

A New Species of *Encephalartos* from Swaziland

by

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ABSTRACT

Encephalartos heenanii R. A. Dyer is described for the first time. It is indigenous in Swaziland and is nearest related to *E. paucidentatus* Stapf & Burtt Davy.

The Cycads of Southern Africa seem to have endless surprises in store for those whose investigations penetrate deeper into relatively unexplored territory. On this occasion, in addition to the record of a previously undescribed species, it is possible to give for the first time descriptions and illustrations of fresh male and female cones of *Encephalartos paucidentatus* Stapf & Burtt Davy from Swaziland. This is appropriate because *E. paucidentatus* is the nearest related species to *E. heenanii*. The records are made possible by the field work of Mr Denis Heenan and his son David.

Encephalartos heenanii R. A. Dyer, sp. nov., *E. paucidentatus* Stapf & Burtt Davy affinis, sed planta e basi plus ramosa, truncis minoribus, foliis brevioribus, foliolis non recurvis, strobilis dense brunneo-hirtolanatis, microsporophyllarum bulla crassiore et brevior differt.

Planta e basi ramosa; trunci erecti vel ascendentes vel aetate provectora decumbentes, ad 2,25 m alti, 25-35 cm diam.; cataphylla acuminato-lanceolata, brunneo-lanosa. *Folia* initio dense hirtio-lanata glabrescentia, oblongo-lanceolata, 100-130 cm longa, 15-20 cm lata; petiolus circa 20 cm longus, pulvino dense hirtio-lanato. *Foliola* media oblongo-lanceolata, pungentia, 12-15 cm longa, plus minusve 1,5 cm lata, marginibus edentatis, infra manifeste 20-30-nervata. *Strobili* pilis brunneis hirtio-lanatis. *Strobilus masculinus* solitarius, subcylindricus, compactus, 25-30 cm longus, 15-17 cm diam., pedunculo 8-9 cm longo, 2,5-3,5 cm diam.; microsporophylla mediana late cuneata, patentia, 6,5-7 cm longa, 5,5-6 cm lata; bulla subcylindrica, 1,3-1,5 cm longa, circa 2,5 cm crassa, verrucosa, copiose brunneo-lanata; vulticulus terminalis circa 1,75 cm latus et altus. *Strobilus femineus* solitarius late ovatus, 23-30 cm longus, 17-18 cm latus, pedunculo 5-6 cm longo, 4 cm diam. obconico, tomentoso; megasporophylla mediana 6-6,5 cm longa, 5-5,5 cm lata; bulla subcylindrica, circa 2,5 cm longa et 2,5 cm crassa, verrucosa, dense brunneo-lanata; vulticulus terminalis 2-2,5 cm latus, 1,7-2 cm altus.

Type: Swaziland.—Piggs Peak, on krantzies, Sept. 1969, D. Heenan in PRE 30904 (PRE, holo.).

Plants branched from the base; trunks erect or ascending, sometimes becoming procumbent with age, up to about 2,25 m tall, 25-35 cm diam.; bracteate leaves linear-lanceolate, very densely woolly with long brown hairs, tips recurving and becoming dry and brittle. *Leaves* with long brownish woolly hairs when young, gradually glabrescent except pulvinus, oblong-lanceolate in outline, 100-130 cm long, 15-20 cm broad, slightly contracted to apex and base; rhachis somewhat twisted; petiole about 20 cm long; leaflets (pinnae) slightly spaced towards base, denser above, sometimes slightly overlapping; upper ones slightly curved towards apex; basal ones not reduced to prickles but 1 or 2 sometimes lobed and somewhat prickly-like;

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PLATE 1.—*Encephalartos heenanii*; top, habit with David Heenan; bottom left, male cone; right, female cone.

margin entire, except very rarely with 1 or 2 prickles in juvenile forms; median leaflets fairly widely spreading or reflexed from the rhachis, oblong-lanceolate, 12–15 cm long, about 1.5 cm broad, becoming rigid, undersurface drying with 20–30 prominent nerves. *Cones* single, sometimes terminal, usually lateral to the terminal leaf-whorl, densely shaggy brown woolly, rarely glabrescent, yellowish, male and female alike in general shape, but male much lighter in mass per unit volume than female. *Male cones* pedunculate; peduncles 8–9 cm long, 2.5–3.5 cm diam. below cone, tapered to base, velvety woolly, without stipules except subtending ones; cones subcylindric, 27–30 cm long, 15–17 cm diam., broadest slightly below the middle and narrowed slightly to apex and broadly rounded base, shaggy woolly with brown hair about 1 cm long, with only the uppermost weathered scale-faces slightly exposed; scale-faces smallest towards apex; median scales spreading more or less horizontally, 6.5–7 cm long, 5.5–6 cm broad at the shoulder, cuneately narrowed to base, shortly stalked; stalk about 1 cm long; limb glabrous, 4–6 mm thick, with sterile margin 3–4 mm wide; bulla 1.3–1.5 cm long, subcylindric, about 2.5 cm thick vertically, abruptly expanded into lateral wings, densely woolly, verrucose; upper facet humped and apparently more or less rounded, 1 cm higher than sporangial spine; lower facet rounded; terminal facet not clearly defined, flattish, verrucose, about 1.75 cm broad and 1.5 wide vertically. *Female cones* pedunculate; peduncles obconic, 5–6 cm long, 4 cm diam. at top, velvety woolly; cones broadly ovate, 23–30 cm long, 17–18 cm broad, shaggy woolly as with male cones; median scales 6–6.5 cm long, 5–5.5 cm broad at the shoulders, 2.5–3 cm thick vertically, with incurved toothed lateral lobes 5–10 mm long; bulla 2.5 cm long, about 2.5 cm thick vertically, abruptly expanded into lateral wings, shaggy woolly, verrucose; upper facet humped with 1 or 2 ridges; lower facet rounded; terminal facet 2–2.5 cm broad, 1.7–2.0 cm wide vertically; seeds angled by compression 3.75–4 cm long with fleshy beak (immature).

SWAZILAND.—2531 CC (Komatipoort): Piggs Peak district, on krantzes, Sept. 1969, *D. Heenan* in PRE 30904; Nov. 1969, *D. Heenan* in PRE 30953; June, 1971, *D. Heenan* in PRE 31825a (male cone); 31825b (female cone).

The first notification of this species came from Mr. Denis Heenan in August, 1969. At this time no fresh cones were available and the remains of old ones were severely damaged by insects and were largely disintegrated. Mr. Heenan had located *E. paucidentatus* Stapf & Burtt Davy in quantity a kilometer and a half away and *E. laevifolius* Stapf & Burtt Davy slightly further. It seemed prudent not to ignore the possibility that *E. heenanii* had originated by hybridisation between these two species known to occur in the same neighbourhood. No supporting evidence for this idea was found, however. But the more knowledge gathered of *E. heenanii* the more definite it became that it should have separate specific status. The development and collection of fresh cones in 1971 was the final proof required and was a fitting reward for Mr. Heenan's patient field work with the able assistance of his son David.

The length and density of the shaggy brown hair on emerging leaves is phenomenal (Fig. 1) but gradually most of it is shed before the leaves reach maturity. A most unusual feature of the loosely brown woolly cones is that the male and female are similar in size and shape. They are not readily distinguishable on sight because of the similarity of the scale-faces which are almost invariably covered with copious brown shaggy hair. On handling the cones it is at once evident that the male is far lighter than the female per unit volume: the male has considerable air space between the pollen-bearing surfaces and shrinks appreciably on drying, whereas the female cones are nearly solid and shrink far less. The observation by Mr. Heenan of one practically glabrous cone on a plant with one normal shaggy cone was a distinct surprise and at this stage no explanation can be presented. This type of variation has not been observed in any other species with normally woolly cones.



PLATE 2.—*Encephalartos heenanii*; top, ad- and abaxial views of male cone-scales; bottom, ad- and abaxial views of female cone-scales with young seeds.



PLATE 3.—*Encephalartos heenanii*, emerging young leaves.

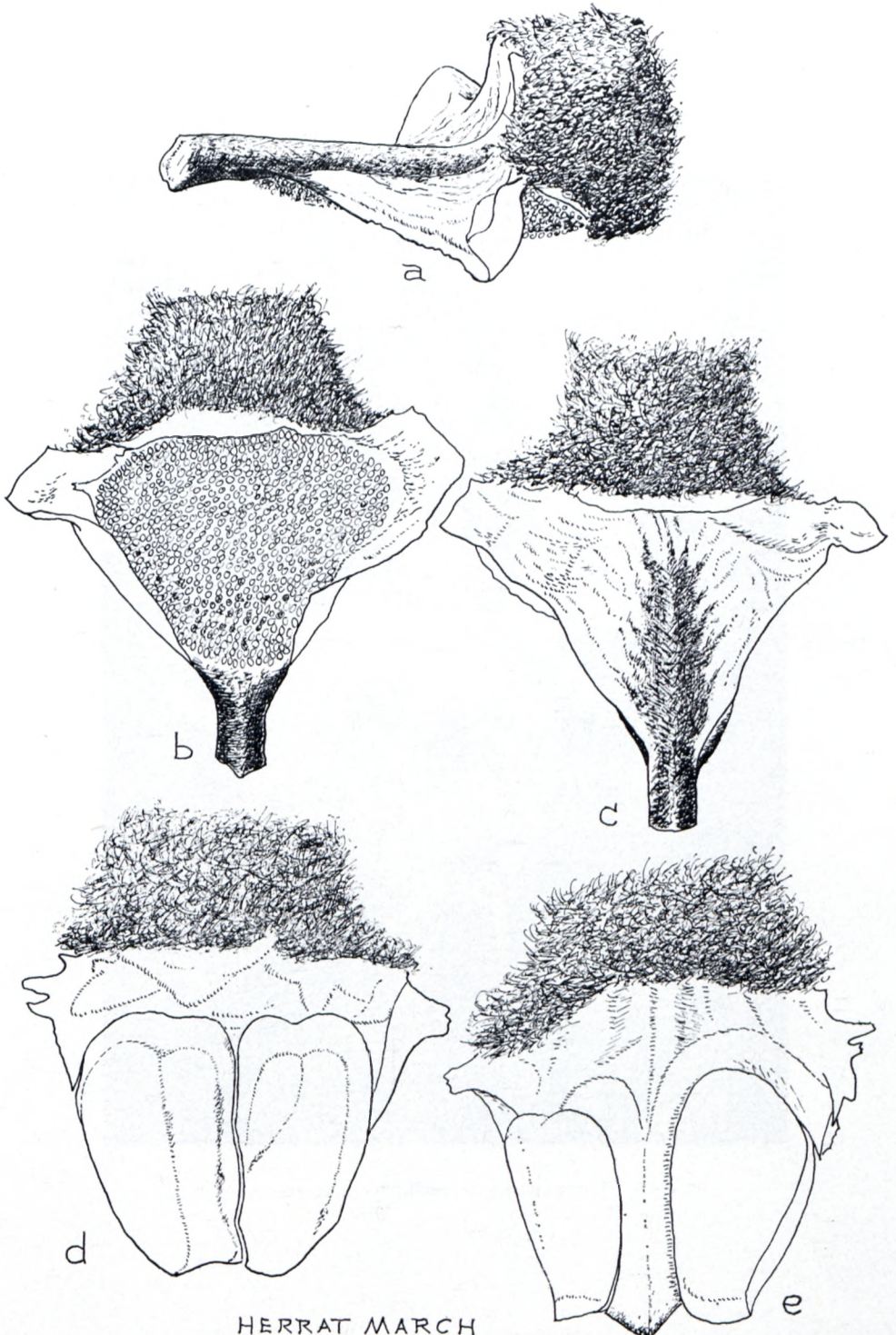


FIG. 1.—*Encephalartos heenanii*; a,b,c, side-, ab- and adaxial views of male cone-scales; d,e, ad- and abaxial views of female cone-scale.

***Encephalartos paucidentatus* Stapf & Burt Davy.** As in other species of the genus, there is appreciable variation between individual specimens over the full range of distribution. Unless one is able to make regular field observations over a number of seasons there is little chance of noting all the possible variations. Recordings are thus done piecemeal.

The number of cones produced by a trunk of *E. paucidentatus* was thought to be 1–3. In the mountain kloofs near Piggs Peak, where the species is sometimes common, David Heenan found female trunks with up to 3 large cones and male trunks with up to 5 cones. Unlike *E. heenanii*, where the male and female cones are almost indistinguishable, the difference in male and female cones of *E. paucidentatus* is very marked. For one thing the male cones are far more slender than the female cones and for another the median male cone-scales have a relatively long narrow beak to the bulla with a small terminal facet.

Since no description has been published of fresh male and female cones of *E. paucidentatus*, this opportunity is taken of recording them with illustrations (see Plate 4).

Cones yellowish, sometimes slightly woolly when young, irregularly papillate-pubescent with reddish-brown and colourless hairs; hair falling with age but bulla-face not becoming altogether glabrous.

Male cones 1–5 together at the apex of stems, subcylindric, slightly narrowed to base and apex, 40–50 (60) cm long, 12–15 cm diam., with cylindric peduncle about 10 cm long and subtended by slender acuminate woolly bracts; median scales narrowly oblong, up to 5,5 cm long, 2,5 cm broad, nearly flat on upper surface and with microsporangia extending nearly to the lateral margins and base; bulla decurved with sharp lateral angles, 1,5–2 cm long, 1,2–1,5 cm thick vertically; upper facet with median ridge; lower facet more or less continuous with sporangial surface; terminal facet 1–1,2 cm broad and slightly less vertically, with minutely irregular margin; the width of the terminal facets from base to apex of cone fairly constant while the vertical measurement decreases to about half.

Female cones 1–3 together at apex of stems, oblong-oval, 35–50 cm long, 20–22 cm in their greatest diam., with short stout obconic peduncle and subtended by slender acuminate woolly bracts; median scales 6,5 cm long; bulla verrucose, about 3 cm long, projecting 1,5–2 cm, 4–4,5 cm broad, 2,7–2,8 cm thick vertically, with lateral ridges extending into incurved lateral lobes about 1 cm long; upper facet rounded, indistinctly ridged; lower facet slightly convex; terminal facet concave, verrucose, 2–3 cm broad, 1–2 cm wide vertically; terminal facets becoming gradually smaller towards the apex of the cone.

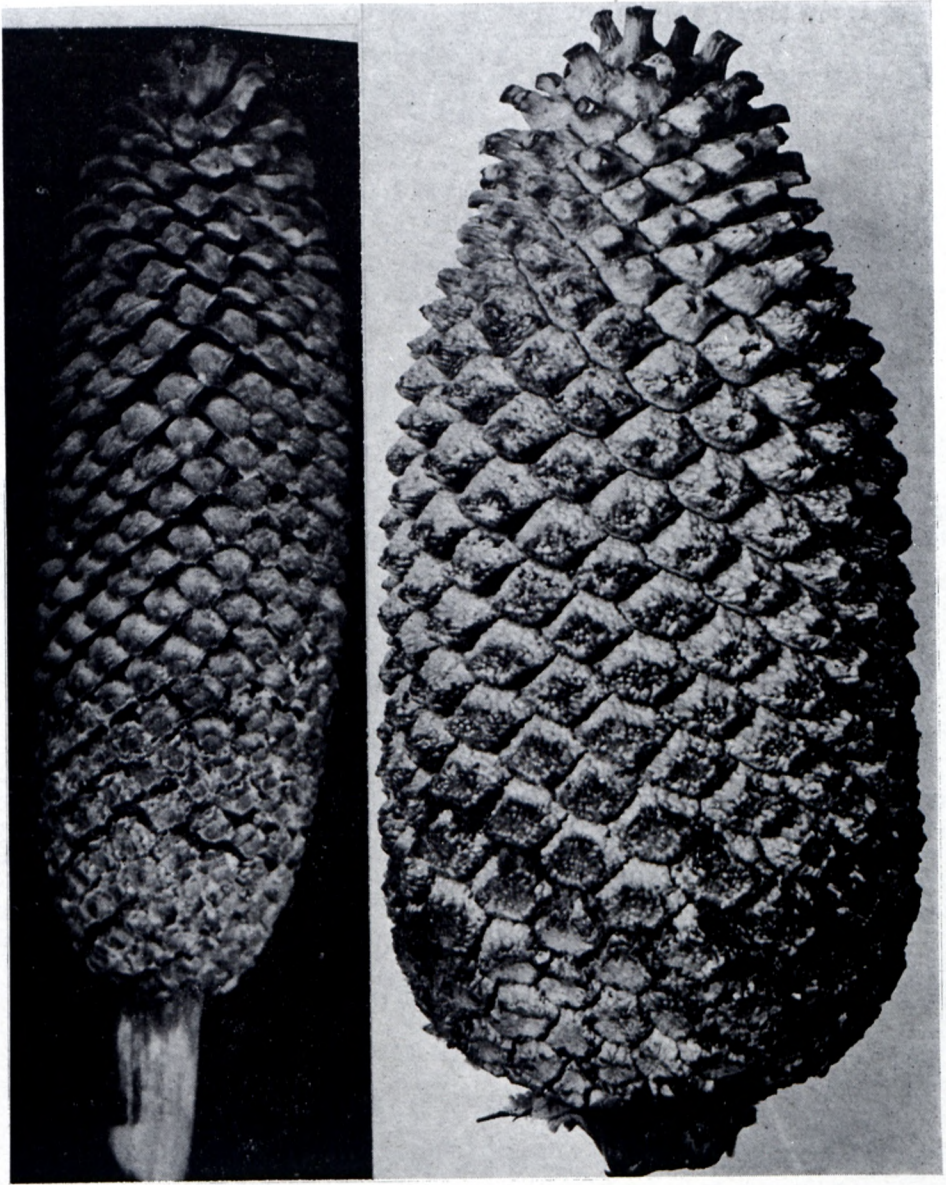


PLATE 4.—*Encephalartos paucidentatus*; left, male cone; right, female cone.