

SOCIETY FOR GROWING AUSTRALIAN PLANTS

INDIGENOUS PALM STUDY GROUP

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Guess by the time this is released festive greetings will be in order. In a new project for 1987 I would like all members who live near palm habitats to give me seed sizes of their habitat palms, colour when ripe, approx. height of mature palm, colour of flower and flowering time, count of leaflets in case of fan palms, colour of trunk, crown shaft and any other peculiarities noticed.

MIXED ARCHONTOPHOENIX -
KUNDELLA RANGE.

HOME GARDEN PLANTING OF
A. ALEXANDRAE.
FINCH HATTON, Q.



PRINCIPES

(By O. D. Evans and L. A. S. Johnson)

Flowers unisexual or, more rarely, hermaphrodite, actinomorphic, usually numerous, mostly small. Inflorescence (spadix) a panicle, sometimes reduced and spike-like, arising from amongst the crown of leaves or from below it, enclosed at first in 1 or more large bracts (spathes). Perianth in 2 whorls. Sepals 3, separate and imbricate, or united in a 3-lobed or 3-toothed cup. Petals 3, separate or connate, usually longer than the sepals, valvate in the males and usually imbricate in the females. Stamens variable in number, usually 6, but sometimes more numerous, rarely fewer; anthers 2-locular. Ovary superior, either 3-locular or consisting of 3 distinct carpels, rudimentary or absent in male flowers; ovule usually solitary, erect to pendulous. Fruit a berry or drupe, 1- to 3-locular, or the carpels distinct. Seed free or adherent to the endocarp; endosperm present, sometimes ruminant; embryo small.

Woody plants, the stem usually unbranched, often erect with a terminal crown of large leaves, sometimes thin, weak, climbing, and bearing alternate leaves, or rarely quite short, either covered with the persistent bases of the leaves or marked with annular scars. Leaves with a plicate lamina, usually becoming pinnately or palmately split into segments or long lobes, rarely simple and entire; petiole long or short, the base usually sheathing.

A large family of more than 200 genera, widely distributed in the Tropics, a few in warm-temperate regions. About 15 genera in Australia, 4 extending into New South Wales. The family is of considerable importance, many species providing useful products; *Cocos nucifera* L., "Coconut", is the source of copra and fibre, but is not hardy in New South Wales; *Phoenix dactylifera* L., which produces the dates of commerce, is occasionally seen here; *Elaeis guineensis* Jacq. is the "Oil Palm" of West Africa. Many palms are valued for ornamental purposes and, amongst these, the following are some of the species seen in New South Wales gardens: *Phoenix canariensis* Chabaud (Canary Is.) and *P. reclinata* Jacq. (Africa); *Washingtonia filifera* (Linden ex André) H. Wendl. ex S. Wats. (California), and *W. robusta* H. Wendl. (Lower California, Mexico); *Trachycarpus fortunei* (Hook.) H. Wendl. (E. Asia); *Butia capitata* (Mart.) Becc. (Brazil); *Attacarpum romanzoffianum* (Cham.) Becc. (Brazil); *Livistona chinensis* (Jacq.) R.Br. (China); *Howea forsterana* (C. Moore et F. Muell.) Becc.; and *H. belmoreana* (C. Moore et F. Muell.) Becc. (both Lord Howe Is.); and in addition several native species dealt with below. The Cycads superficially resemble palms but are quite unrelated to them, differing fundamentally in structure; see Zamiaceae.

The leaves of palms in the seedling stage differ very considerably from those of the adult and are usually either undivided or 2-lobed. The peculiar structure and development of the palm leaf is discussed by Eames in *Phytomorphology* III (1953) 172-189.

1. Erect palms, unarmed except occasionally the petioles; fruit smooth.
2. Leaves palmately divided, fan-shaped; flowers hermaphrodite *Livistona* 1.
- 2.* Leaves pinnately divided; flowers unisexual.
3. Leaves 3-4 m. long; spadix much divided, shorter than the leaves.
Trunk 20 cm. or more in diameter *Archontophoenix* 3.
- 3.* Leaves less than 2 m. long; spadix undivided, longer than the leaves.
Stems slender, cane-like *Linosydes* 4.
- 1.* Climbing palms, armed with prickles; flowers unisexual; fruit scaly *Calamus* 2.

I. LIVISTONA

Low or tall, erect palms. Leaves fan-shaped, plicate; segments entire or bifid at the apex. Petioles long, more or less armed on the margins, rarely nearly smooth. Inflorescence arising from amongst the leaves. Spadix usually large, much divided. Spathes several, tubular, coriaceous, persistent. Flowers hermaphrodite, very small, sessile or shortly pedicellate, solitary or clustered along the ultimate branches of the spadix. Calyx trifid. Corolla longer than the calyx; petals 3, valvate. Stamens 6, distinct but contiguous, dilated at the base; anthers small. Ovary 3-lobed, the carpels readily separable; style shortly columnar; ovules solitary, erect. Fruit globular or ovoid, reduced by abortion to a single carpel; pericarp not thick, hard when dry; endosperm horny, not ruminant, with a deep broad cavity on one side, filled with brown spongy tissue; embryo sub-basal.

About 25 species, from China and India through Malaysia to Australia, one only extending into New South Wales.

L. australis (R.Br.) Mart., Hist. Nat. Palm. III (1839) 241; H. Wendl. & Drude in *Linnaea* XXXIX (1875) 232; Hook. f. in *Bot. Mag. Chh* (1877) sub. t. 6274; Benth., *Fl. Austr.* VII (1878) 146; Moore & Betche, *Handb. Fl. N.S.W.* (1893) 427; F. M. Bailey, *Qld. Flora* V (1902) 1684; Domin in *Bibl. Bot.* XX, Hft 85¹ (1915) 501; Maiden & Betche, *Census* (1916) 35; Maiden, *Forest Flora* VII (1920) 353 t. 256 (excl. figs. A-F). Tall palm, sometimes attaining a height of 30 m. Trunk single, erect, 30-50 cm. diam. at 2 m. from ground, rather rough, brown, marked with annular scars and with numerous narrow, V-shaped vertical furrows and wider ridges. Leaves in a dense crown: petiole 150-250 cm. long, armed on the margins, towards the base, with short, stout, recurved spines; lamina suborbicular in outline, 150-200 cm. diam., divided to the middle or lower into ca. 70 narrow, plicate segments, the latter entire or split in two at the apex. Spadix ca. 1 m. long, decurved, much branched. Flowers light yellow, ca. 3 mm. diam., subsessile, subtended by a small bract. Spathes densely hairy. Calyx segments thin, acute, ca. 2 mm. long. Petals 3, triangular-ovate, fleshy, valvate, subacute, ca. 3 mm. long. Fruit spherical, 1.5-1.8 cm. diam., 1-seeded, smooth, red changing to black, slightly glaucous; pericarp fleshy, ca. 2 mm. thick when fresh, hard and brittle when dry; testa pale brown, smooth; embryo dorsal, above the base of the seed. The fruit appears to be borne on a pedicel 1-4 mm. long, but this structure is compound, consisting of 2-3 parts, viz. the hardened base of the persistent perianth, the true pedicel (ca. 1 mm.) and often the ultimate division of the spadix upon which the flower was seated. "Cabbage Palm"; "Cabbage Tree". *Corypha australis* R.Br., *Prodr.* (1810) 267.

Coast from North to South. In wet sclerophyll forest and, in sheltered places, around swamp forest and (in the south) in or near areas of rainforest. Palm Beach, Ford 10.1947 (47162); Botany Bay, Banks & Solander 1770 (47074); Kurnell, Boorman 5.1906 (47079); Bola Creek, National Park, Johnson 1947 (47076); Bola Creek, National Park, Ford 2.1949 (47075); Illawarra, Weber 7.1886 (47077); Bega, per Glenfield Veterinary Research Station 7.1954 (47073). Also present at Cape Byron; between Woodburn and Ballina; Boambee, south of Coll's Harbour; Smoky Cape, Macleay R.; Tacking Point near Port Macquarie; Coolongolook to Taree; Smith's Lake, south of Forster; many places from Port Stephens to Broken Bay South; Grose Vale; Fox Valley, Wahroonga; sheltered places on shores of Port Jackson and Port Hacking; Ocean View near Robertson; Kangaroo Valley; Milton; Pebbly Beach, N of Bateman's Bay; Tilba Tilba; near Eden. Probably in other localities, though rather uncommon on the North Coast. Also in south-eastern Queensland and far eastern Victoria.

L. drudei F. Muell. ex Becc. (in *Webbia* V (1921) 19, and in *Ann. Roy. Bot. Gard. Calcutta* XIII (1931) 89), from North Queensland, was considered by Drude (in *Engl. Bot. Jahrb.* XVI, Beibl. 39 (1893) 11-12) possibly to be conspecific with *L. australis*. Beccari has shown however that it is distinct. The first valid publication of the name is by Beccari (1921), though it was previously published invalidly by F. Mueller (*Fragm.* XI (1878) 55, name in index only, p. 147) and by Drude (l.c.).

2. CALAMUS

Sterile spadices flagellate, variable in length, similarly armed. Male flower: calyx campanulate, triloc, ca. 2 mm. long; corolla 4-5 mm. long, the petals lanceolate, striate. Female flower: calyx triloc, 1-2 mm. long; corolla ca. 3 mm. long. Fruit globular, ca. 12 mm. long, yellowish. "Lawyer Palm". *C. muelleri* var. *macrospemus* H. Wendl. et Drude in *Linnaea* XXXIX (1875) 194.

North Coast, in rainforest. Mt. Warning, Rodway 10.1939 (50763); Whian Whian State Forest, north of Lismore, Constable 1.1953 (22467); Ballina, Maiden & Boorman, 12.1903 (47092); Broxner Park, ca. 5 miles NW of Coll's Harbour, Johnson 10.1959 (48684). Also present at least as far south as the Dorrigo and Bellinger River district. Also in Queensland.

This extremely prickly climbing palm may form tangled masses in rainforest, and its stems, leaves and inflorescences impede progress in such places.

3. ARCHONTOPHOENIX H. Wendl. et Drude

Tall monoecious palms with a single trunk marked or stepped with annular scars, otherwise smooth. Leaves large, pinnately divided, with long sheathing bases to the petioles; segments numerous, entire, tapering gradually to an acute apex. Inflorescence expanding after the fall of its subtending leaf and thus appearing at the base of the crown. Spadix compound, much branched from the apex of a short peduncle. Spathe 2-valved, the valves of equal length, caducous. Flowers purplish or white, typically in threes, the middle one female. Male flowers 3-angled and oblique in bud; calyx 3-lobed; petals 3, valvate, much longer than the calyx; stamens 9-18, exerted; anthers versatile or dorsifixed; rudiment of the ovary stout or slender. Female flowers more or less rounded, seated in a cupule of bracts; calyx and corolla imbricate and of similar length; ovary 1-locular, with 3 stigmas. Fruit 1-seeded, subglobose or ellipsoid, 1.5 cm. or less in length, coral pink or red at maturity; pericarp thin and fleshy. Seed not furrowed, raphe consisting of bands of loose or embedded fibres encircling the seed; endosperm deeply ruminant.

A small genus of about 3 species confined to tropical and subtropical eastern Australia, one only extending into New South Wales.

4.
A. cunninghamiana (H. Wendl.) H. Wendl. et Drude in *Linnaea* XXXIX (1875) 214; F. M. Bail., *Okla. Flora* V (1902) 1675 (as "*cunninghamii*"); Domin in *Bibl. Bot.* XX, Heft 85¹ (1915) 498; Maiden & Betche, *Census* (1916) 35; Maiden, *Forest Flora* VII (1920) 193, t. 244; L. H. Bail. in *Gent. Herb.* III (1935) 407, ff. 227, 228 p.p., 229 p.p., 230, 231, 234b, 235 p.p., 238 p.p. Tall graceful palm, up to ca. 20 m. Trunk ca. 25 cm. diam. at 2 m. from the ground, only slightly enlarged, if at all, towards the base. Leaves 3-4 m. long including the petiole (20-25 cm.), with a sheathing base 70-90 cm. long; segments 80-90 pairs, 60-90 cm. long, the largest 5-8 cm. broad, green on both surfaces; mid-vein prominent above and below, the secondary veins not very prominent, veins near the margin very fine; underside of the mid-vein with scattered, long, narrow, blackish or brownish scales. Spadix 100-150 cm. long, divided into numerous pendent spikes 50-80 cm. long. Flowers purplish throughout except the pollen, sessile, usually 3 together, the laterals male, the central female, but the latter aborted towards the tips of the spikes. Male flowers: sepals deeply cordate, ca. 2 mm. long, 2-3 mm. broad; petals 5-6 mm. long, 3-4 mm. broad, turgid, obliquely acuminate, stamens ca. 15, united at the base to a thick disc; filaments 3-5 mm. long, thick, flexuose in upper portion; anthers 2.5-3 mm. long; rudimentary ovary 2-3 mm. long, ca. 1 mm. thick near base, conical, with 2 or 3 divergent rudimentary styles and stigmas. Female flowers maturing after the fall of the males, the stigmas but not the perianth expanding at anthesis; stigma trifid, the lobes divergent. Fruit red, subglobose, 1.3-1.5 cm. diam.; pericarp fleshy, thin, supported by numerous broad bands of hard tissue (raphe) separable

with difficulty from the seed. Seed ca. 1.0 cm. diam. Flowers autumn. "Bangalow Palm", "Piccabeen Palm". *Ptychosperma cunninghamiana* H. Wendl. in *Bot. Zeit.* XVI (1858) 346; Benth., *Fl. Austr.* VII (1878) 141 (as "*cunninghamii*"); Moore & Betche, *Handb. Fl. N.S.W.* (1893) 427. (as "*cunninghamii*"); *Jessenia amazonum* Drude in *Mart., Fl. Brasil.* III (1882) 474, t. 109; *Loroma amethystina* O. F. Cook in *Journ. Wash. Acad. Sci.* V (1915) 118; *L. cunninghamiana* (H. Wendl.) O. F. Cook, l.c. (in note).

North and Central Coast and also South Coast north of Bateman's Bay, in or near rainforest especially in valleys and moist places. Orara State Forest, Constable 5.1956 (47114); Cedar Brush Creek, 18 miles S of Nowra, Floyd 8.1952 (47070); southern headwaters of Mathie's Creek, 4 miles W of Wandandian, Johnson & Constable 2.1960 (49572, 49791); Pebley Beach, between Kioloa and Durras Water, N of Bateman's Bay, Constable 6.1960 (53968). Also widely distributed in rainforest areas of the North Coast and ranges (up to 3,000 feet on the Gibraltar Range W of Jackadgeri), and present in the Wyong and Gosford districts, at Port Hacking R., Royal National Park, occasionally on slopes of the Illawarra escarpment as far south as Cambewarra, and at Conjola Creek, 29 miles S of Nowra. Also in Queensland.

This species was first described and figured by W. J. Hooker, in *Bot. Mag.* LXXXVIII (1857) sub t. 4961, under the misapplied name *Scaevola elegans* R.Br. The error was corrected by Wendl. in 1858, his *Ptychosperma cunninghamiana* being based on Hooker's figure and description (excluding the description of the fruit, quoted from Martius' description of the true *Ptychosperma elegans* (R.Br.) H. Wendl.). In *Bot. Mag.* CXX (1894) sub t. 7345, J. D. Hooker states that t. 4961 was a figure of *P. alexandrae* (= *Archontophoenix alexandrae* (F. Muell.) H. Wendl. et Drude). This is incorrect. The spelling "*cunninghamii*" used by Benth. and others is an error. In horticultural usage the names *Scaevola elegans* and *Ptychosperma elegans* have been widely used for *A. cunninghamiana*, although *P. elegans* is in fact an entirely different palm. *Jessenia amazonum* Drude was based on a plant cultivated in Rio de Janeiro, mistakenly thought to be a native of tropical Brazil; the excellent plate leaves no question of its identity. *Loroma amethystina* O. F. Cook was based on plants grown in California; these clearly belong to the present species.

The timber is not used for any other than temporary purposes. The leaf-bases have been used by the Aborigines to form carrying utensils for domestic purposes. *A. cunninghamiana* is planted for ornamental purposes here and in many other parts of the world. Seedlings of *Archontophoenix* can be distinguished from those of *Livistona* by the presence of a deep, broad, V-shaped notch in the apex of the leaf (which is larger than those of *Calamus* and *Linospadix* seedlings).

4. LINOSPADIX

Dwarf unarmed monoecious palms. Stems cane-like, marked with annular leaf-scars. Leaves pinnately divided, in a terminal crown. Inflorescence arising from amongst the leaves. Spadix unbranched and spike-like. Spathes 2 or 3, inserted separately; one short and coriaceous, enclosing the base of the peduncle; another long, linear, membranous, enclosing the spike, but later splitting lengthwise; a third more or less rudimentary spathe is often present, very variable in size, inserted near the base of the spike. Flowers numerous, sessile, typically in threes, the middle one female and maturing much later than the males. Bracts rudimentary. Male flowers: sepals 3, imbricate; petals 3, valvate, rigid, much longer than the sepals; stamens 8-12, on very short filaments which are never geniculate; anthers erect, attached at or slightly above the base. Female flowers: sepals and petals closely imbricate; ovary elliptical, the stigmas 3, small. Fruit small, oblong-ellipsoid, succulent; fibres of the mesocarp undivided, parallel, extending the length of the fruit in a single layer.

About 10 species in New Guinea and Queensland, one of which extends into New South Wales. The name *Linospadix* was wrongly applied by Beccari to another species, but the syn. name *Bacularia* actually means Walking Stick and for many years *Monostachya* was used in this fashion.