

Encephalartos hirsutus (Zamiaceae): a newly described species from South Africa

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Encephalartos hirsutus P.J.H. Hurter is described from the Northern Transvaal. This species resembles *E. eugene-maraisii* Verdoorn, *E. dolomiticus* Lavranos & Goode, *E. dyerianus* Lavranos & Goode, *E. lehmannii* Lehm., *E. princeps* R.A. Dyer and *E. middelburgensis* Vorster et al. in its pungent, stiff, glaucous leaves. It differs from all these species in its decurrent pinnae and glabrous sporophylls with a waxy covering.

Keywords: *Encephalartos*, new species, Zamiaceae.

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An ongoing evaluation of Zamiaceae in southern and tropical Africa is being undertaken by one of us (P.J.H.H.). This study has already revealed the existence of a distinct, undescribed species in the Northern Province of South Africa.

Encephalartos hirsutus P.J.H. Hurter, sp. nov.

E. eugene-maraisii Verdoorn, *E. lehmannii* Lehm., *E. principis* R.A. Dyer, *E. dolomiticus* Lavranos & Goode, *E. dyerianus* Lavranos & Goode et *E. middelburgensis* Vorster et al. similis propter frondibus rigidis pungentibus glaucisque, sed habitu decumbentibus, pinnis decurrentibus, venis prominentibus pagina abaxiali pinnae a speciebus aliis differt.

TYPUS — South Africa: Northern Province, 1 000 m alt., 7 June 1994 (frond and male cone), P.J.H. Hurter 94R/1 (PRE, holotypus).

Plant decumbent, suckering from the base. Trunk decumbent, up to 3.5 or rarely 4.2 m long and 350–400 mm in diameter, leaf bases persistent, with a golden, densely tomentose crown, turning greyish with age. Leaves numerous in a dense crown, subsessile, apex recurved, rigid, glaucous, 1.1–1.2(–1.4) m long, petiole bulbous basally, up to 130 mm long, tomentose, rachis tomentose, becoming subglabrous with age, pinnae entire, inflexed and directed towards the apex of the frond at an angle of ca. 50° to the rachis, opposing leaflets set at an angle of ca. 40° to each other, incubously overlapping, proximal leaflets gradually reduced but not to a series of spines, median leaflets 130–170 mm long and 20–24 mm wide, narrowly elliptic and falcate, gradually acuminate and pungent apically, decurrent basally on the rachis, apices somewhat turned towards the frond apex. Strobili dimorphous, glabrous, scale facets smooth, waxy bluish-green, microsporangiate strobili 5 per trunk, narrowly ovoid, 500 mm long and 90 mm in diameter, peduncle 120 mm long, median microsporophylls rhombic, ca. 29 mm wide, 30 mm long and 7 mm high, with the central facet flat or slightly concave, megasporangiate strobili 1–3 per trunk, ovoid, 400 mm long and 350 mm in diameter, appearing sessile but with peduncle up to 60 mm long, hidden amongst cataphylls in the trunk crown, median megasporophylls rhombic, with four lateral and one central facet, ca. 50 mm wide, 44 mm long and 15 mm high with central facet a third of the horizontal diameter of the bulla. Seeds ca. 200 per cone, sarcotesta orange-red, kernel 30–35 mm long and 15–18 mm in diameter, ellipsoid, round and smooth (Figure 1).

Diagnostic features and affinities

E. hirsutus superficially resembles *E. eugene-maraisii* Verdoorn (Verdoorn 1945), *E. lehmannii* Lehm., *E. princeps* R.A. Dyer (Dyer 1965a, b), *E. dolomiticus* Lavranos & Goode, *E. dyerianus* Lavranos & Goode (Lavranos & Goode 1988) and *E. middelburgensis* Vorster et al. (Robbertse et al. 1989) in its stiff, pungent and glaucous fronds. However, even vegetatively it is easily distinguished from all six species by its decumbent habit, decurrent bases of the pinnae and the raised veins on the abaxial surface of the pinna. The morphology of the fronds in *E. hirsutus* is very distinctive; the pinnae are inflexed, overlap incubously and the proximal part of the pinnae bases are shortly decurrent, a character not yet observed elsewhere in the genus. In *E. eugene-maraisii*, *E. dolomiticus* and *E. princeps* the pinnae are also inflexed and overlap incubously but the veins of these three species are not raised on the abaxial surface of the pinnae and the pinnae are subsessile on the rachis. *E. lehmannii* and *E. dyerianus* also differ from *E. hirsutus* in that their leaflets are subsessile and succubously orientated on the rachis, although their median leaflets usually do not overlap. *E. middelburgensis* differs strikingly from *E. hirsutus* in its subsessile, strongly succubous pinnae.

Profound differences are also observable in the strobili of the new species. In *E. hirsutus* the microstrobili are narrowly ovoid, glabrous, waxy, with the median bulla drawn out but not into a drooping or lip-like structure, the median microsporophylls being flat and rhombic. In *E. eugene-maraisii* and *E. lehmannii* the microstrobili are covered by a short indumentum and the bulla is more drawn out than that of *E. hirsutus*. In *E. princeps* the surface of the bulla is strongly drawn out to form a beak-like structure, also evident to a lesser extent in *E. dolomiticus*. The microstrobili differ from those of *E. dyerianus* in the markedly waxy covering, which remains evident in herbarium material. In all six of these species the microsporophylls are much longer than broad, while in *E. hirsutus* the microsporophylls are as broad as long or only slightly longer than broad.

In *E. hirsutus* the megastrobili are ovoid and bluish-green, and the megasporophylls are glabrous and smooth-surfaced. Megasporophylls of *E. dolomiticus* and *E. princeps* differ from those of *E. hirsutus* in that the terminal facets of the bulla are markedly verrucose. The megastrobili of *E. eugene-maraisii* and *E. lehmannii* differ from that of *E. hirsutus* in that they are usually covered by a dense indumentum. The megastrobili of *E. middelburgensis* and *E. dyerianus* are similar but are not as smooth-surfaced as those of *E. hirsutus* in that some ridges and papillae always occur on the lateral facets of the bullae.

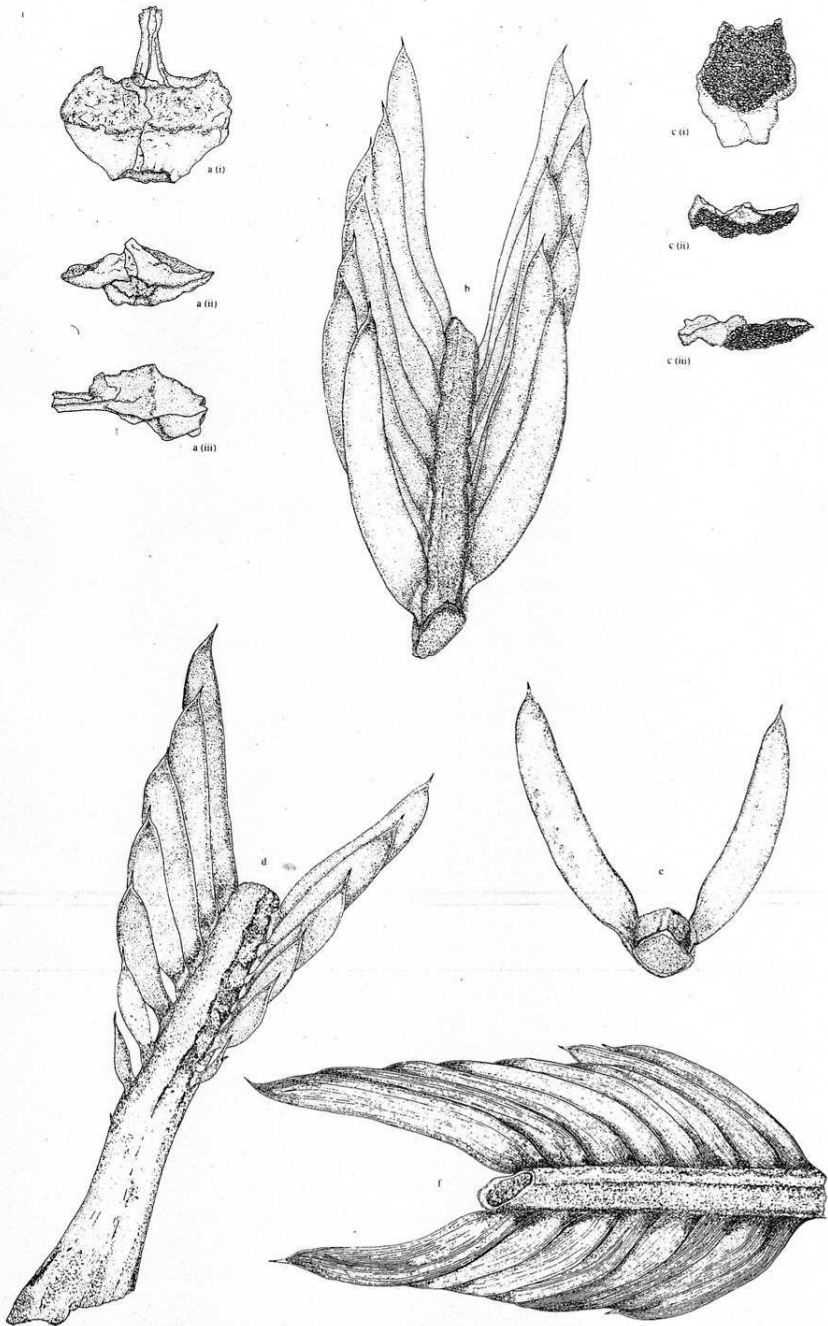


Figure 1 *Encephalartos hirsutus*. (a) Megasporophyll, (b) median pinnae, (c) microsporophyll, (d) leaf base, (e) pair of pinnae showing the rhombic rachis in section and the angle of insertion of the pinnae, (f) sub-apical pinnae. Leaf details: 0.45 \times ; cone details: 0.67 \times (drawing by M.C. Hurter).

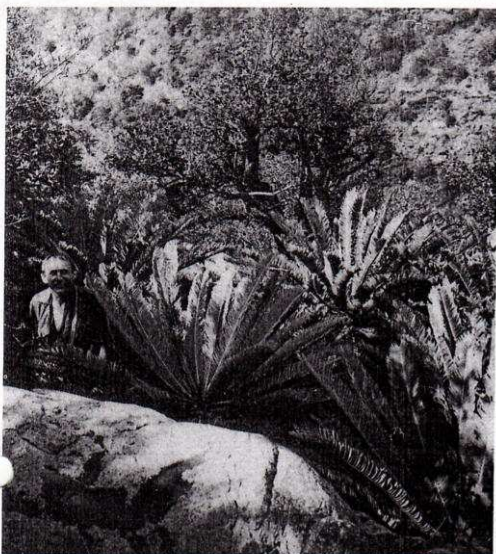


Figure 2 Plant in habitat in a relatively large population.

Geographical distribution and habitat

At present this species is known only from three widely separated localities in the Northern Province, at an altitude of 800–1 000 m.

Plants grow exposed on south-east-facing quartzite cliffs, in moist semi-deciduous mixed scrub where observation is often obscured by the dominant *Androstachys johnsonii* trees. At the type locality, plants grow exposed on a dry south-facing cliff in association with *Androstachys johnsonii*, *Adenia spinosa*, *Barleria bremekampii* and *Eragrostis superba* (Figure 2). The rainfall of some 350–650 mm per annum occurs in summer. Over the distribution range of this species (Figure 3), *E. transvenosus* is the only other *Encephalartos* species occurring nearby.

Material studied

To protect plants from poachers, precise localities are not given, and grid references are restricted to a 1:250 000 scale:

—2228: Alldays, Hurter 94R/3 (PRE).

—2230: Messina, De Winter 10034 (PRE) (male), Glen 3747 (PRE), UNIN, K, MO), Hurter 94R/1a (PRE) (male), Hurter 94R/2a (PRE) (female), Hurter 94R/4 (PRE).

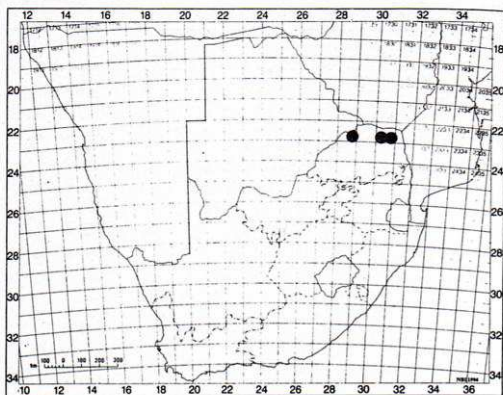


Figure 3 Distribution of *Encephalartos hirsutus*.

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