

## ENCEPHALARTOS MACROSTROBILUS (ZAMIACEAE), A NEW CYCAD SPECIES FROM NORTHERN UGANDA

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**Abstract:** *Encephalartos macrostrobilus* Jones & Wynants, a new species from north-western Uganda, is described. It is compared with *E. septentrionalis* Schweinfurth from which it differs by its arborescent, larger, and more luxuriant habit, its much larger megastrobili, its yellow to ochre instead of red seed sarcotesta, and its less and differently dentate seedling leaflets.

*Encephalartos macrostrobilus* Jones & Wynants, species nova:

*Encephalartos septentrionalis* Schweinfurth propter caulem singulum affinis, sed cauli erecto et majori, foliis majoribus pluribusque, macrostrobilibus majoribus et seminibus ochracei differt.

**TYPE:** NORTH-WESTERN UGANDA. - Madi area (3°35'N, 31°40'E), 900-1400 m, on sandy lithosols in degraded woodland along riverbeds, in light shade, S. Jones & J. Wynants 01 (BR, hol.).

Plant arborescent with usually a single *trunk*, unbranched but occasionally with basal offsets, becoming somewhat procumbent with age, in exposed sites covered with persistent leaf bases but in more shady locations with only a few remaining leaf bases evident, up to 2.5 m tall and 300-450 mm thick. *Leaves* 35-60, spreading-erect, rigid and straight but somewhat recurved near apices, very dark green, in sheltered locations 1.9-2.2 m long and 390-590 mm wide but in exposed places 1.4-2.0 m long, petiolate with petiole 120-150 mm long, basal leaflets abruptly reduced to 1-3 pairs of bifid spines, base strongly bulbous, rachis with longitudinal groove along its entire length; leaflets paired and opposite, at almost 90° with rachis, falcate with margins slightly revolute, stiff, glabrous, with 21 longitudinal veins (counted on 12 different specimens) which are not raised on either ab- or adaxial surfaces, upper margin with 6-8 teeth each 2-6 mm long but not further than 60-80 mm from rachis, lower margin with 2-4 teeth each 2-5 mm long in area 30-80 mm from rachis, leaflets 190-250 mm wide. *Cones* of both sexes emerging simultaneously, glabrous, deep green maturing to olive green, exposed faces of

sporophylls rhombic and smooth to slightly crenulate; *male cones* (*microstrobili*) 6-14, erect, stalked on peduncles 80-90 mm long, cone narrowly ovoid, 180-200 mm long and 45-50 mm across; *female cones* (*megastrobili*) 3, erect on emergence but angled or even drooping at maturity, stalked on peduncles 120-140 mm long, cone up to 800 mm long and 300 mm across, seeds about 300 per cone, 35-40 mm long and 25 mm across including sarcotesta and 32-36 mm long by 19-22 mm across with sarcotesta removed, sarcotesta yellow to deep ochre and turning orange when ripening.

(Figures 1 & 2).

### Diagnostic features

*Encephalartos macrostrobilus* occurs within 50 km of at least one population of *E. septentrionalis* Schweinfurth; and in view of the poorly known nature of *E. septentrionalis*, is likely to be confused with it. However, *E. macrostrobilus* is readily distinguished by its well developed and erect rather than very short and procumbent or even underground trunk, its densely foliated crown compared to the often tattered dozen or two leaves of *E. septentrionalis*, its much larger female cones (about 800 mm long as opposed to 270-360 mm long) which at maturity are olive green with yellow to ochre seeds compared to manila brown cones with bright red seeds, and its remarkably slender male cones. Even the seedlings are distinct: in *E. macrostrobilus* the first leaf has 6 pairs of leaflets with none or only a few teeth along the upper margin near the apex of each leaflet (Figure 2E), while in *E. septentrionalis* the first leaf consists of 4 to 5 pairs of leaflets with significantly more teeth on the upper margins from close to the base or from at least halfway to the apices (Figure 2D).

### Reproduction

The sex ratios of mature plants appear to be skewed in favour of females.

By day baboons and hornbills were seen removing ripe seed. At night other animals, presumed to be rodents, continued dispersal.

Seeds start germinating immediately once they have been shed.

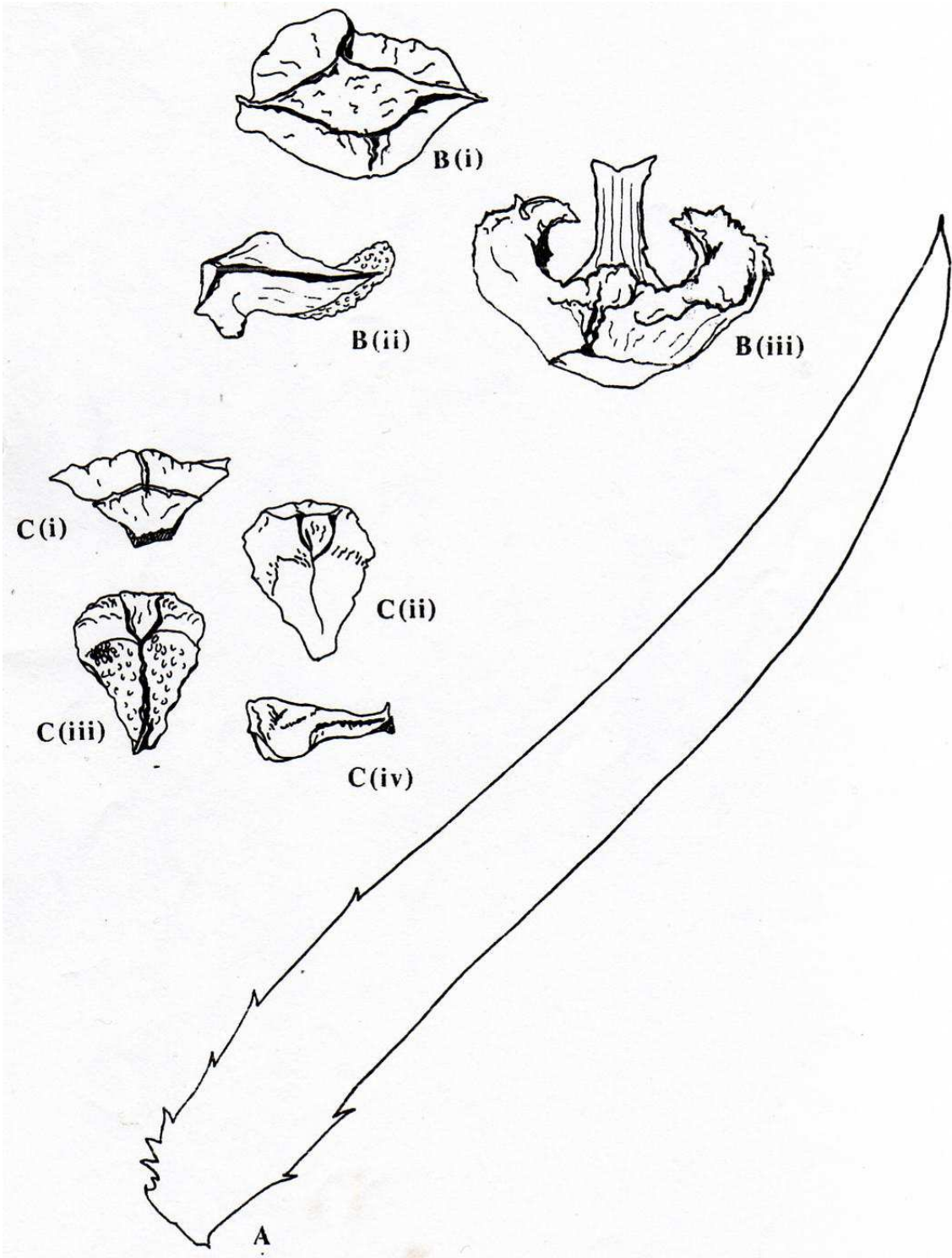


Figure 1 *Encephalartos macrostrobilus*: A, median leaflet; B, median megasporophyll in (i) frontal, (ii) lateral, and (iii) adaxial view; C, median microsporophyll in (i) frontal, (ii) adaxial, (iii) abaxial, and (iv) lateral view. Scale: life size.

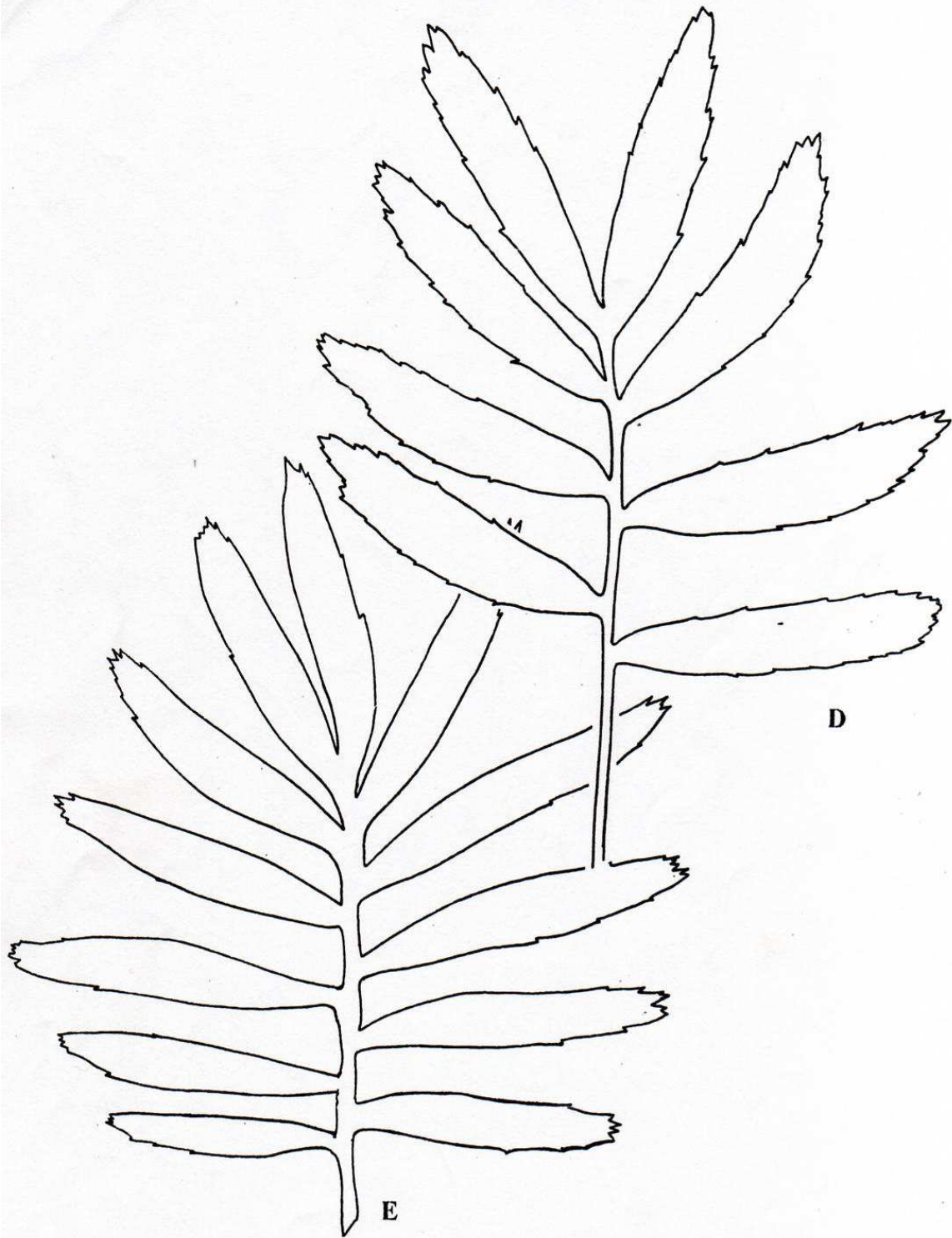


Figure 2 First seedling leaves of *Encephalartos septentrionalis* (D) and *E. macrostrobilus* (E) respectively. Scale: life size.

Despite repeated attempts, no weevils or other beetles were isolated from the cones of either sex. What were thought to be lepidopterous larvae were found feeding on the sarcotesta in one cone, but we were not equipped to preserve and identify the larvae.

There is a good range of age classes at each site visited, with consistently good recruitment.

#### Geographical distribution and habitat

*Encephalartos macrostrobilus* is a recent discovery, known only from north-western Uganda in the area of the Madi people, at 900 to 1400 m above sea level. The vegetation consists of degraded savanna with a canopy height of 5 to 20 m, on sandy lithosols with rock slopes along seasonal watercourses. *E. macrostrobilus* is usually encountered in the slightly more luxuriant vegetation within 100 m of the drainage channels. Typically the plants are about 50% shaded by surrounding trees and shrubs. Most grow amongst large boulders marking the stream course. Two main populations surveyed, occurred on a 10° slope facing eastwards, and a similar slope facing west respectively. The smallest group surveyed comprised 4 mature plants, and the largest at least 13.

#### Conservation status

The few localities from which *E. macrostrobilus* are known at present, are all heavily utilized by the local Madi people for grazing cattle and goats, as well as for timber and fuel. The total number of plants known to us is less than a hundred, but access is difficult and by foot only so there may well be more unrecorded populations. Even though apparently neither widespread nor common, the plants are currently seeding and recruiting successfully. Still, contemporary land use is exacting a toll: the tree cover has deteriorated, and the ground stratum is subject to regular burns to produce fresh grazing and improved access for cattle. It was noticed that plants amongst large boulders and in shade are larger and apparently healthier than ones exposed by felling of sheltering trees. Exposed plants survive repeated burns as evidenced by stem charring, but recruitment may be adversely affected by frequent burning. The cycads themselves are not subject to felling.

Sudanese refugee camps, associated insurgents, and in particular the local cultist "Lord's Resistance Army", make *E. macrostrobilus* relatively safe from all but the suicidal plant collector.

#### Local cultural aspects

These plants are called *Ci-cia*, meaning "resembling the date palm" (*Phoenix*). A few seeds are collected for use to "chase bad omens". When land is cleared, the cycads are not felled, possibly for religious reasons or because they are not suitable for fuel.

#### Acknowledgements

The authors wish to thank Richard Matthews for valuable introductions, Mr. Herbert Alule-Amudra and his family for practical assistance. They also wish to thank Prof. E. Robbrecht of the National Botanical Garden of Belgium for assistance with the compilation of the description, and Lynn Chamberlain for the illustrations.

#### Bibliography

- MELVILLE, R. 1957. *Encephalartos* in central Africa. *Kew Bull.* 2: 237-257.  
SCHWEINFURTH, G. 1871. Cycadaceae. *Botanische Zeitung* 29: 334.

[A reference to this new species appears in the unpublished manuscript titled "Georg Schweinfurth and the discovery of *Encephalartos septentrionalis* - with some comments on the present distribution of this and allied species" by Roy Osborne (submitted for publication to *The Cycad Newsletter*, U.S.A.).

According to Osborne, *Encephalartos septentrionalis* has become somewhat more common than it was a decade ago because of recent seed collections that shed more light on the distribution of this cycad.

To shed more light on the distribution of *Encephalartos macrostrobilus* part of the map, showing the approximate localities for *Encephalartos septentrionalis* and allied taxa in Uganda and Sudan, is reproduced (Figure 3) and the following passage from Osborne's manuscript is quoted:

#### "Seed collections from the present decade

During the past few years there have been at least two major seed collections in the northern Uganda-southern Sudan areas. The first of these was a collection of seed from the Moyo locality in northern Uganda, distributed fairly widely during 1995 under the name *Encephalartos septentrionalis*. At more-or-less the same time, a crop of seed was obtained from a cycad population in the southern Sudan's Didinga Hills, some 100 km to the northeast of the Imatong Mountains. This cycad has been referred to under the name of "*Encephalartos* sp. Sudan". Interestingly, about 100 km to the south of this



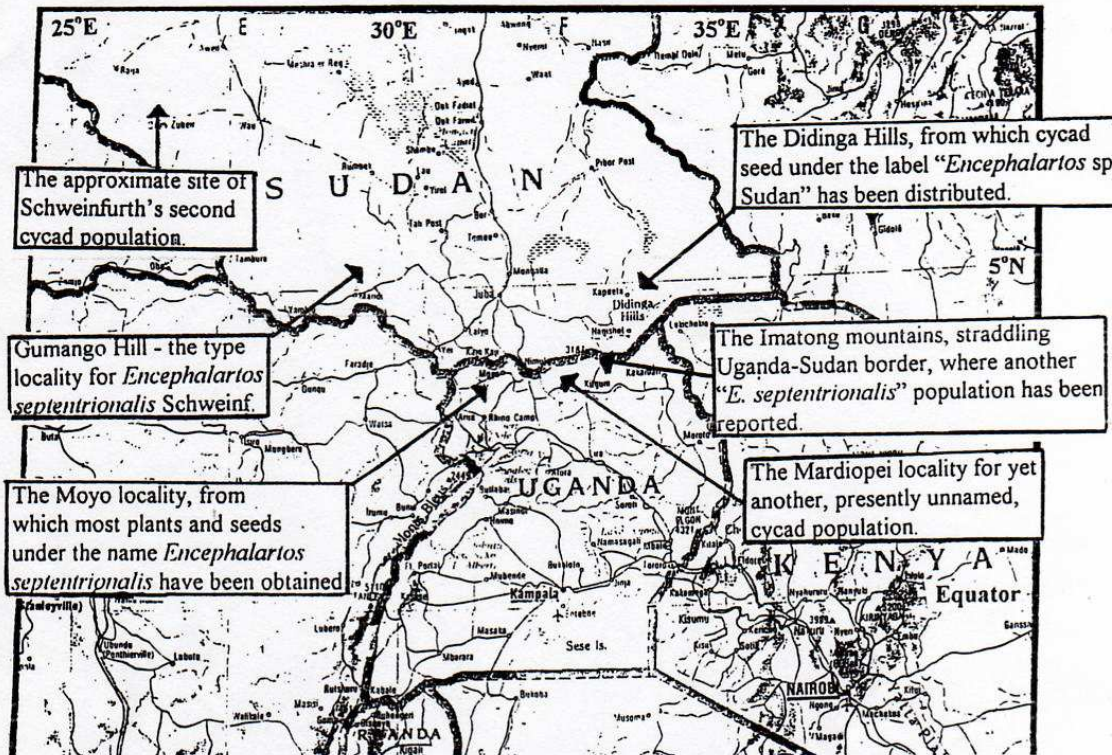


Figure 3 Map showing the approximate localities for *Encephalartos septentrionalis* and allied taxa in Uganda and Sudan.

locality, across the border into northern Uganda near the village of Mardiopei, there is word of yet another population of a cycad which appears to constitute a different species, and the name *Encephalartos "macrostrobila"* has been mentioned. There thus seem to be three cycads in the general area

of the Imatong Mountains, one of which may be allied to *Encephalartos septentrionalis*."

When Osborne's article has been printed in *The Cycad Newsletter* it will be summarized under "New scientific reports" in a future issue of our journal. - Editor.]

## NUUS OOR DIE TRANSVAALSE STREEKTAK VAN DIE VERENIGING

Hanneke Grobbelaar  
Posbus 15357, 0039 Lynn-oos

Ontvang 14 April 1997

### Toekomstige aktiwiteite

5 Julie 1997: 'n Besoek aan 'n *Encephalartos transvenosus*-kolonie in die Happy Rest Natuurreservaat naby Louis Trichardt is gereël. Deelnemers moet om 08h00 by die Schoemansdal Veldskool in die reservaat bymekaar kom (Louis Trichardt - Vivo pad). Verblyf kan in die koshuis van die Schoemansdal Veldskool gereël word.

Koste is R40.00 per persoon, met 2 of 3 persone per kamer. Slegs beddegoed word voorsien, maar 'n kombuis toegerus met 'n stoof en yskas sal tot ons beskikking gestel word. Indien u hiervan gebruik wil maak, is dit noodsaaklik dat u vir Hanneke (Tel. 012 8080995) so gou as moontlik laat weet en die volle bedrag van R40.00 per persoon betaal.

6 Sept. 1997: 14h00 by hoofgebou van die Nasionale