homestead, *Kenneally 10978*, 30 June 1989 (PERTH, NSW); Mt Leake, *Fitzgerald 1206*, July 1905 (PERTH); Mt Broome, *Fitzgerald 815*, May 1905 (PERTH)

Notes

1. This was formerly confused with *L. alfredii* (e.g. Fitzgerald 1918; Gardner 1923 and see note under that species).

2. Fitzgerald (1918) reported '*L. alfredii*' as occurring on 'Mts Herbert, Broome, Leake and Barnett; Isdell, Harris and Phillips Ranges; junction of Hann and Barnett Rivers (W.V.F.)' — some of which fill in the crescent formed by the King Leopold and Durack Ranges.

3. Gardner (1923) gives for '*L. alfredii*' the distribution 'Synnot Creek near Charnley River, King Leopold Ranges near Prince Regent River, and sandstone ranges near the lower King Edward River and Napier Broom Bay. Among sandstone rocks in elevated situations, King Leopold Ranges and Sir Frederick Hills.' Some of these localities would extend its distribution a long way north, but it is more than likely that they represent occurrences of *L. lorophylla*, which Gardner apparently did not distinguish from his '*L. alfredii*'. Neither Fitzgerald nor Gardner appear to have collected specimens to support their observations, which is perhaps understandable considering the conditions under which they travelled.

4. Its closest relationship appears to be with *L. lorophylla* Becc., from which it differs principally in its overall larger dimensions, its pruinose foliage and its much thicker, more rigid inflorescence rachillae. It is possible that toward the northern part of its range it may show some intergradation with that species, in that one or two specimens seen have not been unequivocally referable to one or the other. It is possible even that further study may show it to represent an arid race of *L. lorophylla*, but for the meantime it seems preferable to treat it as a distinct species.

5. The type locality in the Durack Range is also the type locality for *L. mariae* subsp. *occidentalis*, and indeed these two very different taxa grow together here in a rocky ravine, but showing different ecological preferences, with a grove of *L. mariae* confined to permanent soaks in the bed of the ravine, and scattered *L. kimberleyana* among rocky outcrops on the lower slopes — the populations nonetheless intermingling at the boundaries. At the time of my visit I observed (and photographed) some individuals that did not seem clearly referable to one or another of these taxa and suspected that they might be hybrids, but time did not permit collection of a specimen.

15. L. victoriae *Rodd*, **sp. nov.**

Palma solitaria magnitudine mediocris, trunco ad 12 (–20) m alto, c. 20 cm diametro. Coma foliis pruinosis rigide radiantis; petioli c. 1 m longi, 25 mm lati proxime laminam. Lamina valde costapalmata, c. 1 m longa. Inflorescentia 4–8 ramis lateralibus, illis denuo 4-plo ramosis, rhachillis 0.5–3.0 cm longis, gracillimis. Fructus subglobosi-ellipsoidei, in siccitate ad 11 mm longi, 10 mm diametro, sutura ventrali manifesta. Semina intrusione testa laterali, parvo, embryone fere basali.

Type: Northern Territory: c. 3 km W (by road) of Victoria River crossing, Katherine–Kununurra road, 15°35'S, 131°06'E, alt. c. 80 m, *A.N. Rodd 2934*, 3 Nov 1974; holo NSW; iso DNA, K, PERTH.

[*Livistona* sp. 'Victoria River' (Jones 1984); '*Livistona* sp. B' (Wilson 1992: 1250)]

Trunk solitary, to 12 (–20?) m high, c. 20 cm diameter at 1 m above ground, hardly reducing upward, broadening close to ground into a somewhat bulbous swelling to c. 30 cm diameter. Surface rather obscurely ringed with sheath scars, becoming smooth on lower trunk with age; vertical fissures not very conspicuous; petiole-stubs c. 4 cm

long present on lowest 2–3 m of trunk, closely appressed with irregular, abraded or somewhat ragged ends.

Crown rather open, with pale blue-grey cast, globose or slightly elongated, consisting of 30–40 leaves with gently arching to drooping petioles, the leaf-blades continuing in the same plane with straight segment-lobes but conspicuously decurving costa. Ligules prominent, whitish or pale brown, contorted, subglabrous, strongly impressed between fibres, tearing early from petioles but leaving large, roughly triangular remnants attached to them.

Petiole 100–110 cm long, 22–28 mm wide, strongly flattened-triangular in t.s. with rounded keel, slightly concave above but often with slight median keel. Margins obscurely denticulate or toward base armed with irregularly scattered blunt, antrorse or patent prickles up to c. 2 mm long. Surfaces pale dull pinkish, strongly pruinose, obscurely and finely striate; lower surface, and to a lesser extent upper, bearing unevenly but densely scattered groups of slightly elongated shallow pits containing brown linear rows of minute basal-masses, appressed white fimbriate scales spreading from margins of pits, glabrescent with age. *Hastula* flat; base narrowly V-shaped to somewhat ovate-apiculate, often very asymmetric; rim at c. 20° to costa, 3–7 mm wide, with mostly narrow necrotic margin.

Lamina 90–110 cm long, 0.35–0.40 mm thick, strongly costapalmate, with broad basal sinus, fairly stiff and harsh, tough and not readily split; strongly contorted with 1 adaxial undulation either side of the strongly deflexed costa, at base on either side shortly involute with lowermost 2–3 segments resupinate. *Segments* 20–28 either side of costa; largest segments 29–40 mm wide, free for 55–65% of their length, tapering slightly toward point of bifurcation, bifurcated for 55–70% of free length, the lobes evenly tapering but attenuated at apices into slender, necrotic threads, breaking off with age. Intersegmental appendages present, moderately persistent, straight, white, mostly c. 5 cm long. Ribs: abaxial ribs in t.s. oblong, somewhat bluntly square-edged, c. 2.5 mm deep, c. 1.0 mm wide; adaxial ribs very similar. Venation: major longitudinal veins 9–11 either side of abaxial rib, moderately prominent above, less prominent below; transverse veins moderately prominent on both surfaces, often steeply angled, often continuous across most of the width of the half-segment. Surfaces concolorous, strongly pruinose, glabrous except for ribs bearing scales and brown markings as on petiole.

Inflorescences variable in length, from slightly shorter than petioles to about petiole plus half lamina length. Partial inflorescences 5–9, subequal, the largest slightly over half total inflorescence length, each branched to 4 further orders; rachillae 0.4–3 cm long, 0.4–0.6 mm thick, cream when fresh, glabrous; larger axes striate, often very sinuous; all axes minutely papillose (appearing pallid with age). Rachis bracts usually loose and distorted, becoming split and raggedly fibrous with age, thick and harsh-textured, straw-coloured aging silver-grey though more reddish-brown toward apices, finely striate, unevenly but often densely woolly with closely appressed, matted, somewhat curly, narrow white scales; bract apices elongated, acute or obtuse, never cuspidate. *Flower-clusters* 0.5–3 mm apart, 1–2-flowered; cluster axis 0.2–0.7 mm long, cylindrical, moderately slender; longer cluster axes often with lateral flower closer to base than apex. Cluster-bract very short, rounded or minutely apiculate. Bracteoles not detectable.

Flowers: Anthopodium c. 0.5 mm long, bulging downward at base. Sepals membranous, closely appressed to petals, connate for over ½ their length with very broad shallow sinuses, triangular, acute. Petals c. 1.2 mm long, rather narrowly triangular-ovate, acute and cymbiform at apex; inner face with 3 fairly deep cavities. Stamens at least ¾ as long as petals, connate for c. ¼ their length; filaments broadly triangular-ovate, tapering smoothly to an elongated slender apex. Carpels not seen.

Fruit (only immature and long-fallen fruits seen) spherical-ellipsoid, strongly flattened adaxially, c. 11 mm long, 10 mm diameter, abruptly narrowed at base into a very short

conical extension, ventral suture evident. Epicarp reddish-brown (immature, dry) or grey-brown (fallen), minutely verruculose. Mesocarp apparently very thin, deep red-brown on inner surface. Endocarp c. 0.15 mm thick. *Seed* c. 9 mm long, flattened on adaxial face. Intrusion penetrating from lateral position for ¼ to ½ seed diameter, in l.s. with very narrow base and small lobes directed away from embryo. Embryo sub-basal. (Fig. 1b, 4f, 17c)

Distribution: confined to the region of the border between the Northern Territory and Western Australia, north of about 18° latitude. It is abundant in the vicinity of the middle and lower parts of the Victoria River (downstream of Victoria River Downs Station), and much of the Ord River basin, though apparently not downstream of Kununurra. Two sites where it occurs in great abundance are the Bungle Bungles, south of Lake Argyle, and Jasper Gorge, a western tributary of the Victoria River a short distance north of Victoria River Downs. To the northeast, populations of what is very likely this palm were seen from the air on ranges forming the watershed between the Fitzmaurice and Katherine Rivers. For references to possible southern extensions of its range see Note 4 below.

Ecology: apparently virtually confined to sandstone range country, where it grows in rocky ravines, on slopes below cliffs, on cliff ledges, and less commonly along gravelly or sandy watercourses, all habitats where there is permanent seepage water available to its roots. Trees with which it is commonly associated include *Corymbia aspera, Ficus leucotricha, Terminalia canescens, Owenia vernicosa, Gardenia* spp. and *Acacia* spp. The dominant grass is nearly always *Triodia.*

Conservation status: although this species has received the coding 3KC– (Briggs & Leigh 1996), it is now known to occur in very large populations, with many local concentrations scattered over a considerable area of the Ord and Victoria River catchments, mostly on rocky, inaccessible sites and it is very adequately conserved in the Bungle Bungle–Purnululu National Park (WA) and the Gregory National Park (NT). For these reasons is should be regarded as 'not at risk' and should no longer have a ROTAP listing.

Specimens examined: Northern Territory: Victoria River: Yambarran Range, *Leach 4554 & Walsh*, 16 May 1994 (DNA, NSW,BRI, MEL); N side of Jasper Gorge, upper slope below cliffs of sandstone, *McGillivray 3804 & George*, 15 June 1978; Jasper Gorge, *Parker 1065*, 13 July 1977 (DNA, NSW); *Byrnes 1718*, 17 Sep 1969 (DNA, CANB, PERTH); 5 km E of Victoria River crossing, *Maconochie 2493*, 8 Oct 1980 (DNA, NSW).

Western Australia: Gardner: Ord River Basin, *Koford & Dortch 120*, Sep 1974 (PERTH); Tributary of Keep River, *Lullfitz s.n.*, Nov 1978 (DNA, NSW); Thompson Spring, c. 40 km SE of Kununurra, *Ryan s.n.*, 6 June 1979 (PERTH, NSW); 7 miles [11.3 km] E of Denham [=Dunham?] River Station, *Perry 2529*, 19 July 1949 (CANB, NSW); Cabbage Tree Creek, Carr Boyd Ranges, E Kimberleys, *Rodd 2800*, 17 Oct 1974 (NSW, K, PERTH); Carr Boyd Range, Wyndham to Halls Creek road, *Hand s.n.*, 1978 (NSW 108860b); near Lucky Hill, 23 km NNE of Dunham River HS., NE Kimberleys, *Lazarides 8552*, 13 Mar 1978 (CANB, K, PERTH); Piccaninny Creek Gorge, 15 km SE of Bungle Bungle Outcamp, Bungle Bungle Range, NE Kimberley, *Blackwell BB419*, 6 Apr 1985 (PERTH); Bungle Bungle Range, gorge 3 km SE of Bungle Bungle Outcamp, *Kenneally 9260*, 8 July 1984 (PERTH); Gallery Forest 16 km NE of Bungle Bungle Outcamp, E Kimberley, *Kenneally 9212*, 5 July 1984 (PERTH); Frog Hole Canyon, N end of Bungle Bungle Range, *Briggs 9307* 1 Aug 1994 (NSW); Gorge off Piccaninny Creek, Bungle Bungle Range, *Briggs 9309*, 5 Aug 1994 (NSW); Teroni Gorge, 12 miles [19 km] NNW of Elgie Cliffs Station, E Kimberleys, *Lazarides 6395*, 22 July 1959 (CANB); Bens Springs, 3 km E of El Questro homestead, *Kenneally 10965*, 29 June 1989 (PERTH, NSW).

Notes

1. A well-marked species showing clear morphological and geographical demarcation from others in the region. In leaf characters it approaches most closely to *L. alfredii*, differing slightly but consistently in depth of lobing and bifurcation of segments;

the trunk is also more slender. The large inflorescences, ramified to 5 orders and with most rachillae extremely short (4–10 mm), together with the small fruits, and seeds with small endosperm intrusion, combine to make this a very distinctive species.

2. The epithet *victoriae* alludes to its occurrence in the vicinity of the Victoria River, but the genitive form is used to complete a trio with *L. alfredii* and *L. mariae*, named respectively for Queen Victoria's son and daughter-in-law and occurring more or less equidistant from the present species in similarly semi-arid habitats.

3. It is puzzling that this has remained unrecognised as a species for so long, or indeed not even represented by any herbarium collection until Perry's in 1949. It must have been a familiar plant to pioneer pastoralists of the eastern Kimberley Region from the 1880s onward. Further, Mueller himself must have seen it in the course of his journey up the Victoria River with Gregory in 1854.

4. In his autobiographical book, *Boss Drover*, Keith Willey (1971: 113) refers to the former presence of native palms 'at Lewis Creek and in isolated places in the desert', and to 'groves of them at Flora Valley and Sturt Creek but the pioneers cut them all down to build sheds and yards.' These three localities are all in Western Australia not far from the Northern Territory border between 18°10' and 19°10'S, much further south than any of the collections cited here. He also mentions a solitary, tall palm at 'Palm Spring' on Montejinnie Station, which is ESE of Victoria River Downs. From his descriptions of the trunks these palms could well be *L. victoriae,* though *L. mariae* is another possibility.

5. Wilson (1992) describes the fruit as 'black, globular, ca 15 mm across'. Fresh mature fruits may be somewhat larger than dry ones, but I have not seen fruits of such a large diameter nor any that are quite black in colour in the dry state. *Briggs 9307* from the Bungle Bungle Range has apparently mature fruits — though described by the collector as 'green' (August), when dry they had turned chestnut-brown with closely wrinkled skin; they conform to the previously recorded dimensions of 11 mm length and 10 mm diameter. B. Briggs (pers. comm.) considered that fruit colour was a consistent feature distinguishing the green-fruited Bungle Bungle palms from the black fruited plants of *L. eastonii* on the Mitchell Plateau. *Maconochie 2493* bears the label note 'Fruit globular, green, drying black, thin pericarp.' But the dried fruits of his specimen, apparently virtually mature judging by the hardness of the endosperm, are a somewhat reddish-tan with closely wrinkled skin.

16. L. alfredii F. Muell.

Mueller (1892: 112; 1893: 28); Drude (1893: 12); Dammer (1905: 297); Fitzgerald (1918: 24 p.p.); Beccari (1921: 18; 1931: 82, t.6).

Type: Western Australia: Millstream, Hamersley Range, *J. Forrest,* 1883(?); holo MEL.

[*L. mariae* F. Muell. (1878), as to specimens from Fortescue River, W.A.]

Trunk solitary, to 10 or possibly 12 m tall, 30–35 cm diameter at 1 m above ground, broadening more or less abruptly at base, often with flaring rim of corky plates above conical root mass up to 30 cm high. Surface closely ringed with sinuous scars, somewhat bulging between these to give a transversely corrugated appearance; vertical fissures close-set, deep, somewhat zig-zagging; basal 1–2 m of trunk bearing persistent, irregularly broken-off petiole stubs 3–5 cm long, or sometimes whole dead leaves.

Crown globose, moderately dense, consisting of c. 25–30 leaves, the petioles mostly gently recurved, usually with a few dead leaves hanging vertically below. Ligules fairly prominent, with smooth, almost unbroken surface, very pale buff-coloured, whitish scurfy-tomentose.