

## 2. STANGERIA T. Moore

Moore, T., in Hooker's Jour. Bot. 5:228 (1853); Miquel, F. A. W., Prodr. Syst. Cycad. 7-8, 17-18 (1861); De Candolle, A., Prodr. 16<sup>2</sup>:529-530; Schuster, J., Pflanzenreich 4<sup>1</sup>:103-105 (1932).

Stem tuberous and subterranean, branched or unbranched, up to 30 cm. long, without any armor of leaf bases. Leaves few, appearing singly or several in a year, 0.5-1 m. long; petiole unarmed. Leaflets long lanceolate; entire, serrate, or deeply incised; with a strong midrib and fine side veins almost perpendicular to it, these once or rarely twice dichotomous, a few anastomosing. Vernation inflexed or somewhat circinate.

Male cones usually single but occasionally 2 or 3 together, *cylindric*, tapering to the apex, long stalked. Microsporophylls broadly cuneate, sessile, somewhat rounded below and slightly pointed above, the lower surface covered with microsporangia. Female cones single, ovoid-cylindric, long stalked. Megasporophylls unequally peltate, somewhat elongated and thin above. Seeds dark red.

A monotypic genus confined to the eastern coastal region of South Africa. Named for Dr. Stanger, Surveyor General of Natal, who sent specimens of the plant to England in 1851. With respect to the venation of its leaflets, in which it is unique, Stangeria is the most fern-like of all cycads. In fact it was described originally as a species of Lomaria, one of the Polypodiaceae, and the mistake was not corrected until the cones were discovered.

Eucalyptus Kunze

1. Stangeria paradoxa T. Moore

S. erionus (Kunze) Nash

→ [Kunze, G., Linnaea 13:152 (1839) and 18:116 (1844)]; Moore, T., in Hooker's Jour. Bot. 5:228 (1853); Hooker, J. D., Bot. Mag. 85: t. 5121 (1859); Pearson, H. H. W., Trans. So. Afr. Phil. Soc. 16<sup>4</sup>: 349-351 (1906); [Nash, G. V., Jour. New York Bot. Gard. 10:164 (1909)]; Chamberlain, C. J., Bot. Gaz. 61:353-372 (1916); Hutchinson, J., and Rattray, G., Flora Capensis 5<sup>2</sup> (Suppl.):25-27 (1933).

Stem tapering toward the bottom, more or less rounded at the top, often branching near the base but seldom higher up, up to 30 cm. in length and 10 cm. in diameter, smooth. Leaves seldom more than 3 in any one year, often only 1 or 2, but more numerous when bright green, tomentose when young, becoming glabrous. the stem branches and each axis bears leaves; Petiole equal to or exceeding the rachis in length. In damp shady places and in green-houses petiole often 60 cm. long and rachis up to 50 cm., but on the grass veld commonly only half as long. Petiole smooth and terete or subterete; rachis smooth, rounded below and nearly flat above (deeply grooved in dried specimens). Leaflets up to 20 pairs in the bush veld but usually only 12-14 pairs, in the grass veld 9-12 pairs; opposite or subopposite, long lanceolate, acute or rounded at the apex; entire, irregularly finely or coarsely serrate or, in rare cases, so deeply incised as to be almost bipinnate; up to 40 cm. long and 6 cm. wide. Lower leaflets with petiolules up to 5 cm. in length, upper leaflets connate, with the lower border strongly decurrent in the upper two or three pairs and less decurrent below until the condition disappears.

Male cones <sup>cylindric,</sup> ~~solitary,~~ brownish, woolly at first, becoming glabrous, up to 17 cm. in length and 4 cm. in diameter, with a peduncle up to 10 cm. long. Outer surface of microsporophylls rhomboid or

somewhat hexagonal, 1.5-2 cm. wide, the upper outer face thin and pointed, the lower blunt. Microsporangia about 200 in the largest cones and 130 in the smallest, mostly single, not divided into two or several together, groups by a sterile line. Female cones solitary, densely tomentose, up to 22 cm. long and 8.5 cm. in diameter. Megasporophylls unequally peltate, the upper border rounded, slightly pointed, and tapering to a thin edge, the lower part more or less growing over the ovules; larger sporophylls 4-4.5 cm. wide. Seeds broadly ellipsoid, about 3.5 cm. long; stony layer 2.5 cm. long, 1.5 cm. wide, with a thin sharp ridge at the base, a feature which distinguishes it from all other cycads. Fleshy layer usually with 8 bundles.

Geographic distribution: Abundant on the grass veld in the Ngoye region of Zululand and extending south through Natal to the Kowie River, Bathurst Division. Very abundant in the forests around Manubie, Kentani, in the Transkei, and only less abundant on the grass veld near East London. Throughout its range, occupying a narrow strip along the coast.

Rattray found Stangeria near Port Elizabeth and gives that as its western limit. I hunted for days at ~~Van~~<sup>van</sup> Staadens, near Port Elizabeth, in what seemed to be favorable localities, with many plants of Encephalartos longifolius, but did not find a single plant of Stangeria.

Stangeria grows on the grass veld under conditions so dry that it might be called xerophytic, and in the bush veld under conditions ranging from drier mesophytic to almost hydrophytic. The plants seem very responsive to ecological conditions and the typical forest form looks so different from the grass form that at least two species would be recognized were it not for the numerous intergrades indicating a single polymorphic species. The original description was based

on the forest form, in which the petiole is nearly terete, the rachis somewhat flattened above, the apex of leaflet acute or even acuminate, its margin flat and serrate, and the upper margin of the sporophyll acute. The grass form has the petiole slightly flattened and the rachis grooved on the upper surface, the apex of leaflet rounded or obtuse, its margin entire and revolute, and the upper margin of the sporophyll usually rounded.

I studied Stangeria at various places from the Ngoye region of Zululand down to East London, observing it both in the forest and on the grass veld. There appeared to be only one polymorphic species. I dug up several plants at East London and sent them to Chicago, where they have survived for thirty years. The leaflets are now flat and serrate, with acute apices, and one plant has leaves as large as I have ever seen in the forest.

Stangeria<sup>a</sup> was first collected by Drege and von Gueinzius at Port Natal and determined as Lomaria coriacea (Linnaea 10:506, 1836). Later Kunze named it Lomaria eriopus (Linnaea 13:152, 1839), but without giving a description. Therefore the name Stangeria paradoxa Hook. f. must remain. <sup>be retained.</sup>