

Encephalartos msinganus (Zamiaceae): a new species from KwaZulu-Natal

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Encephalartos msinganus is described from the Tugela Ferry area in northern KwaZulu-Natal. It resembles *E. natalensis* R.A. Dyer & Verdoorn in its similar male cones and especially its verrucose female cones, but differs in its much narrower pinnae (16–20 versus 25–45 mm). It resembles *E. senticosus* Vorster vegetatively and in its similar male cones, but differs in the verrucose instead of smooth exposed faces of the megasporophylls.

Keywords: *Encephalartos*, new species, Zamiaceae.

Plants from the Tugela Ferry area in northern KwaZulu-Natal do not conform to any known species, and are considered to represent a new species.

Encephalartos msinganus Vorster, sp. nov.

E. natalensis R.A. Dyer & Verdoorn strobilis masculis similaribus strobilisque femineis verrucosis similis, sed differt pinnis angustissimis (16–20 mm versus 25–45 mm). *E. senticosae* Vorster forma vegetativa et strobilis masculis similis, sed differt faciebus apertis megasporophyllorum verrucosis non laevibus.

TYPUS.— KwaZulu-Natal: Near Msinga, Vorster 2949a (PRE, holotypus; K, LE, MO, FTG, isotypi).

Plant arborescent, often suckering from base to form clumps. *Stem* erect but often leaning to some extent, up to about 3 m tall and about 350 mm thick, covered by remains of leaf bases; crown covered with dense brown wool. *Leaves* 1 100–1 500 mm long, rigid and straight to somewhat arched; petioles unarmed, glabrous, 20–100 mm long; basal leaflets progressively reduced in size towards base of leaf with the lowermost produced as prickles; median leaflets directed towards apex of leaf at angle of about 30°, opposing leaflets set at angle of about 90° to each other, spaced 15–25 mm apart, succubously overlapping or not, very narrowly ovate with both margins dentate or entire and apices acute and pungent, 140–170 mm long and 16–20 mm wide, glossy dark green. *Male cones* on stalks up to 70 mm long, very narrowly ovoid, 2–4 per stem, glabrous to the naked eye, pale yellow, 300–400 mm long when mature and 110–120 mm across; exposed faces of median microsporophylls rhombic, drawn out into prominent drooping beaks towards central facets, facets poorly defined. *Female cones* sessile, ovoid, up to 2 per stem observed, greenish-yellow turning brighter yellow towards maturity but with pigmentation obscured to greater or lesser extent by felt-like brown indumentum, exposed faces of megasporophylls with poorly defined facets, warty, more or less raised towards central facet, cone about 420 mm long and 220 mm across; seeds with bright red sarcotesta. (Figures 1 to 3).

Phenology

Coning seems to be in synchronization with species like *E. natalensis* R.A. Dyer & Verdoorn and *E. senticosus* Vorster (Vorster 1995a). In mid-April, female cones appeared to be full-grown, but male cones had not yet shed pollen. It seems likely that the cones appear at the end of February and early March, that pollination takes place in early May, and that the seeds are released in October. Although the habitat appears to be relatively undisturbed by grazing animals, no sign of seedling regeneration was found. At least until fairly recently, the pollinating mecha-

nism must still have been intact, as seed from the habitat germinated well in nurseries.

Affinities and diagnostic features

The morphology of the vegetative parts and cones suggest that *E. msinganus* is part of the group of species comprising *E. aemulans* Vorster (Vorster 1990), *E. altensteinii* Lehm., *E. lebomboensis* Verdoorn, *E. natalensis* R.A. Dyer & Verdoorn (Dyer 1965, 1966), and *E. senticosus* Vorster (Vorster 1995b). Vegetatively it resembles *E. aemulans*, *E. lebomboensis*, and *E. senticosus* in its glossy dark green and slightly arching leaves (Figure 3), the hard and pungent median leaflets usually, but not invariably with teeth along both margins (Figure 1b), the progressive reduction in size of the lower leaflets towards the leaf base, and the short petiole (Figure 1a). The male cones resemble those of *E. altensteinii*, *E. natalensis*, and *E. senticosus* in respect of the exposed faces of the microsporophylls being drawn out into drooping beaks towards the central facets (Figure 2b), whereas the female cones resemble those of *E. altensteinii* and *E. natalensis* in the exposed faces of the megasporophylls being more or less raised towards the central facet, with otherwise poorly defined facets, and conspicuously verrucose with a short velvety indumentum (Figure 2d). *E. msinganus* is therefore defined by the combination of relatively narrow leaflets (16–20 mm) and verrucose female cones.

Geographical distribution and habitat

Known from the vicinity of Msinga near Tugela Ferry in northern KwaZulu-Natal, where it appears to be of very restricted occurrence at altitudes of 900 to 1 200 m (Figure 4). It grows in short grassland on steep north-facing slopes, usually amongst boulders in scrub clumps (Figure 3a), less commonly on sandstone cliff faces (Figure 3b), more or less in direct sunlight.

This area is rich in *Encephalartos*. It was in this vicinity that, some years ago, a single clump of *E. laevifolius* Stapf & Burtt-Davy was found, some 300 km from the nearest known populations in Swaziland (removed and presently in private hands instead of the National Botanical Gardens), and the type locality of *E. cerinus* Lavranos & Goode is close by. Other species growing almost within sight are *E. natalensis* and *E. villosus* Lem.

Conservation status

When first discovered in the late 1980s, the colony consisted of several hundred rather widely scattered individuals. Since then, the activities of collectors, especially one or two dealers who became widely known as sources of these plants, have almost eradicated them, and the KwaZulu Bureau of Natural Resources seems powerless to protect the plants. The species has become common in private collections (though not represented at the

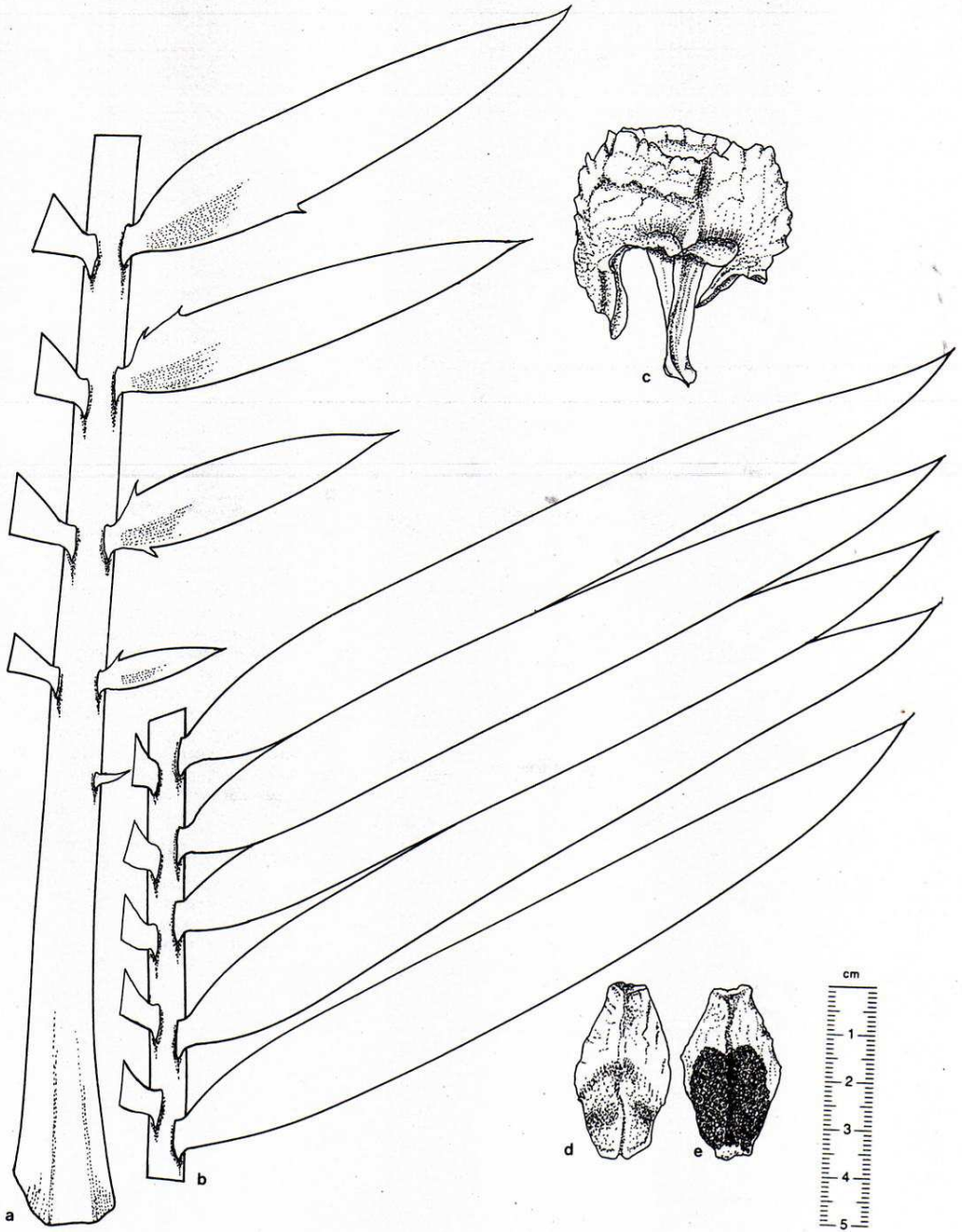


Figure 1 *Encephalartos msinganus*: (a) petiole and proximal part of leaf showing reduction of basal leaflets, (b) median leaflets, (c) megasporophyll in abaxial view, (d, e) microsporophylls in adaxial and abaxial view respectively. From Vorster 2949a (male) and b (female). Del. E.C. Vorster.

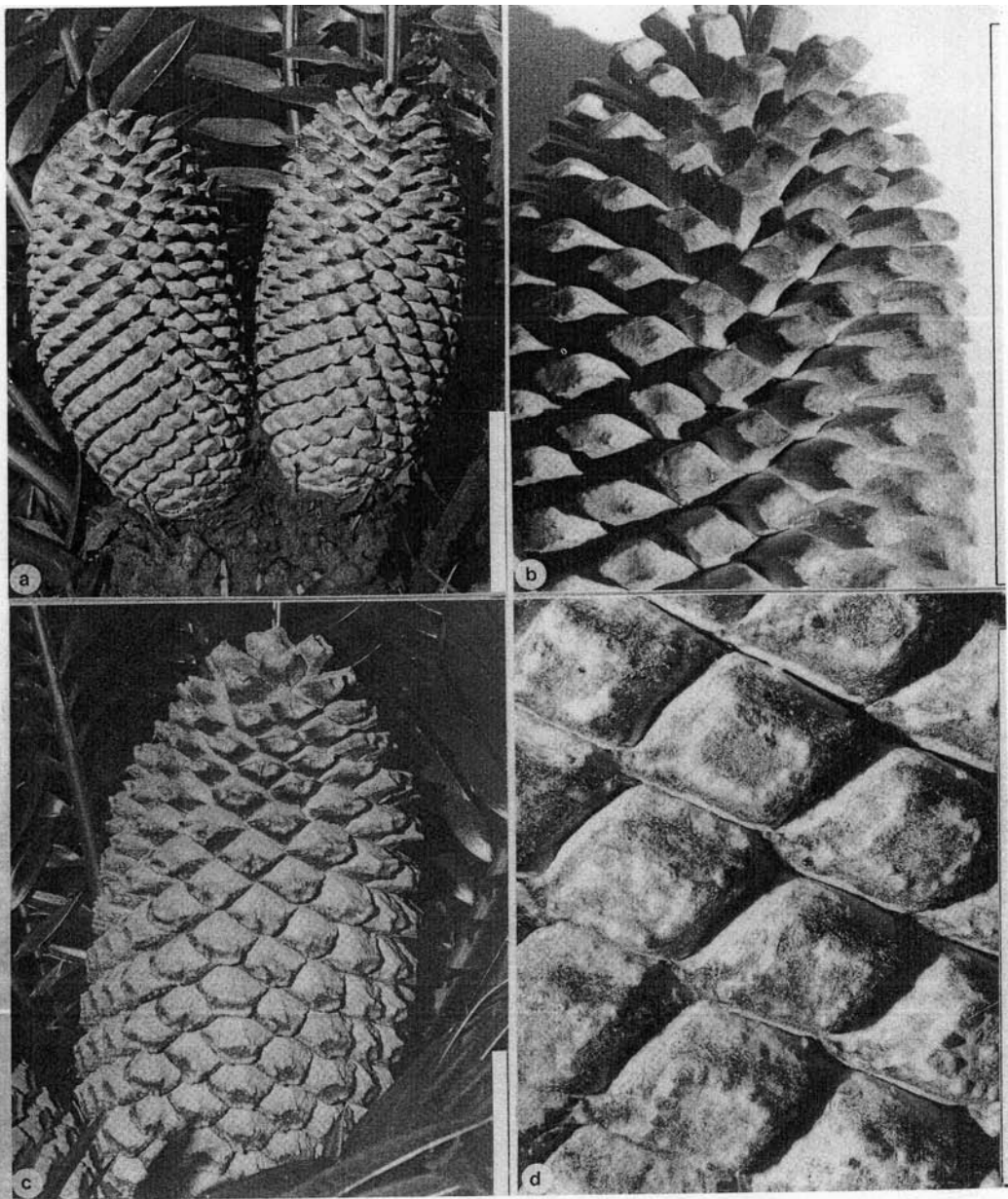


Figure 2 *Encephalartos msinganus*: (a), male cones, (b) detail of male cone showing exposed faces of microsporophylls drawn out into drooping beaks, (c) female cone, (d) detail of female cone showing exposed faces of megasporophylls with poorly defined facets and verrucose surfaces covered with felt-like indumentum. From Vorster 2949a (male) and b (female). Scale bars = 100 mm.

National Botanical Gardens, Kirstenbosch), but in habitat the numbers have dwindled to the extent that the species must be considered to be on the brink of extinction.

Material studied

Kwazulu-Natal: Msinga near Tugela Ferry, precise locality not disclosed, Vorster 2949a (foliage and microsporophylls) (FTG, K, LE,

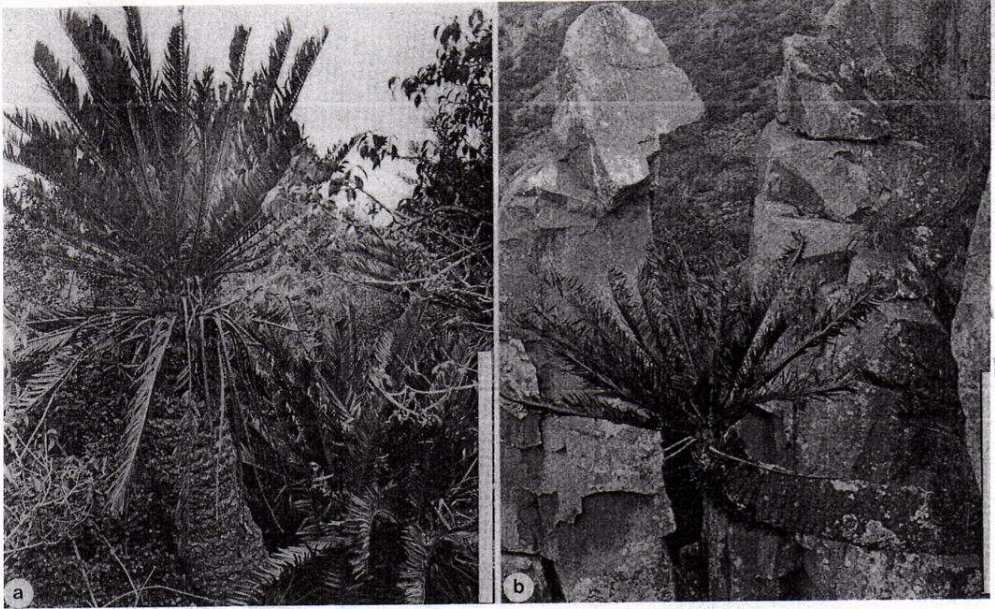


Figure 3 *Encephalartos msinganus*: (a, b) plants in habitat. Scale bar = 1 m.

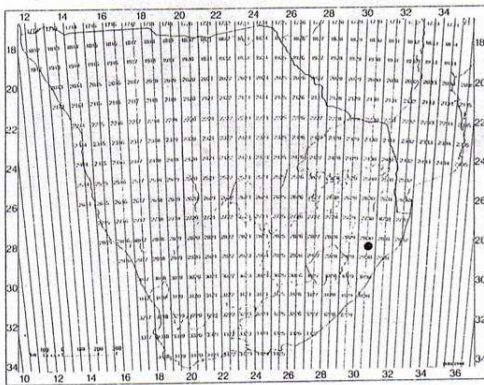


Figure 4 *Encephalartos msinganus*: known geographical distribution.

MO, PRE); *b* (foliage and megasporophylls) (FTG, K, LE, MO, PRE); plus various examples in cultivation.

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