

with a basal short spur, and few sparsely branched, impressed vascular strands; endosperm homogeneous with a narrow central hollow; embryo sub-basal. Germination adjacent-ligular; seedling leaf bifid with entire tips.

Oraniopsis appendiculata (*F. M. Bailey*) *J. Dransfield, A. K. Irvine & N. W. Uhl, comb. nov.*

Areca appendiculata *F. M. Bailey*, in *Dep. Agric. Bot. Bulletin* 4: 18. 1891. Type: Queensland, Bellenden-Ker, *F. M. Bailey* s.n. in 1889 (BRI).

Orania appendiculata (*F. M. Bailey*) *Domin* in *Bibliothec. Bot.* 85: 498. 1915.

Orania beccarii *F. M. Bailey* in *Queensland Agric. Journal* 23: 35. 1909. Type as for *A. appendiculata*.

Trunk up to 20 m tall, 20–45 cm diam. at breast height, gray, irregularly marked with leaf scars. Leaves ca. 8–15 in crown, up to ca. 6 m long; sheathing base cup-like, rather short ca. 20 cm wide at the base, tapering to ca. 15 cm wide, and then narrowing into the petiole; petiole up to ca. 65 cm long, up to ca. 7.0 × 6.0 cm in section, the margins ± winged, ca. 1–2 cm deep, sharp, abaxially brown tomentose; rachis becoming adaxially ridged at ca. half its length; leaflets up to ca. 110 on each side of the rachis, the apical pair composed of 2–4 folds, the rest all single-fold, basal leaflets ca. 15–20 × 0.5–0.8 cm, mid-leaf leaflets to ca. 100 × 4.5 cm, apical pair up to ca. 43 × 4.5 cm, leaflets held at ca. 60° from the rachis

except near the tip where ca. 30°; adaxial surface dark green, abaxial surface mealy, grey-white, tinged brown, with numerous small, dark brown scales. Inflorescences 80–120 cm long; peduncle up to ca. 75 cm long, up to ca. 4 × 2 cm in cross-section, strongly flattened and winged at the base; prophyll borne near the base of the peduncle, ca. 25 × 6 cm, abaxially open to the base, adaxially splitting irregularly; peduncular bract 1 inserted 6–13.5 cm above the base, up to ca. 60 cm long, split abaxially, opening out somewhat, ca. 10 cm wide at widest point, strongly keeled; peduncular bract 2 inserted ca. 20–26 cm above the base, 60–135 × 8–12 cm; peduncular bract 3 inserted ca. 25–50 cm above the base, slightly smaller than bract 2; peduncular bract 4, where present, inserted up to 70 cm above the base, either similar to bract 3, up to 87 cm long or dissimilar, triangular, membranous, ca. 5 cm long, incompletely sheathing with long decurrent margins; peduncular bract 5, where present, inserted up to 70 cm from the base, membranous, subulate, ca. 6 cm long; rachis ca. 35–45 cm long; rachis bracts triangular, membranous, easily disintegrating, the basal to 4 × 1 cm, the distal very small and inconspicuous; first-order branches ca. 70 in staminate, 30–40 in pistillate inflorescence, spirally arranged; rachillae very numerous, staminate ca. 3–5 × 0.15 cm, pistillate ca. 4–10 × 0.2 cm. Staminate flowers cream-colored, borne on pedicels ca. 1.2 × 1.2 mm; calyx ca. 1 mm high with lobes to 0.5 mm; petals ca. 6 × 2 mm; filaments ca. 3–3.5 mm long, ca. 1

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2. *Oraniopsis appendiculata*. A. Watson Road, Millaa Millaa, North Queensland. An exposed staminate palm 7 meters tall, stem diameter 22 cm, on land cleared 60–70 years earlier for dairy farm. Note epiphytes: *Drynaria rigidula* (a fern) and *Schefflera actinophylla* (Araliaceae) Umbrella Tree. Background left: *Calamus moti*. Note the palms would have at least been taller than the reach of cattle 60–70 years ago. B. Keith Davis's farm, Watson Road, Millaa Millaa, North Queensland. Staminate inflorescence left, pistillate inflorescence right. C. Leaf, Topaz, North Queensland. Taken at Timberlea, Atherton (Irvine's home), daughter Rina (nearly 10 years old) and son Ian (4 years old). D. Kelly Road, Millaa Millaa, North Queensland, Australia. Upper and lower leaflet surfaces, greyish white below, green above. 1-12-1984. Photos by Tony Irvine.

mm diam. at the base, anthers ca. 5×1 mm; pistillode ca. 1 mm high, sometimes longer. Pistillate flower similar to staminate; pedicel ca. 2×2 mm; calyx ca. 1 mm high with lobes to 0.5 mm; petals 5×2.2 mm; filaments of staminodes 1.5×1 mm, empty anthers ca. 3×0.8 mm; ovary strongly 3-lobed, ca. 2×3.5 mm, the stigmas ca. 0.8×0.3 mm, mature fruit 2.7–3.4–2.3 \times 2.4–2.9 cm borne on pedicels 3×3 –4 mm; epicarp bright yellow; mesocarp ca. 2.7–3.0 mm thick, the outer ca. 1.7 mm wide layer semi-clear, the inner layer white pulpy; seed globose, ca. 2.2 cm diam., the integument black, ca. 0.5 mm thick; endosperm with a small central hollow ca. 2 mm wide.

SPECIMENS EXAMINED: AUSTRALIA: North Queensland: Upper Mossman River, 20.9.1936, *H. Flecker 2324* (QRS); Eastern slope of Mt. Bartle Frere, 29.10.1939, *H. Flecker 6405* (QRS); Harvey Creek, 9.11.1947, *H. Flecker 11788* (♀) (QRS); Boonjie Logging Area, State Forest Reserve 1230, Western foothills of Mt. Bartle Frere, 4.4.1972, *A. K. Irvine 179* (♂) and *180* (♀) (QRS); Mt. Lewis, State Forest Reserve 143, 22.8.1972, *A. K. Irvine 310* (♀) and *311* (QRS); Boonjie Logging Area, State Forest Reserve 1230, 23.1.1973, *A. K. Irvine 444* (♀) (QRS); Topaz, 7.2.1983, *A. K. Irvine s.n.* (♀) (BH, BRI, K); Millaa Millaa, Watson Road, 13.3.1984, *A. K. Irvine s.n.* (♀) and (♂) (K); Topaz, 14.3.1975, *G. Unwin 2* (♀) and (♂) (QRS); Mt. Bellenden-Ker, 1914, *L. S. Gibbs 6316* (K);

Distribution: *Oraniopsis appendiculata* occurs in rain forests of mountain ranges between the upper Tully River area ($15^{\circ}40'S$), northwards to the Big Tableland ($17^{\circ}50'S$) about 25 km south of Cooktown with the most inland occurrence being on the Great Dividing Range, southwest of Atherton, some 75 km inland, above 1,100 m altitude.

Ecology: The species occurs mostly above 300 m up to ca. 1,500 m altitude,

and also in narrow gorges and gullies at the foot of abruptly descending coastal ranges, but does not extend on to the broader coastal plains. Rainfall is mostly above 1,800 mm per annum, with frequent cloud mist compensating rainfall in the 1,800 mm regions. Soil types are mostly of granitic and metamorphic origin; the palm also occurs on shallow basaltic soils with impeded drainage. The palm is usually absent from deep, well-drained basalt soils. It occurs in the following rain forest types (Tracey and Webb 1975): Simple Microphyll Vine Fern Thicket, Simple Notophyll Vine Forest, Upland Mesophyll Vine Forest and Complex Mesophyll Vine Forest.

Seeds begin to germinate after 200–400 days, but some may continue to germinate 3–4 years after sowing. The palm is very slow growing and seems to stay in the rosette stage for at least 20–30 years. In dense rain forest rosettes may even be twice this age with erect leaves 3–8 m long. Unless growth rates accelerate markedly when a trunk is produced, tall stemmed individuals must be several hundred years old.

Oraniopsis is very closely related to *Ceroxylon*; indeed the only differences between the two genera are the presence in *Oraniopsis* of a bracteole on the pedicel, the incomplete rather than closed prophyll, the free petals, and the curious position of the antesealous stamens. The differences between the genera of the *Ceroxyleae* are best displayed in the following key.

Key to Genera of *Ceroxyleae*

1. Stigmatic remains basal in fruit 2
1. Stigmatic remains lateral to subapical in fruit 3
2. Petals basally united; stamens 6–15 or more.
Andes of S. America *Ceroxylon*
2. Petals free; stamens 6. Queensland *Oraniopsis*
3. Androecium with united filaments. Madagascar
..... *Louvelia*
3. Androecium with free filaments 4
4. Pistillate flower with staminodes bearing rudi-

- mentary anthers; staminate inflorescence often multiple; prophyll incomplete. Madagascar
 *Ravenea*
4. Pistillate flower with staminodes lacking rudimentary anthers; staminate inflorescence solitary; prophyll complete. Juan Fernandez Is. ...
 *Juania*

It would seem at first that the discovery of a close relative of *Ceroxylon*, an Andean genus, in Australia suggests a strong trans-Pacific link; the presence of another member of the Ceroxyleae, *Juania*, on Juan Fernandez off the coast of Chile, would seem to emphasize a trans-Pacific distribution pattern of the tribe. However the two other Ceroxyloid genera, *Louvelia* and *Ravenea* are both confined to Madagascar and offshore islands, and the distribution of the Ceroxyleae might better be explained by an origin in Gondwanaland, followed by rafting on land destined to become present day Madagascar, Australia and South America. Whatever the ancient dispersal path, the presence of *Oraniopsis* in Australia is of great phytogeographic interest.

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