

**Distribution.** *Burretiokentia grandiflora* is only known from the upper Rivière Bleue valley in southern New Caledonia (Fig. 7), from the banks of the river at 200 m elevation about to the ridge of Montagne des Sources at 900 m elevation.

**Ecology.** *Burretiokentia grandiflora* grows in very wet forest (rainfall >3 000 or 4 000 mm per year) on deep, often humic soils overlaying peridotites or gabbros on well-drained slopes or wet depressions.

**Conservation Status.** Low risk, conservation-dependent (LRcd). Two populations of this species are known at 200 m and 900 m elevation on the same slope, each consisting of ~10 adults with juveniles and seedlings. Since exploration in nearby areas of similar forest resulted in no additional plants, it seems that *Burretiokentia grandiflora* occurs in extremely scattered, small groups, a pattern similar to the distribution of *Lavoixia macrocarpa* on Mont Panié. Contrary to *Lavoixia* though, *B. grandiflora* has normal regeneration. The species is adequately protected since its entire range is included in the Provincial Park of Rivière Bleue and the Réserve Naturelle Intégrale of Montagne des Sources.

**Taxonomic History.** Raymond Lavoix found this very rare species in a remote place away from trails high on a slope overlooking the valley of the Rivière Bleue. Gilles Pierson later found it near the Rivière Bleue in 1997.

*Burretiokentia grandiflora* is especially remarkable for its large flowers, bracteoles, and triad clefts, and leaves with few, wide pinnae. Fruits are also unusually large but are still imperfectly known. Leaf sheaths are less prominently keeled than in the two other species, and the new leaf expands light green, not red.

***Burretiokentia koghiensis*** Pintaud and Hodel **sp. nov.** (Fig. 3 A, B, C)

*Burretiokentia dumasii* Pintaud and Hodel affinis sed foliis ascendentibus, pinnis numerosis, rachillis glabris, seminibus elongatis differt. Typus: New Caledonia, Mont Koghi, 500 m elev., 22°10'S, 166°30'E, 26 Sept. 1996, (stam. fl.) J.-C. Pintaud 403 (holotypus P; isotypi BH, K, NOU).

Solitary, sub-canopy to canopy palm. Trunk 10–18 m tall, 12–17 cm dbh, prominently ringed. Leaves 12–17, borne in five ranks, erect to ascending and finally spreading, straight or twisted laterally, expanding red; sheath 60–80

cm long, cylindrical to bulbous, distally costate along petiole axis, proximally rounded, abaxially pale green, covered with thick, white tomentum, adaxially bright pink with sparse to rather dense, white indument, splitting in distal 3/4 opposite petiole and terminating on petiole in two fibrous, chartaceous, prominent wings; petiole 15–35 cm long, winged at least in proximal half or up to rachis base, adaxially channelled, glabrous, abaxially angled, initially white or grey-tomentose, aging punctulate; rachis 2.20–2.90 m long; pinnae 35–45 on each side of rachis, borne in one plane, median ones 80–110 × 5–8.5 cm, distal ones 30–35 × 3 cm, proximal 2–3 pairs 25–30 × 0.8–1.5 cm, all straight, forward-pointing, acute to acuminate, 1-ribbed, glossy green and glabrous on both surfaces, paler abaxially, midrib prominent adaxially, bearing sparse brown scales, midrib very prominent abaxially, bearing brown-centered, white-margined scales, 2–8 secondary nerves scarcely prominent, scales more abundant proximally. Inflorescences 1–4, infrafoliar, drooping, protandrous, 40–60 cm long, cream-colored to pink becoming pale green when exposed, branched to 3 orders; peduncle 4–8 cm long, 3–5.5 cm wide and 2–3 cm thick distally, covered proximally up to attachment of 3rd peduncular bract with dense white tomentum, glabrous distally; prophyll 25–40 × 10–15 cm, inserted 2–3.5 cm above peduncular base, bicarinate, bifid, chartaceous, incompletely encircling peduncle at insertion abaxially, splitting to 1/4–2/5 its length on opposite side, abaxially pale green with white-floccose tomentum, adaxially bright pink, glabrous; first peduncular bract 40–70 × 10–15 cm, oval-elongate, acuminate, chartaceous to woody, to 2 mm thick, completely encircling peduncle at insertion, inserted 1–2 cm above prophyll and exceeding it by 1/3–1/2, color and indument same as prophyll, second peduncular bract very prominent, to 30 × 15 cm, acute or bitrifid or truncate, sparsely tomentose abaxially, ciliate marginally, glabrous adaxially, third peduncular bract to 9 × 4.5 cm, shape and indument same as second one; rachis 12–19 cm long, main branches 6–8, 3–5 cm long, 1.5–2 cm wide, second order branches 0.5–1.5 cm long, all branches angled, glabrous; bracts subtending lower main branches prominent, 5–25 cm long, 3–6 cm wide at base, triangular-subulate or 2–3-fid, tomentose abaxially, subsequent bracts 0.5–6 × 1.5–3.5 cm, triangular-acuminate or en-

larged basally and abruptly subulate, glabrescent; rachillae 20–30, 20–45 cm long, 0.5–1 cm diam., straight, rounded, glabrous except in triad clefts. Flowers in triads in proximal 2/3 to 4/5 of rachillae, only paired or solitary staminate flowers distally, triads closely arranged in 3 spiralling rows, disposed in horizontal elliptic clefts 6–7 mm long, 4–5 mm high, 3 mm deep, distal wall of cleft pubescent; bract subtending triads prominent, broadly rounded, sharp-edged, glabrous; outermost bracteole 3.5–4.5 × 1 mm, collarlike, next 2 bracteoles surrounding pistillate flower 4–5 × 3–3.5 mm, subequal, sepallike, cupped; margins of bracteoles, sepals, and petals fringed with minute, whitish hairs 0.25 mm long; pedicels of staminate flowers 0.5–0.9 mm high, flattened, densely fringed with whitish hairs distally; staminate flowers in bud 6 × 4 mm, bullet-shaped, at anthesis contiguous, 11 × 11 mm; calyx 2.5–3 × 5 mm, cuplike, sepals imbricate nearly to apex, concave adaxially, prominently keeled abaxially, margins rounded; petals 6.5–7 × 3.5–4 mm, ovate, much exceeding sepals, valvate, spreading apically, acute, connate in basal 1/6, lightly grooved adaxially, ± pulvinate, striated abaxially when dry; stamens 6, 8 mm high, conspicuously exceeding petals, erect to spreading, filaments 7 mm long, flattened-columnar, inflexed apically, connate basally in a 0.5 mm high ring and adnate to petals and pistillode to form a 2.75 mm high base, anthers 2.75–3 mm long, dorsifixed slightly below middle, locules briefly united by a central connective, each with a sterile, tanniferous median part marked with included raphides; pistillode short, 2.5 mm high, broadly conic; pistillate flowers 7 × 5 mm, ovoid; calyx 4.5 × 4–5 mm, cuplike, sepals cupped, imbricate nearly to apex, broadly rounded or truncate, fringed; petals 6 × 3.5–4 mm, equalling pistil, cupped, imbricate except valvate tips, thin; staminodes 3, within 1 petal, 1 mm long, triangular; pistil 6 × 3 mm, ovoid, stigma trifid, lobes small, ± blunt, rough, erect to slightly recurved, ovule pendulous. Fruits 16 × 10.5 mm, oval, immature whitish-green becoming pink and finally dark purple at maturity, perianth 5 mm high, stigmatic remains subapical, epicarp smooth, mesocarp 1.25–1.5 mm thick, grainy with numerous tannin cells and few, short longitudinal fibers, endocarp thin, crustaceous, sculptured and costate, with a band of fibers adherent to costa, operculate; seeds 11 × 7 mm, deeply sculptured and fluted

longitudinally with a prominent costa running the length of the seed; endosperm homogeneous, embryo basal. Germination adjacent-ligular, eophyll deeply bifid; seedlings and juveniles like those of *B. dumasii*.

*Additional Specimens Examined.* NEW CALEDONIA. Mont Koghi, 600 m elev., 6 Nov. 1951 (old infr.), *M. G. Baumann-Bodenheim* 15746 (BH, P, Z); Mont Koghi, in rain forest on serpentine, 500 m elev., 22°10'S, 166°30'E, 29 Nov. 1994 (seedlings), *J.-C. Pintaud, J.-M. Veillon and J. Favier* 78, 80 (P); 20 Dec. 1994 (juv.), *J.-C. Pintaud, J.-M. Veillon and J. Favier* 103, 105, 106 (P); *id.* 29 Dec. 1994 (juv.), *J.-C. Pintaud and H. Jourdan* 119, 120 (P); *id.* 17 Jan. 1995 (juv.), *J.-C. Pintaud* 133 (P); *id.* 22 May 1995 (buds), *J.-C. Pintaud* 198 (K, P), *id.* (juv.), *J.-C. Pintaud* 199 (P); *id.* 8 Sept. 1995 (stam. fl.), *J.-C. Pintaud* 260 (BH, K, NOU), *id.* (pist. fl.), *J.-C. Pintaud* 261 (BH, NOU, P), *id.* (stam. fl.), *J.-C. Pintaud* 262 (BH), *id.* (pist. fl.), *J.-C. Pintaud* 263 (K, P), *id.* (pist. fl.), *J.-C. Pintaud* 264 (P); *id.* 12 Jan. 1996 (fr.), *J.-C. Pintaud and M. Dumas* 311 (K), 312 (NOU), 313 (BH, K, NOU, P), 314 (P).

*Distribution.* *Burretiokentia koghiensis* is only known from the southeast and southwest slopes of Mont Bouo in the Mont Koghi massif above Nouméa (Fig. 1) at 500–600 m elevation.

*Ecology.* *Burretiokentia koghiensis* is restricted to a narrow band of serpentine rocks located between the schistose base and peridotitic cover of Mont Bouo (Fig. 1). It occurs in the rain forest understory or canopy in very rocky habitats on brown hypermagnesian, neutral soils of serpentine origin (Fig. 4).

*Phenology* (Fig. 2). Flowering of *Burretiokentia koghiensis* is very seasonal. Anthesis occurs August–October and fruits mature in December–January. Plants are sterile February–April, the first inflorescences appearing in May but the flowers remaining in bud until September. The thick first peduncular bract often does not open before anthesis, suggesting self-pollination can occur. Bees visit exposed flowers.

*Conservation Status.* Vulnerable. *Burretiokentia koghiensis* is known from a single location in an area ~4 × 0.5–1 km. Despite its restricted range, it is abundant where it occurs and regeneration is good. However, the status of the location is very complex since several parties, including private and governmental entities, own and/or manage portions of the land. In recent

years, forest fires on Mont Koghi and in the Thy River valley and land clearing where *B. koghiensis* reaches its highest density on private properties have demonstrated that the site is not adequately protected. The forest was selectively logged half a century ago but this did not affect the palm populations.

*Taxonomic History.* *Burretiokentia koghiensis* was first collected in 1951, but mistaken for *B. vieillardii* with which it occurs. The only collection known to Moore (*Baumann 15746*) was listed under *B. vieillardii* in Moore and Uhl (1984). In the early 1990s, members of Association Chambeyronia noticed major differences between the two species (Dumas 1994) and named the new palm *Burretiokentia* sp. #83, in reference to a label in front of one specimen along the self-guided nature walk at the tourist site of Auberge du Mont Koghi. Seeds have been widely distributed as *Burretiokentia* sp. #83.

Concurrently, J.-M. Veillon and T. Jaffré of ORSTOM, Nouméa, working on the structure and floristics of the forest, noticed *Burretiokentia* sp. #83 was restricted to soils derived from ultramafic serpentine rocks, while *B. vieillardii* was confined to soils derived from schistose rocks; the two species occurring together only in the area of contact between both substrates (Fig. 1). The two species differ strikingly in their phenology (Fig. 2), and there is no evidence of hybridization.

*Burretiokentia koghiensis* is readily distinguished from *B. vieillardii* (Table 1) particularly

by the open, white-tomentose leaf sheaths (Fig. 5), the numerous, erect leaves expanding red and with many, closely inserted pinnae, the contracted, drooping inflorescences with a short rachis and first order branches, and the small fruits which change from white to purple at maturity (Fig. 8).

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### LITERATURE CITED

- DUMAS, M. 1994. Palmier endémique au Territoire: *Burretiokentia vieillardii*. *Chambeyronia* 3: 8-9.  
 IUCN, 1994. IUCN Red List Categories. Gland, Switzerland, 21p.  
 MOORE, H. E. AND N. W. UHL. 1984. The indigenous palms of New Caledonia. *Allertonia* 3(5): 324-325.

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