFRIKA  
WORD MET DANK ERKEN:

Number Nommer	NAME/NAAM	Amount Bedrag	Number Nommer	NAME/NAAM	Amount Bedrag
1715	Ausloos, G.	R 15.00	1628	Eksteen, L.C.	R 7.00
1578	Avenant, S.F. du T.	35.00	1985	Engelbrecht, I. (mev)	10.00
1727	Barkhuizen, K.H.	10.00	1694	Erasmus, D.	10.00
1846	Benade, B.P.	28.00	1863	Erasmus, P.M.S.J.	10.00
1227	Besseling, H.M.	10.00	1916	Falconer, M.J.	40.00
1849	Bezuidenhout, J.H.	50.00	1963	Fokkens, J.F.	90.00
0399	Bischofberger, K.	10.00	1190	Fouche, H.P.J.	10.00
0951	Bishop, M.	5.00	1947	Fountain, R.	5.00
0947	Booyesen, J.J.	10.00	1901	Fourie, G.B.	10.00
1669	Botha, K.D.	10.00	0271	Freeman, I.M.	10.00
1761	Botma, W.D.	10.00	0542	Fritz, G.P.J.	10.00
1142	Brits, M.C. (mev)	10.00	1666	Gerber, G.G.	60.00
1807	Brumme, D.	10.00	1841	Gittleson, G.	60.00
0916	Bruwer, M.B.	10.00	1614	Gneiting, C.F.H.	20.00
1191	Bruwer, P.W.	5.00	1842	Gobetz, P.	60.00
0595	Burse, J. (Mrs)	5.00	1335	Gould, T.M.	10.00
1706	Calitz, A. (mev)	60.00	0143	Grobler, M. (mev)	20.00
0933	Camp, G.A.	10.00	1178	Harris, M.V.	10.00
0316	Campbell, C. (mev)	20.00	1600	Harris, R.	10.00
1434	Clemison, J.M.	25.00	0601	Hart, G.B.	10.00
1982	Coertze, R.J.	10.00	1534	Harvey, N.A.	20.00
1206	Coetzee, S.D.	10.00	0704	Heard, W.	10.00
1681	Cooper, S.G.	40.00	1586	Heiberg, B.	20.00
1348	Corlett, G.P.	5.00	1347	Heibloem, P.	15.00
1930	Cronje, J.A.S.	5.00	1886	Heslinga, P.I.	60.00
1956	De Beer, H.J.	10.00	1535	Hinterding, M.M.	5.00
1966	De Beer, W.J.	10.00	1794	Hoog, R.J.L.	10.00
1962	De Jager, C.S.	10.00	1692	Hoops, H.O.	20.00
0080	De Jong, J.J.	30.00	1983	Horsthemke, R.E.	10.00
0452	De Kock, C.V.	10.00	1979	Hoxey, P.	5.00
1374	De Kock, K.N.	20.00	1002	Janse van Rensburg, J.M.	50.00
1818	De Smidt, D.J.	10.00	1885	Jordaan, J.D.	20.00
1806	De Villiers, D.J.	20.00	1928	Jordaan, J.J.	40.00
1919	Dennill, I.B.	20.00	1531	Joubert, I.J.	10.00
1817	Dexter, P.	50.00	1355	Joubert, W.	50.00
1403	Doddemeade, P.W.	10.00	1462	Kable, A.J.	10.00
1195	Doherty, R.P.	10.00	1482	Kemp, J.J.	10.00
1801	Dowdy, T.V.	1.30	1134	Kirton, D.L.	10.00
1730	Du Plessis, A.	120.00	1867	Kockott, C.P. (Mrs)	10.00
1577	Du Preez, J.C.	10.00	1845	Koesno, S.	68.69
1271	Du Toit, H.X.N.	25.00	1358	Kofman, J.H.	10.00
0971	Du Toit, K.P.	20.00	1687	König, E.	5.00
1921	Dykes, R.A.	10.00	0545	Kruger, M.S.	10.00
1606	Edmondson, G.E.	10.00	0853	Kruger, P.W.B.	10.00

Number Nommer	NAME/NAAM	Amount Bedrag	Number Nommer	NAME/NAAM	Amount Bedrag
1061	Kruger, R.	R 10.00	0544	Schott, E.	R 5.00
1672	Kuschke, A.E.	25.00	1691	Shimizu, H.	11.50
0109	Lasnitski, M. (Mrs)	10.00	1959	Smalberger, H.C.	110.00
1697	Le Roux, A.	10.00	1259	Smuts, M.L. (Mrs)	10.00
1670	Leach, M. (Ms)	10.00	1815	Snyman, P.H.R.	10.00
1927	Liltved, W.R.	20.00	1037	Stander, A.H.	20.00
1948	Lombaard, J.A.	10.00	1508	Stewart, H.E.	10.00
0645	Lotter, W.J.	10.00	1236	Steyn, R.C.	10.00
1746	Lotz, G.	10.00	1596	Storbeck, G.	5.00
0159	Loubser, J.D.	20.00	1004	Stranex, P.	10.00
1676	Louw, J.P.	10.00	1401	Strobos, J.G.	20.00
1272	Louw, W.H.	10.00	1625	Strydom, F.	10.00
1721	Malan, C.	100.00	1264	Subroyen, M.	10.00
1973	Marais, R.E.B.	10.00	0139	Swanepoel, J.	10.00
1701	Mentz van Zyl, M.H.	22.00	1833	Tappin, G.S.	30.00
1275	Meyer, G.A.	60.00	0265	Tarr, A.A.	20.00
1109	Meyer, P.K.	10.00	1793	Tomiyama, H.	36.00
1637	Mieritz, K.	3.00	1760	Uys, A.	10.00
1908	Monteux, G.	305.00	1369	Van Buren-Schele, F.J.	40.00
1905	Morphis, G.	40.00	1836	Van den Berg, T.	15.00
1722	Muller, T.I.	20.00	1144	Van den Heede, A.	200.00
0168	Munro, N.	10.00	1539	Van den Heever, J.L.	60.00
1268	Myburgh, E.J. (mev)	10.00	1283	Van der Merwe, C.H.	10.00
1922	Myburgh, F.M.	40.00	1705	Van der Merwe, E.J.	10.00
1470	Nasser, M.	10.00	1126	Van der Westhuizen, H.R.	10.00
1081	Nel, D.J.	20.00	1728	Van Deventer, J.C.	50.00
1423	Nel, J.J.G.	20.00	0719	Van Niekerk, P.A.	60.00
1911	Nel, L.	10.00	1903	Van Rooyen, H.G.	10.00
1597	Nel, P.A.	10.00	1717	Van Rooyen, J.J. (mev)	20.00
1784	Nel, P.W.	10.00	0569	Van Rooyen, L.D.	10.00
0237	Nell, J.M.	10.00	1719	Van Vinckenroye, P.	5.00
1194	Niemand, H. & D.	10.00	1937	Van Wyk, M.R.	10.00
0931	Norman, D.	5.00	1891	Van Wyk, R.J.	20.00
1968	Oberholzer, N. & T.	10.00	1756	Van Zyl, E.	10.00
0094	Olivier, L.	60.00	1868	Van Zyl, G.	20.00
1960	Olsen, E.C. (Mrs)	10.00	1682	Van Zyl, P. & Venske, J.	10.00
0427	Palmer, K.H.	20.00	1643	Van Zyl, P.C.	20.00
0059	Phipson, Y. (Mrs)	20.00	1915	Van Zyl Roux, W.	20.00
1323	Pieterse, F. & E.	60.00	0681	Venter, F.F.C.	20.00
1941	Potgieter, C.	20.00	1907	Venter, J.A.	10.00
1790	Potgieter, J.P.	25.00	1934	Venter, J.P.	10.00
1977	Pretorius, J.	20.00	1033	Vice, A.R.	50.00
0166	Prinsloo, G.C.	10.00	0500	Vissers, H.	20.00
1581	Prinsloo, J.J.	10.00	0847	Walters, J.W.	100.00
1917	Quin, P. & L.	40.00	0629	Watson, K.	10.00
1019	Ras, J.J.	10.00	0039	Wentzel, A.F.	10.00
1112	Rautenbach, M.J.	10.00	1380	Wentzel, P.	10.00
1197	Reinach, N.	45.00	0047	Wentzel, S.W.	25.00
1222	Riordan, S.	10.00	0696	Westermeyer, L.G.	40.00
1572	Rönnkvist, H.	5.00	1502	Wiegner, K.	5.00
0973	Rossouw, N.B.	11.00	1718	Williams, C.S.	10.00
1442	Roux, J.P.	10.00	0008	Wohlberg, E.	20.00
0415	Rudman, R.R.	20.00	1975	Wolmarans, L.E. (Mrs)	10.00
1685	Schele, A.	80.00	1894	Wood, B.E. (Mrs)	20.00
0311	Schimmer, C.M.	20.00			
<b>TOTAL/TOTAAL</b>					<b>R4528.49</b>

## NEW SCIENTIFIC REPORTS

<sup>1</sup> Hurter, P.J.H. June 1995. Two newly described cycads from Africa. *Phytologia* 78(6): 409-416.

[The author gives a formal description of two species, one from South Africa and the other from Uganda. The one from South Africa is named *Encephalartos nubimontanus* (apparently *nubi-* {derived from "nubilus"} refers to the blue-grey colour of the plant's leaves and *-montanus* to the mountainous habitat of the plants). The plant has glaucous leaves and resembles *E. cupidus* except that it is arborescent with trunks up to 2.5 m long bearing long recurved leaves. At present the species is known only from a small area in the Northern Province of South Africa where it grows at an altitude of 1000 m. From the publication it would appear that *E. nubimontanus* is the formal name for plants that were often referred to by cycad collectors by one of the following unofficial names: "Fifth eugene-maraisii", "Giant cupidus", "Venetus" or "Venetus robustus".

The taxon from Uganda is named *E. whitelockii* for the well known cycad collector Loran M. Whitelock of the U.S.A.. It is an arborescent cycad which superficially resembles *E. hildebrandtii* because of its stiff dentate and pungent green leaves. However, even vegetatively the two taxa can easily be distinguished from one another. In *E. hildebrandtii* the pinnae are ascending, succubously overlapping and falcate with the apices directed toward the base of the leaf. In *E. whitelockii* the pinnae are spreading, not overlapping and falcate with the apices directed toward the apex of the leaf. At present this species is known only from one area near the Mpanga River Falls in Western Uganda at an altitude of 1 200 m.

*Author's address: Lowveld National Botanical Garden, P.O. Box 1024, 1200 Nelspruit, Republic of South Africa.*

[*Encephalartos whitelockii* is the legitimate name for plants hitherto known as the "Lake George" or "Mpanga"

cycads (Hurter, *pers. comm.*). - Editor.]

Kowalska, M.T., Itzhak, Y. & Puett, D. 1995. *J. Ethnopharmacol.* 47(3): 113-116.

[Tropical plants that contain inhibitors of the cytochrome P 450 aromatase were identified and thus may be used in treating estrogen-dependent tumours. Extracts were screened from five species of cycad leaves encompassing three genera: *Cycas cairnsiana*, *C. revoluta*, *C. rumphii*, *Dioon spinulosum* and *Encephalartos ferox*. All extracts were found to contain inhibitors of the human enzyme.]

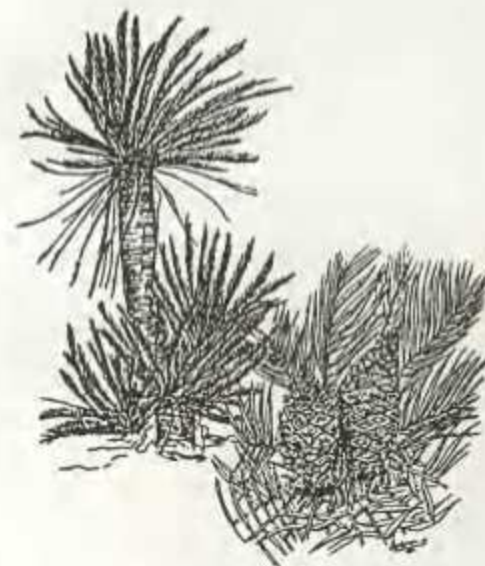
*Authors' address: School of Medicine, University of Miami, Miami, Florida 33101, U.S.A.*

<sup>2</sup> Vorster, P.\* & Heibloem, P. 1995. *Encephalartos imbricans* (Zamiaceae): a new species from Uganda. *Novon* 5(4): 388-394.

[I have it on good authority that the species described in this article is the same as was given the name *E. equatorialis* by Hurter and Glen in the *S. Afr. J. Bot.* 61(4): 226-229, 1995 (see report in *Encephalartos* 44: 48, December 1995). Because the publication of Hurter and Glen fulfils the international requirements for the formal description of a new taxon and because it was published before (August 1995) the article by Vorster and Heibloem (December 1995), the name *E. equatorialis* Hurter takes precedence over the name *E. imbricans* Vorster.]

*\*Senior author's address: Department of Botany, University of Stellenbosch, Private Bag X1, 7602 Matieland, South Africa.*

<sup>1</sup> and <sup>2</sup> Compiled by Nat Grobbelaar, P.O. Box 15357, 0039 Lynn East, South Africa.



**LIST OF MEMBERS**

**JANUARY 1996**



**LEDELYS**

**JANUARIE 1996**

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Please check whether your membership number, name and address appear and are correctly cited in this directory. If not, please notify:

**The membership Secretary (Mr. Giel Fourie)  
9 Hobson Street, 2550 STILFONTEIN.**

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**Die Lidmaatskapsekretaris (mnr Giel Fourie)  
Hobsonstraat 9, 2250 STILFONTEIN**

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1541	BEZUIDENHOUT, Mnr. L.	Saffierstraat 10, Wilkoppies, KLERKSDORP 2570.
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1785	BOTHMA, Mnr. A.C.	Posbus 93475, BOORDFONTEIN 0201.
0848	BOTHMA, Mev. J.W.	Xavierstraat 2, Robertsham, JOHANNESBURG 2091.
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1857	BOUCHER, Mnr. Ruan	Corneliasingel 79, Generaal de Wet, BLOEMFONTEIN 9301.
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1231	BRITS, Mnr. Johan	Posbus 319, RANT-EN-DAL 1751.
1142	BRITS, Mev. M.C.	Inyonisingel 2, AMANZIMTOTI 4125.
1282	BRITZ, Mnr. S.J.H.	Algolweg 7, Solheim, P.K. FISCHER'S HILL 1401.
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1191	BRUWER, Mnr. P.W.	Posbus 58093, KARENPAK 0118.
1016	BRYTENBACH, Mnr. A.S.	Posbus 748, WARMBAD 0480.
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1434	CLEMITSON, Mr. J.	216 Nixon Street, New Muckleneuk, PRETORIA 0181.
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1982	COERTZE, Dr R.J.	Posbus 587, WARMBAD, 0840
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1206	COETZEE, Mnr. S.D.	Windmeulstraat 21, BRACKENFELL 7560.
0064	COETZER, Dr. P.W.W.	Posbus 14028, SINOVILLE 0129.
1579	COMBRINCK, Mnr. J.J.	Posbus 30, MOOINOOI 0325.
1681	COOPER, Mr. Simon G.	P.O. Box 38892, GARSFONTEIN 0042.
1348	CORLETT, Mr. G.	P.O. Box 324, GARSFONTEIN 0042.
1910	COWLEY, Mnr. V.W.	Posbus 28136, Sunridge Park, PORT ELIZABETH 6008
0032	COX, Mr. Graham	P.O. Box 3032, DURBAN 4000.
1496	CRADOCK, Mr. K.R.	P.O. Box 79, BOTHAS HILL 3660.
1764	COOPER, Mr. W.A.	29 Flamink Road, Birch Acres, KEMPTON PARK 1619.
1546	CURACH, Mr. S.	P.O. Box 286, LINK HILLS 3652.
1698	CUTLER, Mr. G.D.	P.O. Box 5013, WELTEVREDEN PARK 1715.
1473	DALZELL, Mr C.G.	Durban Botanic Gardens, P.O.Box 3740, DURBAN 4000.
1952	DAVEL, Mnr J.	Posbus 23317, GEZINA, 0031
0192	DAVIDSON, Mr. I.A.	30 Liza Street, Kilner Park Extention, PRETORIA 0186.
1951	DAY, Mnr H.J.	Louisestr. 374, Pretoria-Tuine, PRETORIA, 0082
0923	DE BEER, Mnr. J.A.	Posbus 920, GERMISTON 1400.
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1405	DE BEER, Mnr. W.W.	Danie Theronstraat 137, PRETORIA-NOORD 0182.
1966	DE BEER, W.J.	Posbus 1591, BRONKHORSTSPRUIT 1020
1783	DE BRUYN, Mnr. G.J.	Posbus 6403, Homestead, GERMISTON 1412.
1196	DE BRUYN, Mnr. M.J.	Zirconstraat 265, Lyttleton Uitbreiding 3, VERWOERDBURG 0157.
1160	DEETLEFS, Mnr. J.C.	Posbus 236, HALFWAY HOUSE 1685.
0410	DE HAAS, Dr. G.N.	Posbus 1897, PIETERSBURG 0700.
1962	DE JAGER, Mnr C.S.	Posbus 224, VRYHEID, 3100
1675	DE JAGER, Prof. F J.	Fakulteit Regsgeleerdheid, R.A.U., Posbus 524, AUCKLANDPARK 2006.
0080	DE JONG, J.J.	P.O. Box 934, NORTH RIDING 2162.
1838	DEKKER, Mnr. D.J.M.	Posbus 166, DUNDEE 3000.
1522	DEKKER, ELECT.	P.O. Box 608, HILLCREST 3650.
0664	DE KLERK, Dr. J.A.	Posbus 2234, PIETERSBURG 0700.
0452	DE KOCK, Mnr. C.V.	Posbus 18, POLITSI 0851.
0404	DE KOCK, Prof. G. de V.	Villiersweg 257, WALMER 6070.
0815	DE KOCK, Mnr. J.A.	Villiersweg 257, WALMER 6070.
1374	DE KOCK, Dr. K.N.	Richardsonstraat 2, Bailliepark, POTCHEFSTROOM 2520.
1543	DE KOOKER, Mnr. & Mev. P.	Posbus 673, ORKNEY 2620.
1062	DE LA REY, Mnr. A. le R.	27ste Laan 318, Villieria, PRETORIA 0186.
1919	DENNILL, Mr I.B.	P.O.Box 9312, NEWCASTLE, 2940
1452	DEPARTEMENT WATERWESE & BOSBOU	Privaatsak X11288, NELSPRUIT 1200.
1818	DE SMIDT, Mr. D.J.	90 California Street, CROSBY 2092.
1806	DE VILLIERS, Dr. D.J.	Posbus 587, WARMBAD 0480.
1944	DE VILLIERS, Mnr F.D.	Posbus 971, STILFONTEIN, 2550
1723	DEVINE, Mr. S.	P.O. Box 99, UVONGO 4270.
0328	DE WET, Mr. D.S.	Broadlandsweg 5, SOMERSET-WES 7130.

1817	DEXTER, Peter	P.O. Box 1149, DURBAN 4000.
1322	DIPPENAAR, Mnr. A.	Posbus 5061, DORINGKRUIN 2576.
0085	DIXON, Mr. Ian	20 Varley Road, Hayfields, PIETERMARITZBURG 3201.
1403	DODDEMEADE, Mr. P.W.	P.O. Box 12387, CHLOORKOP 1624.
1649	DOEPEL, Mr. W.R	P.O. Box 1127, HONEYDEW 2040.
1195	DOHERTY, Mr. R.P.	30 Sunnyside Avenue, Westdene, BENONI 1501.
1464	DONALDSON, Dr. J.S.	National Botanical Institute, Private Bag X7, CLAREMONT 7735.
1786	DRAKE, Wendy & Robert	5 Kloof Falls Road, KLOOF 3610.
0806	DUNCAN, Mrs. Lorraine	10 7th Street, Linden, JOHANNESBURG 2195.
1319	DU PLESSIS, Mr. A.	28 Central Street, Lower Houghton, JOHANNESBURG 2198.
1298	DU PLESSIS, Mnr. André	Essenhoutweg 9, Wilkoppies, KLERKSDORP 2570.
1730	DU PLESSIS, André	All-Trux Transport, P.O. Box 14772, Farrarmere, BENONI 1518.
0386	DU PLESSIS, Mr. G.C.	9 John Chand Place, KLOOF 3610.
1767	DU PLESSIS, Dr. G.J.	Wychwoodlaan 31, Linkside, PORT ELIZABETH 6001.
0955	DU PLOOY, Mnr. J.F.	Posbus 177, MONDEOR 2110.
1577	DU PREEZ, Mnr. J.C.	Posbus 5452, Onverwacht, ELLISRAS 0557.
1854	DU PREEZ, Mnr. J.G.	Fismerstraat 8, ELSBURG 1407.
1548	DU PREEZ, Mr. R.J.	3 Suffolk Road, Kensington, JOHANNESBURG 2094.
1835	DU PREEZ, Tilania	P.O. Box 35875, MENLO PARK 0102.
1428	DU RAND, Mr. Leon	P.O. Box 1254, ROOSEVELT PARK 2129.
1810	DU TOIT, Mnr. H.P.J.	Posbus 3942, PIETERSBURG 0700.
1271	DU TOIT, Mnr. H.X.N.	Posbus 22, BREDASDORP 7280.
0971	DU TOIT, Mnr. K P.	Posbus 75, BURGERSFORT 1150.
1713	DUVENHAGE, Mr. H.J.	P.O. Box 4015, PRETORIA 0001.
1921	DYKES, Mnr R.A.	Republiekstr. 85, VRYHEID, 3100
1606	EDMONDSON, Mr. G.E.W.	P.O. Box 2495, Joubert Park, JOHANNESBURG 2001.
1628	EKSTEEN, Mnr. L.C.	Posbus 7259, Ferrax, NEWCASTLE 2940.
1630	EKSTEEN, Mnr. L.J.	Moberlystraat 32, EMPANGENI 3880.
1848	ELS, Annemarie	Posbus 117, ELLISRAS 0555.
1219	ELLISON, Mr. E.	P.O. Box 92186, NORWOOD 2043.
1985	ENGELBRECHT, Mev Ina	Posbus 560, FERNDAL, 2160
1410	ENSLIN, Mev. M.E.	Huis 12, MARIEPSKOP 1383.
0817	ERASMUS, Dr. C.S.	7 Rustenburg Road, Emmerentia, JOHANNESBURG 2195.
1694	ERASMUS, Mr. Deon	1203 Sunflower Street, Roodekrans x13, ROODEPOORT 1724.
1936	ERASMUS, Mnr J.M.	Loopstr. 29, RUSTENBURG, 0300
1863	ERASMUS, Mnr. P.M.S.J.	Posbus 31231, TOTIUSDAL 0134.
0802	ESTERHUYSE, Mr. D.	22 Headingly Avenue, WESTVILLE 3630.
0793	EVERETT, Mr. W.A.	P.O. Box 238, CONSTANTIA 7848.
1866	EVERTS, Mnr. J.C.	Posbus 39814, MORELETAPARK 0044.
1916	FALCONER, Mr M.J.	28 Woolf Street, KENRIDGE, 7550
1976	FERERO, Mnr Tino	Posbus 36558, MENLOPARK 0102
1611	FERREIRA, Mnr. & Mev. S.	Posbus 17220, BAINSVLEI 9338.
0577	FERREIRA, Stefan	Ravelstraat 33, RIEBEEKSTAD 9469.
0661	FLEMIX, Mrs. E.A.	25 Tiekiedraai, Vierlanden, DURBANVILLE 7550.
1961	FLETCHER, Mr C.M.	P O Box 200, PORT ALFRED, 6170
9015	FLORA CONSERVATION COMMITTEE	Botanical Society of S.A., Kirstenbosch, CLAREMONT 7735.
1963	FOKKENS, Mnr J.F.	Posbus 26, POMFRET, 8619
0148	FORRESTER, Mr. L A.	No 8 Cottage Callie Evens Lodge, CATHCART 5310.
1663	FORT COX AGRICULTURAL COLLEGE	Private Bag X02, MIDDLEDRIFT 5685.
1852	FOUCHÉ, Mnr. G.W.	Oaklaan 43, PRIMROSE 1401.
1190	FOUCHE, Mnr. H.P.J.	Posbus 1527, HALFWAY HOUSE 1685.
1901	FOURIE, Mnr. G.B.	Posbus 75113, LYNNWOODRIF 0040.
0689	FOURIE, Mnr. M.J.	Hobsonstraat 9, STILFONTEIN 2550.
0271	FREEMAN, Mr. I.M.	13 12th Avenue, HOUGHTON ESTATE 2198.
0542	FRITZ, Mnr. G.	Posbus 139, HEIDELBERG 2400.
1632	FUGLISTER, Mr. F.J.	P.O. Box 121, HALFWAY HOUSE 1685.
1377	GAINSFORD, Mr. C.	P.O. Box 147, Linkhills, Hillcrest, DURBAN 3652.
1299	GAINSFORD, Mr. F.G.	15 Flamboyant Street, EMPANGENI 3880.
1079	GELDERBLOM, Mr. P.J.	29 Tulbagh Avenue, Kenridge, DURBANVILLE 7550.
1510	GERBER, Mnr. G.	Blommelaan 3, Westering, PORT ELIZABETH 6001.
1666	GERBER, Mnr. G.G.	Buckinghamweg 59, KLOOF 3610.
0200	GERBER, Mr. Harry	45 Anleno Road, Montclair, DURBAN 4001.
1875	GERRITZ, Mr. W.M.	P.O. Box 877, DUNDEE 3000.

1988	GIBBON, Ms C.M.	P.O.Box 20392, RICHARDS BAY, 3900
0018	GIDDY, Mrs. Cynthia	Cycad Nursery, P.O. Box 45, UMLAAS ROAD 3730.
1841	GITTLESON, Mr. G.	31 Sunnyside Road, ORCHARDS 2192.
1614	GNEITING, Mr. C.F.H.	P.O. Box 72188, LYNNWOOD RIDGE 0040.
1842	GOBETZ, Mr. P.	P.O. Box 5753, PRETORIA 0001.
1466	GOLDSCHMIDT, Dr. R.P.	P.O. Box 68332, BRYANSTON 2021.
1696	GOODWIN, Mr. M.G.N.	P.O. Box 453, PLETTENBERG BAY 6600.
0525	GORE, Mnr. P.H.	669 Killick Avenue, Les Marais, PRETORIA 0084.
1335	GOULD, Mr. & Mrs. T.	P.O. Box 414, UMBOGINTWINI 4120.
1044	GOUWS, Mnr. L.J.	Posbus 149, UMTENTWENI 4235.
1170	GREENAWAY, Mr. I.H.	80 South Road, Rewlatch, JOHANNESBURG 2197.
1847	GREYLING, Mnr. A.C.	Derdelaan 17, MELVILLE 2092.
1789	GREYLING, Mnr. J.J.	21 ste Laan 760, RIETFontein 0084.
1720	GRIESEL, Mnr. C.L.B.	Queens Crescent 427, Lynnwood, PRETORIA 0081.
1400	GROBBELAAR, Mev. Hanneke	Tarentaalkloof, Posbus 15357, LYNN-OOS 0039.
HON.	GROBBELAAR, Prof. N. (ERELID)	Tarentaalkloof, Posbus 15357, LYNN-OOS 0039.
1855	GROBLER, Mnr. F.	Posbus 794, HARTBEESPOORT 0216.
0143	GROBLER, Mev. Maria	Posbus 914, PIETERSBURG 0700.
1840	GROBLER, Mnr. P.S.	Posbus 20871, NEW CASTLE 2940.
1914	HALL, Mr Alan	49A South Rd., ESCOMBE, 4093
0420	HANACZECK, Mr. H.W.	P.O. Box 44, DUIWELSKLOOF 0835.
1585	HANDLEY, Mr. B.J.	P.O. Box 1135, HILLCREST 3650.
1178	HARRIS, Mr. M.V.	5 FitzPatrick Street, SASOLBURG 9570.
1600	HARRIS, Mnr. R.	Posbus 50429, WIERDAPARK 0149.
0510	HARRISON, Mr. E.R.	P.O. Box 104, MTUBATUBA 3935.
0601	HART, Mr. G.B.	P.O. Box 72727, LYNNWOOD RIDGE, 0040.
1844	HARTZENBERG TUINE	Posbus 4, NORTH RIDING 2162.
1534	HARVEY, Mr. N. A.	P.O. Box 28444, DANHOF 9310.
0309	HASTINGS, Mr. & Mrs. J.F.	5 Owen Street, Mount Croix, PORT ELIZABETH 6000.
0077	HATTINGH, Mev. E.F.	Posbus 615, GROBLERSDAL 0470.
0704	HEARD, Mr. W.	41 Protea Way, DURBANVILLE 7550.
1586	HEIBERG, Mnr. B.	Posbus 21079, HELDERKRUIN 1733.
1964	HEINE, Mnr E.W.P.	Groenweide 10, STELLENBOSCH, 7600
1892	HEYMANS, Mnr. J.L.	Ceresrylaan 7, Kenmare 4, KRUGERSDORP 1739.
1066	HENDERSON, Mrs. D.M.	P.O. Box 284, GILLITTS 3603.
0115	HENMAN, Mr. Enrico	187 Torquay Avenue, BLUFF 4052.
0433	HENNING, Dr. N.G.C.	Cantonmentsweg 80, Lyttelton Manor, VERWOERDBURG 0157.
1886	HESLINGA, Mnr. P.I.	Posbus 1093, PRETORIA 0001
1892	HEYMANS, Mnr J.L.	Ceresrylaan 7, Kenmare 4, KRUGERSDORP, 1739
1080	HEYNS, Mnr. J.O.	Wenningstraat 115, Groenkloof, PRETORIA 0181.
1028	HIETKAMP, Dr. S.	P.O. Box 15381, LYNN EAST 0039.
1711	HOLLANDER, Prof. W.J.	Randse Afrikaanse Universiteit, Posbus 524, AUCKLANDPARK 2006.
9002	HOOFDIREKTORAAT NATUURBEWARING	Privaatsak X209, PRETORIA 0001.
1794	HOOG, Mr. R.J.L.	22 Douglas Road, KLOOF 3610.
0086	HOOLE, Mr. James C.	P.O. Box 7958, Newton Park, PORT ELIZABETH 6055.
1692	HOOPS, Mnr. H.O.	Posbus 6, ALEXANDRIA 6185.
1529	HORAK, Mev. G.	Bradylaan 52, Wilkoppies, KLERKSDORP 2571.
1946	HORING, Mr H.J.	12 Leeuwenhof Street, Oak Glen, BELLVILLE, 7430
1983	HORSTHEMKE, Mr R.E.	P.O.Box 365, FERNDAL, 2160
0498	HULSHOF, Mr. A.	P.O. Box 1526, KLERKSDORP 2570.
1766	HUNTER, Dr. J.J.	Nietvoorbij, Privaatsak X5026, STELLENBOSCH 7599.
1693	INGLIS, Mr. J.G.	103 South Avenue, Athol, SANDTON 2196.
1155	ISACKS, Mr. G.A.	8 Medway Road, WESTVILLE 3630.
1168	ISACKS, Mr. G.R.	44 Windham Avenue, HILLARY 4094.
1487	JACOBS, Mev. S.C.	28ste Laan 378, Villieria, PRETORIA 0186.
0528	JACOBS, Mnr. W.J.	Ashleyweg 19, SCOTTSBURGH 4180.
1900	JANSE VAN RENSBURG, Mnr. J.A.	Posbus 345, PIETERMARITZBURG 3200.
1002	JANSE VAN RENSBURG, Mnr. J.M.	Posbus 92, VRYHEID 3100.
1217	JANSE VAN RENSBURG, J.P.	Jopie Fouriestraat 374, PRETORIA-NOORD 0182.
1851	JANSE VAN RENSBURG, Mnr. W.J.	Nondweni S.W.S., Privaatsak X4027, TZANEEN 0850.
0458	JOHANNES, Mr. G.	P.O. Box 215, PIET RETIEF 2380.
1797	JOHANNESBURG PUBLIC LIBRARY	Market Square, JOHANNESBURG 2001.

0299	JONKER, Mnr. Attie	Saffraanlaan 29, Die Boord, STELLENBOSCH 7600.
0624	JORDAAN, Dr. A.J.J.	Posbus 6461, WELTEVREDEPARK 1715.
1415	JORDAAN, Mnr. A.S.	Ponsfordsingel 36, ESCOMBE 4093.
1885	JORDAAN, Mnr. J.D.	Posbus 396, WITRIVIER 1240.
1928	JORDAAN, Mnr J. J.	Posbus 123, MONTANAPARK, 0159
1527	JORDAAN, Past. Ben	Waterbokst. 9, Faunapark, PIETERSBURG 0699.
0146	JORDAAN, Sakkie & Anna	Posbus 104, WARRENTON 8530.
1874	JOUBERT, Mnr. C.J.	Posbus 717, NABOOMSPRUIT 0560.
1531	JOUBERT, Mnr. I.J.	Borriusstraat 8, Bailliepark, POTCHEFSTROOM 2520.
1355	JOUBERT, Mnr. W.	Posbus 376, WARMBAD 0480.
1462	KABLE, Mr. A.J.	12 Orchid Road, Tygerdal, GOODWOOD 7460.
0223	KACHELHOFFER, Mr. N.J.	P.O. Box 3107, PRETORIA 0001.
1791	KADWA, Dr. M.A.	Park Lane Clinic, Junction Avenue, PARKTOWN 2193.
1598	KANGWANE PARKS (A.v.Wyk)	P.O.Box 1990, NELSPRUIT 1200.
0714	KANTOR, Mr. S.R.	P.O. Box 59542, KAREN PARK 0118.
0010	KEMP, Mr. H.J.	51 Constance Road, Broadwood, PORT ELIZABETH 6070.
1482	KEMP, Mnr. J.J.	Posbus 1135, PIETERSBURG 0700.
0081	KENNEDY, Mnr. H.C.	Panoramastraat 2, PAARL 7646.
1542	KEYSER, Mnr. D.J.	Posbus 673, HERMANUS 7200.
1084	KIDSON, Mnr. J.C.	Posbus 9081, EDLEEN 1625.
1134	KIRTON, Mr. D.L.	P.O. Box 2550, DURBAN 4000.
1714	KLOPPERS, Mr. J.J.	P.O. Box 407, MTUNZINI 3867.
0745	KLOPPERS, Mnr. J.S.	Posbus 24, GROBLERSDAL 0870.
1378	KNIFE, Mr. A.J.	26 Fuller Crescent, Edgemead, CAPE TOWN 7441.
0823	KNOX-DAVIES, Prof. P.S.	35 Union Avenue, STELLENBOSCH 7600.
1867	KOCKOTT, Mrs. C.P.	P.O. Box 1253, STILFONTEIN 2550.
1358	KOFMAN, Mnr. J.H.	Floraunaweg 806, Florauna, PRETORIA-NOORD 0182.
1538	KOK, Mnr. M.B.	Posbus 48187, HERCULES 0030.
1871	KONIG, Mr. Andrew	P.O. Box 890442, LYNDHURST 2106.
0943	KOTZE, Mnr. H.C.	Glenardleweg 119, BRIGHTONSTRAND 4052.
1939	KORKIE, Mnr & Mev E.S.	Vampirestr. 569, ELARDUSPARK, 0181
1812	KRIEL, Mnr. W.H.	Rupertlaan 34, SOMERSET-WES 7130.
1906	KRUGER, Mnr. & Mev. Christo	Posbus 222, DENDRON 0715.
1302	KRUGER, Mrs. F.J.	22 Approach Avenue, Selwyn, FLORIDA 1709.
1923	KRUGER, Mnr Leon	Posbus 13586, LERAATSFONTEIN, 1038
0545	KRUGER, Mev. M.S.	Lovellaan 1, Die Boord, STELLENBOSCH 7600.
1373	KRUGER, Mnr. N.J.S.	Posbus 46, RANT-EN-DAL 1751.
0853	KRUGER, Dr. P.W.B.	Posbus 3173, PRETORIA 0001.
1061	KRUGER, Mr. R.	P.O. Box 177, BLOEMFONTEIN 9300.
1140	KRUGER, Mnr. S.R.	Reineckestraat 45, Panorama, BETHLEHEM 9700.
1672	KUSCHKE, Mnr. A.E.	Posbus 54, HAZYVIEW 1242.
1832	KUUN, Mnr. P.J.C.	Posbus 39718, MORELETAPARK 0044.
1888	KUYPER, Mnr. A.	Posbus 161, MONTANAPARK 0159.
1803	LA GRANGE, Mnr. J.	Posbus 2096, WITBANK 1035.
1636	LAMBERT, Miss. A.	Durban Botanical Gardens, P.O. Box 3740, DURBAN 4000.
0109	LASNITSKI, Mrs. M.	1 Viljoen Street, ROUXVILLE 2192.
1679	LEACH, Mev. Marie	Kingfisherstraat 124, Horison Uitbreiding, ROODEPOORT 1725.
1697	LE ROUX, Mnr. A.	Posbus 11412, UNIFIED 1713.
1431	LE ROUX, Mr. Stan	39 Dick King Road, Athlone Park, AMANZIMTOTI 4126.
1532	LESSING, Mnr. & Mev. J.	Oribistr. 30, JEFFREYSBAAI 6330.
0041	LEVITT, Mr. R.E.	P.O. Box 538, WESTVILLE 3630.
0827	LIEBENBERG, Mr. Andre	P.O. Box 21372, BLUFF 4036.
1166	LIGHTLEY, Mr. C.G.	c/o S.A.Wire, P.O. Box 756, EMPANGENI 3880.
1927	LILTVED, Mr W.R.	10 De Villiers Rd., KOMMETJIE, 7975
1240	LOMBARD, Mnr. J.H.	Posbus 908285, MONTANA 0151.
1948	LOMBAARD, Mnr J.A.	Posbus 50689, WIERDAPARK, 0149
1887	LOOTS, Mnr. F.N.	Matroosbergweg 129, WATERKLOOFHOOGTE 0181.
1494	LOTTER, Mnr. D.	Posbus 6881, FLAMWOOD 2572.
0645	LOTTER, Mr. W.J.	Posbus 48520, Hercules, PRETORIA 0030.
1746	LOTZ, Mr. G.J.	P.O. Box 10767, Linton Grange, PORT ELIZABETH 6015.
0159	LOUBSER, Prof. J.D.	Posbus 11315, QUEENSWOOD 0121.
1676	LOUW, Mr. J.P.	5 Hanlon Road, VALHALLA 0185.
1272	LOUW, Mnr. W.H.	Posbus 57, NABOOMSPRUIT 0560.
1324	LOVATT, Mr. M.	P.O. Box 338, EMPANGENI 3880.

0296	LOWVELD BOTANICAL GARDEN	P.O. Box 1024, NELSPRUIT 1200.
1587	LUBBE, Mnr. D.P.	Giraffeweg 47, Monumentpark, PRETORIA 0181.
1978	MACGREGOR, Mr C.A.	P.O.Box 101525, MORELETAPARK 0044
1980	McARTHUR, Mr H.B.	P.O. Box 452, GILLITS, 3603
1660	McCLELLAN, Dr. Tracy	Department of Genetics, University of the Witwatersrand, Private Bag 3, WITS 2050.
1352	MALAN, Mr. Armand	85 Ibeworth Avenue, Woodlands, DURBAN 4001.
1721	MALAN, Mnr. C.	Posbus 11258, QUEENSWOOD 0121.
1265	MARAIS, Mnr. G.J.	Posbus 5018, NEWCASTLE 2940.
1973	MARAIS, Mr R.E.B.	67 Glover Avenue, DORINGKLOOF, 0157
1474	MARSON, Mr R.	Herbert Baker St., GROENKLOOF 0181.
0088	MARX, Mnr. Frank	Kurumanskloof 29, Summerstrand, PORT ELIZABETH 6001.
1372	MARX, Mr. M.A.M.	Private Bag X1668, BERGVILLE 3350.
0969	MATTHEE, Mnr. B.L.	Posbus 12538, TYGERDAL 7462.
1805	MAUD, Mr. C.S.	Howard Place, DURBAN NORTH 4051.
1873	MELVILLE, Miss. S.	23 Ypsilanti Avenue, GLENASHLEY 4051.
1701	MENTZ VAN ZYL, Mr. M.H.	P.O. Box 79, SOUTHBROOM 4277.
1667	MERESMAN, Ms. Avis	P.O. Box 4726, DURBAN 4000.
1724	MERRY SPRUIT KWEKERY	Posbus 1130, MIDDELBURG 1050.
0205	MEYER, Mnr. C.C.	Ralstonweg 20, Fernglen, PORT ELIZABETH 6045.
1275	MEYER, Mr. G.A.	P.O. Box 37950, Faerie Glen, PRETORIA 0043.
1575	MEYER, Prof. J.J.M.	Departement Plantkunde, Universiteit van Pretoria, PRETORIA 0002.
1109	MEYER, Mr. P.K.	P.O. Box 435, ST. MICHAEL'S-ON-SEA 4265.
1107	MIDDELMANN, Mr. W.J.	402 CPOA, 231 Main Rd., RONDEBOSCH 7700.
1809	MIDDLEWICK, Dr. G.C.	P.O. Box 1383, ROOSEVELD PARK 2129.
0006	MINNIE, Dr. Ollie J.	P.O. Box 137, MTUBATUBA 3935.
1210	MOODIE, Mnr. S.T.	Posbus 3125, PRETORIA 0001.
1905	MORPHIS, Mnr. G.	P.O. Box 708, GILLITS 3603.
0489	MORRIS, Mr. S.F.	P.O. Box 837, RUSTENBURG 0300.
1957	MOSTERT, Mev Cassandra	Posbus 687, KEMPTONPARK, 1620
0741	MULDER, Mr. I.B.	Saffraanlaan 10, Weltevredenpark x9, ROODEPOORT 1709.
1798	MÜLLER, Mnr. E.	Posbus 17360, PRETORIA-NOORD 0116.
1965	MULLER, Mnr H.F.	Kahlerstr. 64, Idasvallei, STELLENBOSCH, 7600
0737	MULLER, Mev. M.	Moultonlaan 1427, WAVERLEY 0186.
1837	MÜLLER, Mr. T.	P.O. Box 12437, ONDERSTEPOORT 0110.
1722	MULLER, Mnr.T.I.	Venterstraat 28, Universitas, BLOEMFONTEIN 9301.
1268	MYBURGH, Mev. E.J.	Breyerlaan 1329, Waverley, PRETORIA 0186.
0397	MYBURGH, Mej. J.S.	Departement Plantkunde, Universiteit van Pretoria, PRETORIA 0002.
0523	MYBURGH, Mnr. P.P.	Associationweg 9, Dawieview, GERMISTON 1401.
1922	MYBURGH, Mnr & Mev F.M.	Iste Weg 20, KEW, 2090
1620	MYERS, Mev. M.M.	Posbus 401, WITRIVIER 1240.
1470	NASSER, Mr. M.	62 Cocspur Avenue, Weltevreden Park, ROODEPOORT 1709.
1232	NASIONALE BOTANIESE INSTITUUT	Privaatsak X101, PRETORIA 0001.
9011	NATAL HERBARIUM	Botanic Gardens Road, DURBAN 4001.
9001	NATAL PARKS BOARD, (Att. Mr. N. Snyman)	P.O. Box 662, PIETERMARITZBURG 3200.
9016	NATALSE BIBLIOTEEK	(Afdeling Pligeksemplare), Posbus 415, PIETERMARITZBURG 3200.
0019	NATIONAL BOTANIC, GARDENS KIRSTENBOSCH	(Att.: The Curator) Private Bag X7, CLAREMONT 7735.
0065	NATIONAL BOTANICAL INSTITUTE	Private Bag X7, CLAREMONT 7735.
0993	NAUDE, Mnr. A S.B.	Njalastr. 85, Kanonkop, MIDDELBURG.
0536	NAUDE, Mnr. J.J.	Posbus 13649, Sinoville, PRETORIA 0129.
1570	NAUDE, Mnr. J.J.	Posbus 157, TZANEEN 0850.
1683	NAUDE, Mr. P.J.	36 Dickens Road, Bellair, DURBAN 4094.
1528	NAUDE, Mnr. S.J.	Posbus 95841, WATERKLOOF 0145.
0715	NEETHLING, Mnr. A.J.	Kloofstraat 20, BREDASDORP 7280.
1081	NEL, Mnr. D.J.	Posbus 2289, VRYHEID 3100.
0261	NEL, Mnr. D.P.	Bowkerweg 120, ESCOMBE 4093.
1311	NEL, Mnr. F.J.	Posbus 279, PATENSIE 6335.
1423	NEL, Mnr. J.J.G.	Jan van Riebeeckweg 300, OUDTSHOORN 6620.
1911	NEL, Mnr. L.	Selatistraat 11, Peninapark, PIETERSBURG 0699.
1519	NEL, Mnr. M.H.B.	Cowgillstraat 1159, Queenswood, PRETORIA 0186.

1597	NEL, Mnr. P.	11de Laan 403, Gezina, PRETORIA 0084.
1784	NEL, Mnr. P.W.	Posbus 122, NABOOMSPRUIT 0560.
1943	NELL, Mnr J.F.	Hexrivierstr. 40, Eastvale, SPRINGS, 1560
0227	NEL, Mnr. William	Posbus 87, MTUNZINI 3867.
0237	NELL, Mnr. J.M.	Danielstraat 60, Lambton Gardens, GERMISTON 1407.
1346	NEWLAND-NELL, Mr. T.	9 Perth Street, Kabega Park, PORT ELIZABETH 6025.
1216	NEYTZELL-DE WILDE, F.G.	P.O. Box 985, WESTVILLE 3630.
1686	NIEHAUS, Mnr. C.H.	Posbus 1271, VRYHEID 3100.
1194	NIEMAND, Mr. & Mrs. H. & D.	50 Judges Avenue, Cresta Extention 1, RANDBURG 2195.
1192	NIEUWENHUIZEN, Mr. R.	Winterhoek Street 28, Durbanville, CAPE TOWN 7550.
1503	NIEUWOUDT, Mnr. J.	Posbus 6410, WELTEVREDENPARK 1715.
0829	NIEWOUDT, Prof. C.F.	Posbus 17129, GROENKLOOF 0027.
1929	NOURSE, Mr A.D.	49 Albizia Place, WESTVILLE, 3630
1656	OBERHOLSTER, Mnr. G.I.A.	Posbus 2535, NELSPRUIT 1200.
1869	OBERHOLZER, Mr. N.S.	61 17th Street, PARKHURST 2193.
1968	OBERHOLZER, Neil & Thea	Posbus 44622, LINDEN, 2104
0975	OBERPRIELER, Mr. Rolf G.	National Insect Collection, P.P.R.I., Private Bag X134, PRETORIA 0001.
1588	OCHSE, Mr. A.L.	P.O. Rox 310, HONEYDEW 2040.
0094	OLIVIER, Mnr. & Mev. L.	Posbus 288, KIRKWOOD 6120.
1365	OLIVIER, Mnr. C.	Posbus 14300, SINOVILLE 0129.
1732	OLIVIER, Mnr. H.G.	Posbus 15057, LAMBTON 1414.
1960	OLSEN, Mrs E.C.	9 Sandison Mansions, Belmont Rd., RONDEBOSCH, 7715
1638	OOSTHUIZEN, Mnr. F.P.	Posbus 52134, Fouriesrus, PRETORIA 0024.
0872	OOSTHUYZEN, Mnr. J.C.	Posbus 59911, KARENPAK 0118.
	OPENBARE BIBLIOTEEK	(Afdeling Pligeksemplare), Posbus 1029, BLOEMFONTEIN 9300.
	BLOEMFONTEIN	
0400	OSBORNE, Mrs. P.J.	Green Pastures, P.O. Box 45, DURBANVILLE 7550.
1824	OTTO, Mev. D.G.	Posbus 17207, PRETORIA-NOORD 0116.
1820	PAGEL, Mr. T.D.	P.O. Box 12194, AMALINDA 5252.
0427	PALMER, Mr. K.H.	1 Rudolf Erasmus Street, Heuwelsig, BLOEMFONTEIN 9301.
0357	PARSONS, Mr. J.S.	P.O. Box 41652, CRAIGHALL 2024.
0029	PEARTON, D.J.	P.O. Box 28419, SUNRIDGE PARK 6009.
1498	PEER, Mr. A.K.	5 Alphen Drive, CONSTANTIA 7800.
1709	PELLISSIER, Mr Robert	
0627	PELZER, Mnr. A.N.P.	Posbus 644, ERMELO 2350.
0463	PERT, Mr. C.W.	34 Crestview Road, Bellevue, PIETERMARITZBURG 3201.
0059	PHIPSON, Mrs. Y.H.	3 Dickens Place, PINETOWN 3610.
1619	PICKERING, Mr. W.	19 Winston Road, KLOOF 3610.
0024	PIENAAR, Mr. Leon	626 Jan Visse Avenue, ROSEVILLE 0084.
0005	PIENAAR, Mev. S.M.	Berg Zembi, Posbus 15625, LYNN-OOS 0039.
1323	PIETERSE, Mnr. F.	Emus Erasmuslaan 278, Erasmusrand, PRETORIA 0181.
1354	PILLAI, Mr. L.	55 Maple Crescent, Circle Park, KLOOF 3610.
1967	PILLAI, Mr Roy	P.O. Box 1435, UMHLANGA ROCKS, 4320
0078	PINKER, Mr. Colin	P.O. Box 2115, NELSPRUIT 1200.
1970	PITOUT, Mnr H.L.	Wilkenstr. 53, Meiringspark, KLERKSDORP 2570
1941	POTGIETER, Dr Chris	Posbus 12, HUMANSDORP, 6300
1790	POTGIETER, Mnr. J.P.	Posbus 92, LINMEYER 2105.
1152	POULTON LIBRARY:	Durban Parks Department, P.O. Box 3740, DURBAN 4000.
0864	PRANGLEY, Mr. P.R.	P.O. Box 35245, NORTHWAY 4065.
1977	PRETORIUS, Mnr Johan	Reigerstr. 20, Culemborgpark, RANDFONTEIN 1760
1843	PRETORIUS, Mnr. & Mev. J.	Posbus 738, BLOEMFONTEIN 9300.
1274	PRETORIUS, Mr. P.	3 Inyathi Crescent, MANDINI 4490.
0043	PRINGLE, Mr. Victor	P.O. Box 59, BEDFORD 5780.
0166	PRINSLOO, Mnr. G.C.	N.I.T.K., Privaatsak X82075, RUSTENBURG 0300.
1581	PRINSLOO, Mnr. J.J.	Posbus 25219, MONUMENTPARK 0105.
0154	PROZESKY, Mnr. H.D.	6 Avon Place, COWIES HILL 3610.
0631	PROZESKY, Mr. J G.	P.O. Box 6172, BIRCHLEIGH 1621.
1917	QUINN, Peter & Linda	P.O.Box 77, DURBAN, 4000
1183	RAATS, Mnr. W.P.J.	Posbus 9268, PRETORIA 0001.
0832	RADEMeyer, Mev. C.	Windsorstraat 5, GEORGE 6530.
1019	RAS, Mnr. J.J.	Posbus 2498, WITRIVIER 1240.
1759	RAUTENBACH, Mnr. J.W.	Kameeldoringstraat 10, Vredeloof, BRACKENFELL 7560.
1112	RAUTENBACH, Mnr. M.J.	Irving Steynstraat 19, South Crest, ALBERTON 1450.
0732	REICH, Mr. R.G.	1015 Martha Street, ELDORAIGNE 0157.

1197	REINACH, Dr. Norman	Posbus 1834, GEORGE 6530.
1370	RICHTER, Mr. M.P.	P.O. Box 209, KNYSNA 6570.
0759	RIDGE, Mr. Bruce	22 Estuary View, Beacon Bay, EAST LONDON 5241.
1222	RIORDAN, Mr. S.	C.R.M., P.O. Box 61689, MARSHALLTOWN 2107.
1654	ROBBERTSE, Prof. P.J.	Astridstraat 167, Meyerspark, PRETORIA 0184.
1253	ROBINSON, Mr. Ken	P.O. Box 41168, CRAIGHALL 2024.
1201	ROOS, A.	Marine Rylaan 303, Brighton Strand, DURBAN 4052.
1699	ROOS, Mr. C A.	14 Arundel Road, Dinwiddie, GERMISTON 1401.
1557	ROSS, Mrs. M.	P.O. Box 914523, WINGATE PARK 0153.
0187	ROSS, Mr. W.D.	20 Wanless Road, Glenmore, DURBAN 4001.
0973	ROSSOUW, Mr. N.B.	38 Middleton Road, ESCOMBE 4093.
1853	ROUWENHORST, Erik	Posbus 620, NEWCASTLE 2940.
1442	ROUX, Mnr. J.J.	Graphitestraat 64, WILROPARK 1724.
1633	ROUX, Mnr. T.	Posbus 16464, PRETORIA-NOORD 0116.
1893	RUDMAN, Mr. E.R.	35 Brand van Zyl Avenue, Vanes Estate, UITENHAGE 6230.
0415	RUDMAN, Mr. R.R.	3 Dunn Road, Jansendal Township, UITENHAGE 6230.
1402	RYAN, Mnr. M.J.	Mahemlaan 3, RUSTENBURG 0300.
1055	SANDISON, Mr. I.	59 Alamein Avenue, KLOOF 3610.
1829	SCHAAP, Mnr. S.	Posbus 149, GRAVELOTTE 0895.
1685	SCHELE, Mr. Anton	P.O. Box 72917, LYNNWOOD RIDGE 0040.
0311	SCHIMMER, Mr. C.M.	P.O. Box 274, ALLANRIDGE 9490.
0424	SCHMIDT, Mnr. & Mev. C.F.	Posbus 16657, PRETORIA-NOORD 0116.
1984	SCHMIDT, Mr. E.V.	28 Bruarfoss Rd., VALHALLA, 0185
0426	SCHMIDT, Mnr. S.A.D.	Posbus 9121624, Silverton, PRETORIA 0127.
1881	SCHOEMAN, Mnr. J.	Posbus 38448, GARSFONTEIN 0042.
0082	SCHOEMAN, Mnr. S.J.	Posbus 16001, PRETORIA-NOORD 0116.
1729	SCHOLTZ-KOEN, Dr. M.	Posbus 16343, PRETORIA-NOORD 0116.
1880	SCHUTTE, Mev. J.E.	Posbus 1745, RUSTENBURG 3500.
1077	SCHUTTE, Mr. R.	P.O. Box 65580, BENMORE 2010.
0647	SCHWELLNUS, Mnr. M.R.	Posbus 7045, Newton Park, PORT ELIZABETH 6055.
1612	SCOPEL, Dr. G.	32 12th Street, Orange Grove, JOHANNESBURG 2192.
0477	SCRIBA, Mr. J.H.	College for Foresters, Saasveld, Private Bag X6531, GEORGE 6530.
1249	SEEDAT, Hassim	P.O. Box 48611, QUALBERT 4078.
0674	SELVAN, Mr. J.R.	P.O. Box 552, KELVIN 2054.
0052	SHOOTER, Mr. E. Roy	21 Channel View Road, FYNNLANDS 4052.
0254	SLABBERT, Mnr. J.F.	Diazweg 122, Adcockvale, PORT ELIZABETH 6001.
1688	SLAVIERA, Mr. G.F.	1 Murray Street, Dagbreek, WELKOM 9459.
1650	SLAVIERO, Mr. L.	2 Pierneef Road, Elma Park, EDENVALE 1610.
1959	SMALBERGER, Mnr H.C.	Posbus 17190, PRETORIA-NOORD, 0116
0534	SMIT, Mnr. D.D.	Posbus 17167, PRETORIA-NOORD 0116.
1821	SMIT, Mnr. J.	Meppenstraat 32, Gerdview, GERMISTON 1401.
1580	SMITH, Mrs. D.J.F.	29 Chipstead Avenue, Bluff, DURBAN 4052.
0903	SMITH, Dr. G.F.	Nasionale Botaniese Instituut, Privaatsak X101, PRETORIA 0001.
1356	SMITH, Mr. J.D.	P.O. Box 210, WINKLESPRUIT 4145.
1830	SMITH, Mr. T.D.	10 Amber Valley, Ambleside Lane, COWIE'S HILL 3610.
1259	SMUTS (ATTENBURY) Mrs. M.L.	P.O. Box 10569, MEERENSEE 3901
0698	SMUTS, Mnr. M.N.	Posbus 13682, SINOVILLE 0129.
0512	SNELLING, Mr. R.C.H.	P.O. Box 141, CATHCART 5310.
1481	SNYMAN, Mr. A.J.	P.O. Box 101, ILLOVO BEACH 4155.
1815	SNYMAN, Dr. P.H.R.	Posbus 565, MONTANAPARK -159.
9009	SOUTH AFRICAN NATURE FOUNDATION, The	(Att. Dr. Ian MacDonald), P.O. Box 456, STELLENBOSCH 7599.
0992	SPICER, Mr. B.E.J.	P.O. Box 32074, MOBENI 4060.
9003	STAATSBIBLIOTEEK	(Afdeling Pligeksemplare), Posbus 397, PRETORIA 0001.
0911	STEENKAMP, Mnr. & Mev. K.	Ontevrede, Posbus 115, LOUWSBURG 3150.
1935	STEENKAMP, Mnr M.L.	Posbus 792, DURBANVILLE, 7550
1816	STEFFENS, Mnr. A.S.	Posbus 115, EMPANGENI 3880.
1043	STEGEN, Mnr. Robbie	Posbus 214, VRYHEID 3100.
1576	STEP, Mnr. E.O.	Van Riebeecklaan 133, Lyttelton Manor, VERWOERDBURG 0157.
1508	STEWART, Mr. H.E.	P.O. Box 56, RICHARDS BAY 3900.
1629	STEYN, Dr. E.M.A.	Privaatsak X101, PRETORIA 0001.
1236	STEYN, Mr. R.C.	P.O. Box 1218, HONEYDEW 2040.
1958	STOLS, Mnr W.J.	Posbus 13170, WITFIELD, 1467
1338	STOKES, Mnr. C.	Posbus 528, BENONI 1500.
1004	STRANEX, Mr. Philip	P.O. Box 53235, KENILWORTH 7745.

1117	STRANG, Mrs. C.	P.O. Box 69212, BRYANSTON 2021.
1401	STROBOS, Mr. J.G.	P.O. Box 1732, LINKHILLS 3652.
0084	STROEBEL, Mr. Pieter	Posbus 189, PORT ELIZABETH 6000.
0213	STRYDOM, Dr. Dawid	Prospecting Services, Anglo American, Private Bag X5035, KLERKSDORP 2570.
1625	STRYDOM, Mr. F.	39 Skegness Avenue, Hillary, DURBAN 4093.
1264	SUBROYEN, Mr M.	P.O.Box 117, DESAINAGAR 4405.
9006	SUID-AFRIKAANSE BIBLIOTEEK	(Afdeling Pligeksemplare), Posbus 496, KAAPSTAD 8000.
1889	SWAN, Mr. Mark	P.O.Box 39227, QUEENSBURGH 4070.
1986	SWANEPOEL, Dr A.C.J.	Rabiestr. 176, MEYERSPARK, 0184
0139	SWANEPOEL, Mnr. Johan	Posbus 911, BLOEMFONTEIN 9300.
1879	SWANEPOEL, Mnr. Louis	Posbus 6093, BIRCHLEIGH 1620.
1890	SWART, Dr. I.J.	Posbus 1006, WITRIVIER 1240.
1167	SWARTS, Dr. S.W.	99 Worthing Avenue, Bluff, DURBAN 4052.
1425	SYDOW, Mr. J.	27 Perth Road, Tokai, CAPE TOWN 7945.
1833	TAPPIN, Mr. G.S.	P.O. Box 162, WELKOM 9460.
0265	TARR, Dr. A.A.	14 St. Matthews Road, EAST LONDON 5201.
0147	TATE, Mr. D.M.	P.O. Box 8099, DIE HEUWEL 1042.
1689	TENCATE, Mnr. A.S.	Wilkenstraat 41, Meiringspark, KLERKSDORP 2571.
1708	TERBLANCHE, Johan	Mimosalaan 448, LYNNWOOD 0081.
1865	THE NURSERY	National Botanical Institute, Private Bag X101, PRETORIA 0001.
1555	THERON, Dr. H.S.	Posbus 1645, BRITS 0250.
1909	THI-LOU KWEKERY	Posbus 197, MARBLE HALL 0450
1119	THOMPSON, Mnr. E.F.	Mintstraat 19, Vredenberg, BELLVILLE 7530.
1808	THURSTON, Mrs. V.A.	c/o Private Bag X6, MAIDSTONE 4380.
0304	TOPHAM, Mr. Andre	P.O. Box 44, HOEDSPRUIT 1380.
0178	TOPHAM, Mnr. C.W.	Apiesdoringlaan 88, Wonderboom, PRETORIA 0182.
1981	TROLLIP, Mnr S.W.K.	Posbus 3622, BRITS, 0250
0184	TRUTER, Mr. J.W.	Moreson, P.O. Box 4, RIEBEECK EAST 6140.
1599	ULRICH, Mnr. B.J.	Posbus 1956, LADYSMITH 3370.
0678	UNGERER, Mr. H.	P.O. Box 279, MELVILLE 2109.
1760	UYS, Mev. A.G.	Posbus 683, VRYHEID 3100.
0322	VALLABH, Mr. P.D.	373 Mink Street, Laudium, PRETORIA 0037.
0646	VAN AARDE, Mr. J.W.	48 Sandpiper Street, Yellowwood Park, DURBAN 4011.
1369	VAN BUREN-SCHELE, Mnr. J.	Posbus 1159, PARKLANDS 2121.
1631	VAN DEN BERG, Mnr. H.J.	Palmstraat 73, Florapark, PIETERSBURG 0699.
1526	VAN DEN BERG, Mnr. I.J.	Williamsstraat 59, Wilkoppies, KLERKSDORP 2571.
1478	VAN DEN BERG, Mnr. M.J.	Posbus 194, HARTBEEPOORT 0216.
1836	VAN DEN BERG, Mnr. T.	Posbus 768, POTGIETERSRUS 0600.
1144	VAN DEN HEEDE, Mr. A.M.P.	P.O. Box 2031, PINETOWN 3600.
1539	VAN DEN HEEVER, Mnr. J.L.	Posbus 7262, WELTEVREDENPARK 1715.
0991	VAN DER LINDE, Mr. C.	281 Impala Road, AMANZIMTOTI 4126.
1882	VAN DER MERWE, Antoinette	P.O. Box 4404, LINDEN 2104.
1283	VAN DER MERWE, Mnr. C.H.	Posbus 993, Rant-en-Dal, KRUGERSDORP 1751.
1918	VAN DER MERWE, Mnr F.A.	Posbus 679, BARBERTON, 1300
1229	VAN DER MERWE, Mnr. P.H.C.	Posbus 5071, HELDERBERG 7135.
0816	VAN DER MERWE, Mnr. T.J.	Posbus 1011, LADYSMITH 3370.
1745	VAN DER MERWE, Mr. W.S.	P.O. Box 13655, SINOVILLE 0129.
1678	VAN DER VYVER, Mnr. J.C.	Posbus 361, PRETORIA 0001.
0203	VAN DER WALT, Mnr. A.S.J.	Posbus 77720, Fontainebleau, RANDBURG 2032.
0038	VAN DER WALT, Mev. Ita	Cycad Kwekery, Posbus 15251, LYNN-OOS 0039.
1558	VAN DER WALT, Mnr. J.	Theunsweg 225, MURRAYFIELD 0184.
1971	VAN DER WALT, Mnr G.	Posbus 6454, Flamwood, KLERKSDORP, 2572
1126	VAN DER WESTHUIZEN, Mnr. H.R.	Windramstraat 80, KRUGERSDORP-WES 1740.
0746	VAN DER WESTHUIZEN, J.F.G.	Posbus 1536, NORTHCLIFF 2115.
1728	VAN DEVENTER, J.C.	Posbus 6379, Welgemoed, BELLVILLE 7530.
1987	VAN ELST, Mr Deon	P.O.Box 89201, LYNDHURST, 2106.
0752	VAN GREUNING, Mnr. J.	8ste Laan 940, WONDERBOOM-SUID 0084.
1695	VAN GREUNING, Mnr. J.	Posbus 46, MEERLUS 1090.
1782	VAN HEERDEN, Andre	Posbus 937, MELMOTH 3835.
1185	VAN HEERDEN, Dr. H.G.	P.O. Box 237, STRAND 7140.
0938	VAN HEERDEN, Mr. J.L.	2 Undine, Eversdal, DURBANVILLE 7550.
1974	VAN HUFFEL, Mnr John	Eikestraat 4, DRUBANVILLE, 7570
1556	VAN JAARSVELD, Mnr. M.J.	Ciliarisstraat 799, DORANDIA 0182.

0719	VAN NIEKERK, Mnr. P.A.	Posbus 2842, PRETORIA 0001.
1924	VAN ROOYEN, Mnr H.C.	Posbus 4, WELKOM, 9460
1925	VAN ROOYEN, Ds J.C.	Posbus 2752, MIDDELBURG, 1050
1258	VAN ROOY, Mnr. Leon	Posbus 1019, WITRIVIER 1240.
1903	VAN ROOYEN, Mnr. H.G.	Dept. Kurrikulumstudies, Randse Afrikaanse Universiteit, Posbus 524, AUCKLANDPARK 2006
1717	VAN ROOYEN, Mev. J.J.	Posbus 594, NELSPRUIT 1200.
0569	VAN ROOYEN, Mnr. L.D.	Onrust, Posbus 69, GREYTOWN 3500.
1207	VAN ROOYEN, Mnr. W.	Posbus 38299, GARSFONTEIN 0042.
1651	VAN STADEN, Mr. S.	P.O. Box 148, ANERLEY 4230.
1671	VAN TONDER, Mnr. J.H.	Departement Openbare Werke, Privaatsak X65, Poyntons (Kamer 1510), PRETORIA 0001.
1972	VAN TONDER, Mnr T.M.	Posbus 58355, Karenpark, AKASIA, 0118
1819	VAN VUUREN, Mr. J.	P.O. Box 13474, CLUBVIEW 0014.
1872	VAN WYK, Mnr. Cobus	Ninastraat 115, MEYERSPARK 0184.
0229	VAN WYK, Mev. G.	Posbus 11306, HATFIELD 0028.
1937	VAN WYK, Mr M.R.	P O Box 73241, LYNNWOOD RIDGE, 0040
1267	VAN WYK, Mnr. P.L.	Posbus 12881, ONDERSTEPSPOORT 0110.
1891	VAN WYK, Mnr. R.J.	Posbus 113, MOOINOOI 0350.
1756	VAN ZYL, Elkie	Posbus 115, MOOKETSI 0825.
1868	VAN ZYL, Mnr. G.	Posbus 6429, WELTEVREDENPARK 1715.
0910	VAN ZYL, Mnr. J.H.	Posbus 95332, WATERKLOOF 0145.
1643	VAN ZYL, Dr. P.C.	Posbus 35557, Menlopark, PRETORIA 0102.
1823	VAN ZYL, Mnr. R.	Posbus 17, CRAMERVIEW 2060.
1915	VAN ZYL ROUX, Mnr W	Totiusstr. 27, Gholfsig, MIDDELBURG, 1050
1682	VENSKE, J.N.& van Zyl, P.	Posbus 142, DORDRECHT 5435.
0681	VENTER, Mnr. F.F.C.	Ontdekkersweg 367, Florida Park Uitbreiding 3, FLORIDA 1709.
1907	VENTER, Mnr. J.A.	Posbus 96013, BRIXTON 2019.
1934	VENTER, Mnr J.P.	Posbus 3006, HONEYDEW, 2040
1135	VERMAAK, Mr. A.J.	P.O. Box 536, MTUNZINI 3867.
1033	VICE, Dr. A.R.	54 Frere Road, Vincent, EAST LONDON 5247.
1945	VILJOEN, Mr Frank	P.O.Box 261. FERNDAL 2160.
1825	VILJOEN, Mnr. G.T.R.	Tugelaweg 1, DUNDEE 3000.
1607	VILJOEN, Mnr. Jaap	Posbus 1735, MULBARTON 2059.
1609	VILJOEN, Mnr. J.J.	Republiekstraat 88, VRYHEID 3100.
1949	VILJOEN, Mr Norman	28 Cheviot Rd., The Hill, JOHANNESBURG, 2197
0071	VISSER, Mnr. Ben	Posbus 3538, BRITS 0250.
1056	VISSER, Mnr. C.L.	Posbus 927, UPINGTON 8800.
1770	VISSER, Mnr. W.P.	Windhoekweg 2, Arauna, BRACKENFELL 7560.
0917	VORAJEE, Mr. R.	3 Princess Street, LADYSMITH 3370.
0016	VORSTER, Dr. Piet	Departement Plantkunde, Universiteit van Stellenbosch, Privaatsak X1, MATIELAND 7602.
0183	VOSLOO, Mnr. W.J.	Eugene Maraisstraat 16, SASOLBURG 9570.
0051	WALTERS, Mr. George	198 Torquay Avenue, BLUFF 4052.
0847	WALTERS, Mr. J.W.	5 Nagel St., Lakefield, BENONI 1501.
1602	WARING, Mnr. M.B.	Bronkhorststraat 99, GROENKLOOF 0181.
0629	WATSON, Mr. K.	14 Liefdesliedjie Crescent, Pellisier, BLOEMFONTEIN 9301.
0175	WELLS, Mr. B.K.	P.O. Box 7068, Newton Park, PORT ELIZABETH 6055.
0039	WENTZEL, Mr. B.	19 Rietfontein Road, Primrose, GERMISTON 1401.
1712	WENTZEL, Mnr. J.H.	Assegaiwoonstelle 8, Broadway South-straat, VALHALLA 0185.
1380	WENTZEL, Mnr. P.	Posbus 1016, KROONSTAD 9500.
0047	WENTZEL, Mr. Stephanus W.	Blackwoodstraat 170, ARCADIA 0083.
0448	WESSELS, Dr. F.H.	P.O. Box 7, PHALABORWA 1390.
1318	WESSELS, Mnr. J.H.	Posbus 31, HEIDELBERG 6760.
0696	WESTERMEYER, Mr. L.G.	P.O. Box 496, MTUNZINI 3867.
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## Broodbome: moets en moenies

MENSE se onkunde oor broodbome, en die koop en verkoop daarvan, stel hulle in groter gevaar as om bloot die regte kanale te volg. Dit verg gewoonlik slegs 'n permit om aan die veilige kant van die gereg te bly.

Broodbome word beskou as beskermde en spesiaal beskermde plante. Spesiaal beskermde plante is dié wat buite hul natuurlike habitat voorkom. Broodbome in die voormalige Transvaal val in laasgenoemde kategorie.

Mense wat broodbome besit en die bome wil saamneem wanneer hulle van een huis na 'n ander in die stad trek, moet 'n permit kry om die plante te vervoer.

Om broodbome van een provinsie na 'n ander te vervoer, is 'n uitvoerpermit aan dié kant, en 'n invoerpermit in die ander provinsie nodig. Dit geld ook die vervoer van sade na die buiteland.

In alle gevalle kan die direktoraat natuurbewaring in kennis gestel of geraadpleeg word.

Volgens mnr. Terence Venter, 'n natuurbewaarder by die subdirektoraat bewaring en landbou, moedig die departement mense aan om saailinge van broodbome te kweek.

Broodbome het min water nodig en is gevolglik 'n ideale tuinplant in die huidige droogtetoestand.

Die groot probleem met die onwettige uithaal van broodbome, is weer eens onkunde. Mense haal dikwels 'n vroulike plant uit 'n omgewing, waarna die hele bevolking vrek omdat die res manlike plante is.

Nog 'n probleem wat opduik, is wanneer 'n eiendom verkoop word en dit nie duidelik in die kontrak uitgestippel word dat die verkoper die broodbome wil uithaal, of saam met die huis wil verkoop nie.

In laasgenoemde geval kan die permit aan die volgende eienaar oorgedra word, wat dan weer onder sy naam en adres om 'n permit moet aansoek doen.

Wanneer mense versuim om permitte uit te neem, kan boetes van tot R20 000 aan die skuldiges opgelê word.

Mense wat nader inligting oor permitte verlang, kan mnr. Venter bel by ☎ (012) 808-1186/0373.



In die dae van min water is broodbome 'n goeie plantkeuse vir huistuine. Kwekerie sal leiding kan gee oor watter soort broodbome in u besondere gebied sal aard. Die *Encephalartos lanatus* kom byvoorbeeld hoofsaaklik in die omgewing van Middelburg, Witbank, Bronkhorstspruit voor, maar kan moontlik ook doodgelukkig in u omgewing groei.