

## Three New Species of *Burretiokentia*

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*Burretiokentia vieillardii*, one of the most common and widespread palms in New Caledonia, is well known to palm botanists, horticulturists, and growers. It occurs almost from one end of the island to the other, seemingly wherever one enters the forest, and often forms large, gregarious populations. It is a common and popular palm, cultivated in many places around the world. Although New Caledonia had been extensively explored for palms from 1960–90, only one additional species in the genus, *B. hapala*, was discovered. After 30 years of palm exploration, it seemed unlikely and really unimaginable that additional, new species were hidden and still unknown in the island's forests.

The 1990s ushered in a new era of interest and exploration for palms in New Caledonia. Led mostly by local palm enthusiasts, three additional new species of *Burretiokentia* have been discovered, and it is with great pleasure that we present them here.

While conducting extensive searches for rare and unusual palms in the botanical sanctuary of Montagne des Sources, Raymond Lavoix, nurseryman and palm collector in Nouméa, stumbled across one of the new species, *Burretiokentia grandiflora* in a remote area well off a seldom-used trail, high above the valley of the Rivière Bleue. Gilles Pierson, a member of Association Chambeyronia, the New Caledonia Palm Society, later found it on a well-used trail along the upper Rivière Bleue. *B. grandiflora* is remarkable for its large inflorescences and flowers.

Perhaps the most astonishing discovery was *B. koghiensis*. It was found in a well-known and

easily accessible forest just a short 15 minutes' drive from Nouméa at the popular tourist site at Auberge du Mont Koghi. Even more remarkable is the fact that the individual from which the type specimen was collected is on a paved trail and marked with a posted sign numbered #83 on a self-guided nature walk! For decades botanists and palm collectors confused it with *B. vieillardii* which grows nearby. Only when members of Association Chambeyronia brought persistent attention to several critical characteristics did botanists scrutinize it more closely and determine it to represent a new species.

Finally, there is *Burretiokentia dumasii*, found by ORSTOM botanist Jean-Marie Veillon and government forester Serge Blancher while they were botanizing in Nodéla Valley in west-central New Caledonia. Veillon thought it was the same as *B. koghiensis*, but careful examination of inflorescences and fruits showed that it too, was a new species.

Just when it seemed we had them all, we were dropped by helicopter into a beautiful, pristine, remote, hidden valley in the Forêt de Saille, south of Thio, in June 1996; and there, staring us in the face, was still another, apparently different *Burretiokentia*. Unfortunately, we need additional material of this last *Burretiokentia* for critical analysis, so we are unable to place and/or name it at this time.

What we now know is that there are at least three and perhaps four new, distinctive species of *Burretiokentia*, all of which are more closely related to each other than to the previously described *B. vieillardii* and *B. hapala*. The three new species share several characteristics which separate them from *B. vieillardii* (Table 1), and are restricted to very small, isolated populations on soils derived from ultramafic rocks. That the widespread *B. vieillardii* is found near or with

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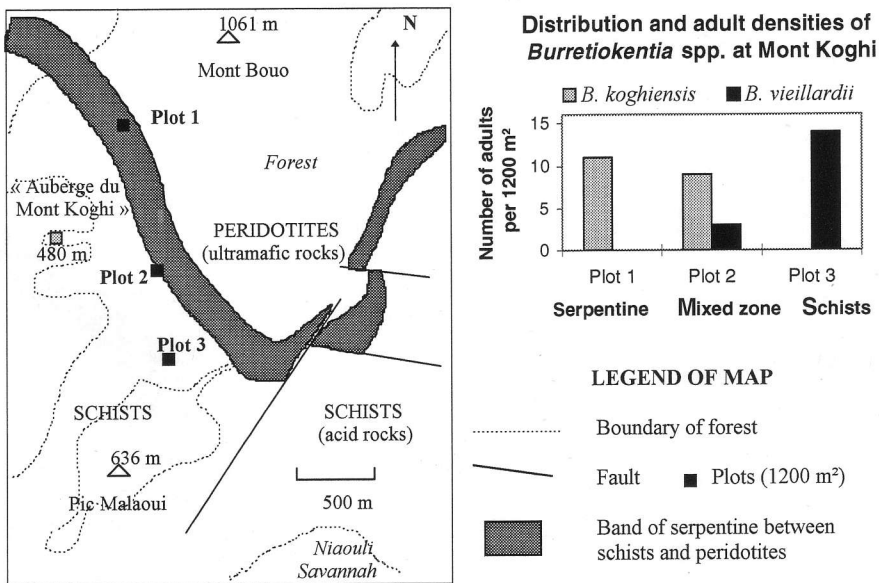
Table 1. Major differences between *Burretiokentia vieillardii* and the new species.

Characteristics	<i>Burretiokentia vieillardii</i>	All New <i>Burretiokentia</i> Species
Crownshaft	Prominent, leaf sheaths barely splitting opposite petiole.	Less prominent, leaf sheaths splitting deeply opposite petiole.
Shape of leaf sheath	Rounded or slightly costate apically along petiole axis.	Costate to keeled.
Indument of leaf sheath	Brown tomentum.	White tomentum.
Insertion of leaves	Spirally arranged.	In five ranks.
Secondary veins	Very prominent abaxially and densely covered by reddish-brown, often bullate hairs.	Scarcely prominent and with sparse, brown-centered, white-margined scales.
Indument of prophyll and first peduncular bract	Glabrescent to brown-tomentose.	White-floccose.
Second peduncular bract	Small, slightly or not exceeding peduncle.	Large, much exceeding peduncle.
Inflorescence indument	Glabrous to shortly brown-tomentose.	Glabrescent to white-greyish.
Phenology	Regular, flowering and fruiting year-round.	Seasonal.
Ecology	Widespread in rain forests on schistose or ultramafic rocks, 400–1300 m.	Always very local, restricted to ultramafic rocks at 200–1000 m elevation.

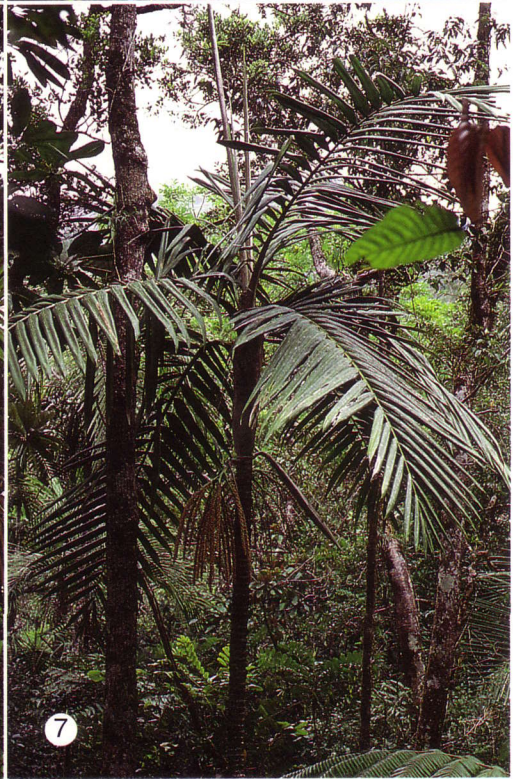
these new species and was confused with them probably explains why they were unrecognized until very recently. With the discovery of these new species and an understanding of their re-

stricted, localized distribution, we think *Burretiokentia* may now be the most promising palm genus for new discoveries in New Caledonia.

(Text continued on p. 160)

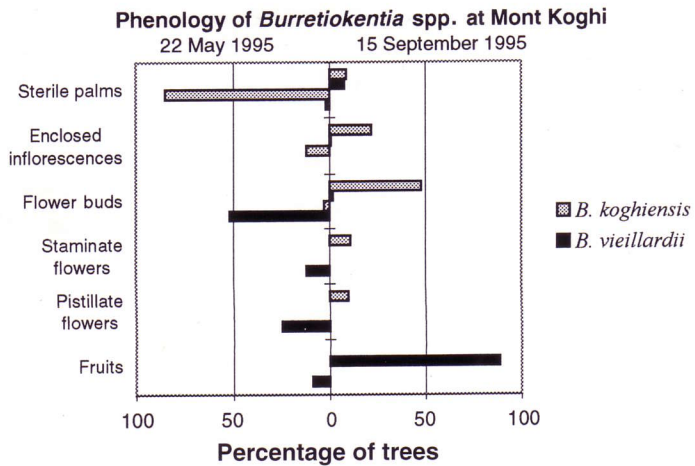


1. Distribution and adult densities of *Burretiokentia* spp. at Mont Koghi.





8. Inflorescences with immature fruits at the same stage. Left: *Burretiokentia vieillardii*; right: *B. koghiensis*. Mont Koghi, 500 m (Photo J.-C. Pintaud).



2. Phenology of *Burretiokentia* spp. at Mont Koghi.

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 4. *Burretiokentia koghiensis* Habit, Mont Koghi, 500 m. (Photo D. R. Hodel). 5. *Burretiokentia koghiensis*. Open, white-to-mentose leaf sheaths and immature fruits. Mont Koghi, 500 m. (Photo J.-C. Pintaud). 6. *Burretiokentia dumasii*. Habit, Nodéla valley, 600 m (Photo D. R. Hodel). 7. *Burretiokentia grandiflora*. Habit, upper Rivière Bleue, 200 m (Photo J.-C. Pintaud).

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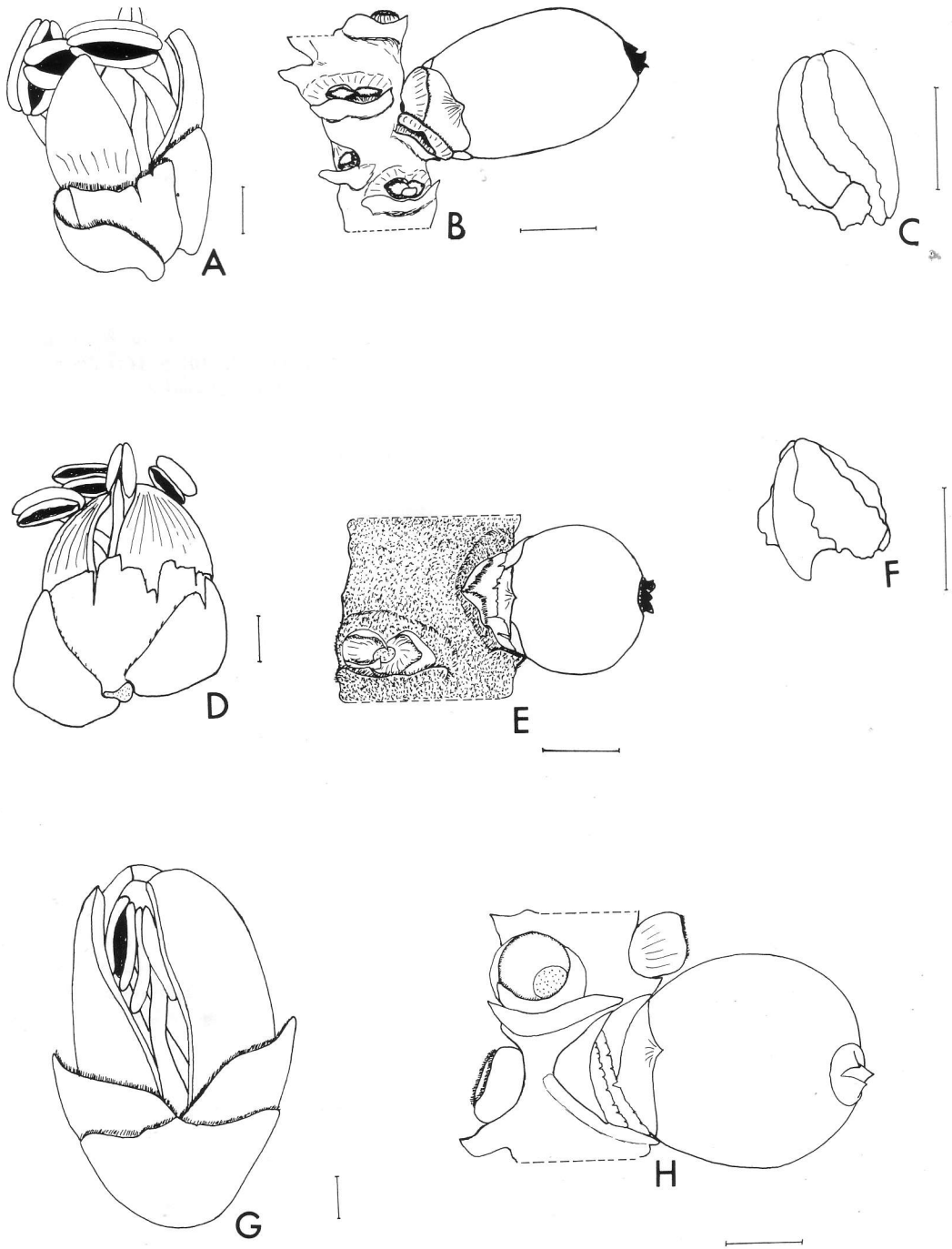
We name and describe these new species in anticipation of publishing a fully illustrated book, now in press, on the palms of New Caledonia.

**Burretiokentia dumasii** Pintaud and Hodel, **sp. nov.** (Fig. 3, D, E, F)

*Burretiokentia vieillardii* (Brongn. and Gris) Pichi-Serm. affinis sed vaginis tomentosus albis, petiolis alatis, rachillis tomentosus differt. Typus: New Caledonia, Nodéla Valley, 600 m elev., 21°26'S, 165°21'E, 15 Sept. 1995 (fl.), J.-C. Pintaud and Y. Bruireu 266 (Holotypus P; isotypi BH, K, NOU).

Solitary sub-canopy palm. Trunk 8–12 m tall, 10–13 cm dbh, prominently ringed. Leaves 10–12, borne in five ranks, spreading, expanding red; sheath 60–80 cm long, cylindrical, 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 on proximal half or up to rachis base, adaxially channelled, glabrous, abaxially angled, initially white or grey-tomentose, aging punctulate; rachis 2–2.50 m long; pinnae ~25 on each side of rachis, borne in one plane, median ones 80–100 × 5–8 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, stiffly spreading, protandrous, 40–60 cm long, entirely and persistently greyish-tomentose, branched to 3 orders; peduncle 5–7 cm long, 3–5.5 cm wide and 2–3 cm thick distally; prophyll 25–40 × 10–15 cm, inserted 2–3 cm above peduncular base, bicarinate, bifid, chartaceous, incompletely encircling peduncle at insertion abaxially, splitting to 1/4–2/3 its length on opposite side; first peduncular bract 40–60 × 10–15 cm, oval-elongate, rostrate to acuminate, thin, completely encircling peduncle at insertion, inserted 1–2 cm above prophyll and exceeding it by 1/3–1/2, pro-

phyll and first peduncular bract white-tomentose abaxially, second peduncular bract prominent, 8–13 × 3–5 cm, acute, bifid or truncate, densely greyish tomentose abaxially, glabrous adaxially, third peduncular bract to 5 × 3 cm, shape and indument same as second one; rachis 18–20 cm long, main branches 6–9, 5–8 cm long, 1.5–2 cm wide, second order branches 1–3 cm long, all branches angled; bracts subtending main branches triangular, 1–5 cm long, rachillae 18–35, divaricate, stout, 20–45 cm long, 1.3 cm diam.; rachis, branches, and rachillae densely greyish-tomentose. Flowers in spirally arranged triads except staminate only distally; triad clefts 8 mm wide, 4 mm high, 3 mm deep; bract subtending triad broadly rounded, densely fringed; outermost bracteole low, 4 × 2 mm, inner two bracteoles surrounding pistillate flower sepallike, subequal, 3–4 × 3–3.5 mm; staminate flowers in bud 6 × 5 mm, at anthesis 11 × 11 mm, calyx 4 × 6 mm, sepals imbricate, prominently keeled, rounded apically, fringed; petals broadly ovate, 5 × 4 mm, 1/3 longer than sepals, connate basally; stamens 6, filaments 4.5 mm long, connate basally in a short ring, inflexed apically, anthers 2.75 mm long, dorsifixed, locules with a central, sterile part; pistillode short, 2 mm high, conic; pistillate flowers 6.5 × 4.5 mm, ovoid-cylindrical; sepals 4 × 4 mm, rounded, sparsely fringed, imbricate; petals 5 × 5 mm, thin, broadly imbricate except valvate tips, fringed; staminodes three, within one petal, 1 mm long, triangular; pistil 6.5 × 3.5 mm, stigma trifid, lobes small, erect, ovule pendulous. Fruits 13 × 11 mm, obovoid-globose, pale green when immature, purplish at maturity, mesocarp grainy, tanniferous with few included fibers, endocarp thin, crustaceous, sculptured and costate, operculate, with a band of fibers adherent to costa; seeds 8 × 8 mm, obpyramidal, depressed apically, sculptured, costate, endosperm homogeneous, embryo basal. Germination adjacent-ligular, eophyll deeply bifid; seedlings becoming strongly trigonous at base with age, leaf sheath sharply angled, late bifid leaves tristichous, petiole and rachis densely covered with numerous, prominent blackish scales, lamina obtriangular, to 40 cm long, lobes to 5 cm wide, connate in proximal 2/5 to half; trunkless juveniles with keeled leaf sheaths, petioles angled abaxially, deeply channelled adaxially and prominently winged, litter trapping; leaf sheath marcescent on trunked juveniles, abscising and forming a crownshaft only in mature trees.



3. A, B, C. *Burretiokentia koghiensis*. A. Dried staminate flower (Pintaud 403). B. Fresh portion of rachillae with fruit (Pintaud 311). C. Seed (Pintaud 311). D, E, F. *Burretiokentia dumasii*. D. Dried staminate flower (Pintaud 266). E. Fresh portion of rachillae with fruit (Pintaud 317). F. Seed (Pintaud 317). G, H. *Burretiokentia grandiflora*. G. Dried staminate flower (Pintaud 335). H. Fresh portion of rachillae with fruit (Pintaud 392). Scale bars: 1 mm for flowers; 5 mm for fruits and seeds. Illustrations by J.-C. Pintaud.

*Additional Specimens Examined.* NEW CALEDONIA. Nodéla Valley, 600 m elev., in rain forest on ultramafic rocks, 21°26'S, 165°21'E, 25 Apr. 1995 (buds), J.-C. Pintaud, S. Blancher and T. Jaffré 166 (BH, K, NOU, P), *id.* (seedlings) 167, 168, 169, 170 (P), *id.* (buds) 171 (P); *id.* 17 Sept. 1995 (fl.), J.-C. Pintaud and Y. Bruireu 267 (P); *id.* 25 Jan. 1996 (fr.), J.-C. Pintaud and S. Blancher 317 (BH).

*Distribution.* *Burretiokentia dumasii* is known only from collections in Nodéla Valley on the Mé Maoya massif north of Bourail in west-central New Caledonia, at 600 m elevation (Fig. 6). According to observations and photographs by J.-P. Tivollier, however, it may also grow above Emma Mine on the ridge leading to Mé Maoya summit at 1100 m elevation, and if so, it probably occurs elsewhere on the massif. A collection at Forêt de Saille, south of Thio, in southeast New Caledonia (Hodel *et al.*, 1501) may represent the same species. In that case, *B. dumasii* may be relatively widespread.

*Ecology.* *Burretiokentia dumasii* occurs in rain forest on ultramafic rocks. It is found mostly on rocky, well-drained sites on oxysols derived from peridotites.

*Phenology.* *Burretiokentia dumasii* flowers in September and fruits in January.

*Conservation Status (IUCN, 1994).* Low risk, conservation-dependent (LRcd). The type and only documented locality in Nodéla Valley has been recently declared a Special Reserve of Flora and Fauna. The Forestry Service of Bourail manages and controls access to the reserve. Thus, although very rare, *B. dumasii* is adequately protected. This palm is abundant where it grows and regeneration is good.

*Taxonomic History.* J.-M. Veillon of ORSTOM and Serge Blancher of the Forest Service found *Burretiokentia dumasii* in 1992 when the Forestry Service began to manage the forests of Nodéla. A private company had partially logged Nodéla Valley prior to 1992.

*Etymology.* The name honors Marc Dumas, an ardent palm enthusiast who has greatly contributed to the study of New Caledonian palms in recent years and who helped in raising a new and strong interest in palms in New Caledonia with the founding of Association Chambeyronia, of which he is currently president.

*Burretiokentia dumasii* shares several characteristics with *B. koghiensis*, including the new leaf expanding red and the tristichous seedling

with a triangular base and prominent blackish scales. *Burretiokentia dumasii* differs from *B. koghiensis* in the less numerous, spreading leaves with far fewer pinnae, the stiffly spreading, densely tomentose inflorescences with stout rachillae, the obovoid-globose fruits, and the peculiar, pyramidal seeds (Table 2).

***Burretiokentia grandiflora*** Pintaud and Hodel **sp. nov.** (Fig. 3 G, H)

Species insignis pinnis latissimus, floribus et fructibus grandissimus, a ceteris speciebus bene distincta. Typus: New Caledonia, Montagne des Sources, 900 m elev., 22°08'S, 166°36'E, 9 Apr. 1996 (fl.), J.-C. Pintaud and J.-P. Tivollier 335 (holotypus P; isotypi BH, K).

Solitary, sub-canopy palm. Trunk 8–12 m tall, 9–14 cm dbh, prominently ringed. Leaves 8–12, borne in five ranks, spreading, expanding light green; sheath 40–80 cm long, fusiform, weakly costate distally to rounded, white tomentose abaxially, glabrous adaxially, splitting deeply opposite petiole nearly to base and terminating on petiole in two 20 cm long wings; petiole 18–25 cm long, channelled adaxially, weakly angled to rounded abaxially, glabrescent; rachis 2–2.80 m long; pinnae 20–25 on each side of rachis, borne  $\pm$  in one plane, median pinnae 80–90  $\times$  8–11 cm, distal ones 25  $\times$  2.5 cm, proximal ones 38  $\times$  3 cm (lorae absent), all acute, arranged at 5–11 cm intervals, green and glabrous on both surfaces, midrib prominent, bearing brown scales adaxially and brown-centered, white-margined scales abaxially, secondary veins slightly prominent abaxially, bearing sparse scales. Inflorescences 1–4, infrafoliar, spreading, 40–70 cm long, branched to 3 orders; peduncle 7–9 cm long, 3–6 cm wide and 1.5–2 cm thick distally, white-tomentose proximally up to insertion of first peduncular bract, indument becoming sparse above, distally green, glabrous; prophyll 27–48 cm long, inserted 2.5 cm above peduncular base, bicarinate, truncate, incompletely encircling peduncle on abaxial side, splitting in distal 2/3 on adaxial side of petiole, white-floccose abaxially, glabrous adaxially; first peduncular bract rather thick, 50–97  $\times$  12 cm, fusiform, prominently rostrate, indument same as prophyll, inserted 1.5–2 cm above prophyll, completely encircling peduncle at insertion, second peduncular bract 4–25  $\times$  3–11 cm at base, triangular to subulate, acute, sometimes inserted laterally and then en-

Table 2. Synopsis of differences among the three new *Burretiokentia*.

	<i>B. dumasii</i>	<i>B. grandiflora</i>	<i>B. koghiensis</i>
Seedling base	Triangular	Weakly angled	Triangular
New leaf	Red	Green	Red
Leaves	Spreading	Spreading	Erect to ascending
Number of pinnae per side	25	20–25	35–45
Size of median pinnae	80–100 × 5–8 cm	80–90 × 8–11 cm	80–110 × 5–8.5 cm
Number of rachillae	18–35	12–18	20–30
Dimensions of rachillae	20–45 × 1–1.3 cm	25–60 × 1–1.4 cm	20–45 × 0.5–1 cm
Indument of rachillae	Tomentose	Glabrous	Glabrous
Staminate flowers at anthesis	11 × 11 mm	13 × 15 mm	11 × 11 mm
Fruit shape	Obovoid–globose	Oval–obovoid	Oval–elongate
Fruit size	1.3 × 1.1 cm	2.2 × 1.7 cm	1.6 × 1 cm
Seed	Obpyramidal, 8 × 8 mm	Unknown	Elongate, 11 × 7 mm

circling more than half of the peduncle at insertion, covered with abundant white tomentum abaxially, third peduncular bract 2–6 cm long, 3 cm wide at base, triangular, acuminate; rachis 9–20 cm long with 4–6 main branches 3–11 cm long, thick, angled, bracts subtending branches 1–5 cm long, triangular, acuminate, upper ones reduced to low ridges; rachillae 12–18, 25–58 cm long, 1–1.4 cm diam., straight, rounded; rachis, branches and rachillae glabrous except in triad clefts, initially cream-colored with a touch of pink becoming pale green. Flowers in triads proximally, only paired or solitary staminate flowers distally; triads in 2 spirally arranged rows, disposed in horizontal, oval clefts 10 mm long, 8 mm high, 2.5–3 mm deep, subtended by a prominent rounded bract 2–2.5 mm high, broadly rounded to truncate, sharp-edged; outer bracteole low, 5 × 1.5 mm, inner two bracteoles sepal-like, 5–7 × 3–5 mm, broadly rounded, bracteoles and pedicels of flowers with whitish, 0.5 mm long hairs; staminate flowers in bud 10 × 6.5 mm, bullet-shaped, at anthesis 12–14 mm × 15 mm; calyx 3–3.5 × 7–8 mm, bowl-like, sepals strongly bowl-like, imbricate nearly to apex, truncate to broadly rounded, dark-margined, abaxially sharply keeled; petals 8 × 6 mm, ovate, thickened, lightly ridged adaxially, striate abaxially when dry, valvate and spreading apically, connate in basal 1/6; stamens 6, 9–10 mm high, ascending to spreading, exceeding petals, filaments 8 mm long, 1.5 mm wide at middle, 3 mm wide at base, inflexed at apex, anthers 4 mm long, dorsifixed just below middle, locules with a sterile, central part, filaments connate basally in a 1 mm high ring and adnate to pistillode and petals, forming a 3 mm

tall base; pistillode broadly conic, 3 mm high. Pistillate flowers just prior to anthesis 10 × 7 mm, bullet-shaped; calyx 6 × 8 mm, deeply cup-shaped, sepals scooplike, imbricate nearly to apex, broadly rounded or truncate, dark-margined, fringed; petals 8–9 × 6–7 mm, boat-shaped, ovate to oval, imbricate nearly to apex, dark-margined; staminodes 3, within 1 petal, 2 × 1 mm, triangular-rounded, connate basally; pistil 10 × 5.5 mm, ovoid, stigma lobes small, erect, acute. Fruit oval-obovoid, 2.2 × 1.7 cm, pale green when immature with prominent apical stigmatic remains 5 mm diam., perianth 7 mm high, endocarp 1.5–1.7 × 1.1–1.3 cm, rather thin, obpyramidal, deeply depressed apically and prominently costate on one side, slightly grooved on the other one; mature fruit and seed unknown. Germination adjacent-ligular, eophyll deeply bifid, late bifid leaves with petiole up to 40 cm long, channelled and winged proximally, covered with brown lepidote indument, sheath weakly angled, blade to 70 cm long, lobes connate in proximal 3/4, acute distally. Juveniles with keeled sheaths, channelled, angled and winged petioles, litter trapping.

*Additional Specimens Examined.* NEW CALEDONIA. Montagne des Sources, in montane rain forest on gabbros, 900 m elev., 22°08'S, 166°36'E, 19 Feb. 1996 (buds), *J.-C. Pintaud and R. Lavoix* 320 (BH, NOU, P), *id.* (seedling), 321 (P), *id.* (juv.), 322 (BH, NOU, P), *id.* (seedling), 323 (P); *id.* 15 Sept. 1996 (fr.), *J.-C. Pintaud and J.-P. Tivollier* 392 (BH, K, NOU, P), *id.* (juv.), 393 (K, P), 395 (BH, P); Upper Rivière Bleue Valley, in rain forest on peridotites, 200 m elev. 22°06'S, 166°38'E, 18 Jan. 1997 (fl.), *J.-C. Pintaud and J.-P. Tivollier* 438 (K, P).



*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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