

Boghen area with several populations exceeding 1000 individuals, regeneration is very low due to cattle grazing; dramatic population reduction is expected here. The government of the South Province of New Caledonia has established an experimental, fenced area near Boghen to exclude cattle from one stand of *K. oliviformis*. However, these measures need to be greatly expanded to protect these and other populations adequately. Clearing of forests and harvesting trees for the edible cabbage or palm heart have much reduced populations near Kouaoua, La Foa, and Bourail.

*Taxonomic history.* A. Brongniart and A. Gris (1864) named and described *Kentia olivaeformis* from an incomplete collection of Vieillard from Canala lacking leaves and male flowers. Brongniart (1873) transferred the species to *Kentiopsis* and listed a more complete collection, *Balansa 766* near Nera River at Bourail. This population still exists but is much reduced as this area is now converted to agricultural land. Vieillard reported the vernacular name of Kipe for this species in Canala and said it exceeded 30 m tall and outgrew the coconuts from which *K. oliviformis* differed only by the small red fruits.

*Derivation of name.* The epithet means olive-shaped, and refers to the shape of the fruits.

*Kentiopsis oliviformis* is distinctive within the genus by the very asymmetrical staminate flowers, not glossy in bud, the bracteoles not sepal-like and mesocarp fibers adherent to endocarp throughout. Other distinguishing features include the dense white indument on the leaf sheath, petiole, rachis, bracts and peduncle, bright, pale green expanding leaf and erect inflorescences with scarcely divergent rachillae. "Saxophone" type establishment growth is present. Leaves are spirally arranged in young juvenile plants and petioles have prominent dark brown scales becoming marginally more and more white-fimbriate and finally white-floccose with age of the plant.

### 3. *Kentiopsis piersoniorum* Pintaud & Hodel *sp. nov.* (Figs. 5, 9)

*K. magnificae* (H. E. Moore) Pintaud & Hodel affinis sed foliis valde recurvatis, pinnis erectis, vaginis purpurascensibus vel purpureis- viridibus glabrescentibus ceraceis albis, staminodiis 6, filamentis basaliter distinctis, pistillodiis circa fila aequantibus differt. Typus: New Caledonia, Mont Panié, 570 m elev,

20°34'S, 164°48'E, 29 Dec. 1995, *Pintaud 309* (holotypus P; isotypus BH).

Emergent palm. Trunk 10–15 m tall or more, 18–25 cm dbh, gray, sometimes with an expanded base. Leaves 10–12, sharply recurved; sheath 80–120 cm long, purplish-green to purple obscured by a layer of bright glaucous wax and dotted with tiny brown scales abaxially, only slightly splitting opposite petiole and there bearing small auricles 1 cm long; petiole 12–18 cm long, rachis 2.2–2.3 m long, petiole and rachis purplish, soon glabrescent but covered initially by a dense, short white tomentum; pinnae 35–40 on each side, median ones 110 × 3–4.5 cm, proximal 2 pairs continuing into lorae, all straight, narrowly acute, coriaceous, 1-ribbed, ascending in a narrow V, adaxially waxy, glaucous-green, midrib bearing abaxially twisted brownramenta on proximal 1/2 to 3/4 of the pinnae. Inflorescences 80–100 cm wide, spreading, branched to three orders, all parts except flowers and bracts strikingly glaucous and discretely spotted with minute, brown scales; peduncle short, encircling half the trunk; prophyll 60–70 × 20 cm, acute, with marginal wings 2–5 cm wide; first peduncular bract 60–70 × 15–18 cm, rostrate, both bracts densely covered abaxially with brown indument; rachis 30 cm long, main branches 6–10 cm long, 1–2 cm wide, ± rounded, swollen at base; bracts subtending branches small, triangular proximally, reduced to a low ridge distally; rachillae 100–200 or more, 35 cm long, 0.5 cm diameter, straight to reflexed, rounded, glabrous. Flowers in triads in proximal 2/3–3/4 of rachilla, bract subtending triads a thin, sharp-edged, rounded shelf 1.5–1.75 mm high; flowers glossy, dark brown in bud, flowering basipetally; staminate flowers in bud 9.5 × 4.5 mm, bullet-shaped, slightly asymmetrical; calyx 4 × 6 mm, cupular, triangular, sepals cup-shaped, rounded or truncate apically, strongly angled abaxially; petals 8 × 4.5 mm, long-ovate, connate in basal 1/4–1/3, pink adaxially; stamens 35–38, exceeding petals, filaments 5 mm long, slender, white, attenuate apically, straight or inflexed, free or nearly so, anthers 4–4.5 mm long, slender, dorsifixed 1.5 mm from base, connective narrow, tanniferous; pistillode 3.5–4 mm high, 2/3 as high to equalling filaments, conic basally, attenuate apically; outer bracteole surrounding pistillate flower conspicuous, 2.5 mm high, inner bracteole very large, sepal-like, 4.5 mm

high, only partly surrounding flower on one side, rounded; pistillate flowers at anthesis  $10 \times 5$  mm, ovoid-elongate; calyx  $5 \times 5.5$  mm, cup-shaped, sepals broadly rounded apically; petals cup-shaped, acute apically; staminodes 6,  $\pm$  thick, connate basally and forming a crownlike ring 0.6 mm high; gynoecium  $6 \times 4$  mm at anthesis, ovoid, stigmatic lobes thick, blunt, straight at anthesis, recurved later, angled, ovule pendulous. Fruits  $17\text{--}23 \times 9\text{--}10$  mm, cylindrical and smooth when fresh, purplish, drying bullet-shaped and pebbled, fruiting perianth 6.5 mm high, stigmatic remains apical; mesocarp with a layer of flat, mostly separate, longitudinal fibers included in a thick layer of tannin cells; endocarp thin. Seeds  $10\text{--}15 \times 6.5\text{--}7$  mm, bullet-shaped but truncate at both ends, endosperm homogeneous. Seedling with deeply bifid eophyll, lobes narrowly lanceolate to 15 cm long, with prominent nerves adaxially; trunkless juvenile individuals with spirally arranged leaves; saxophone growth absent.

*Additional specimens examined.* NEW CALEDONIA. East slope of Mont Panié, 600–700 m elev.,  $20^{\circ} 34' S$ ,  $164^{\circ} 48' E$ , 23 June 1971 (fr.), H. E. Moore, Jr., H. Brinon, M. Schmid & J.-M. Veillon 9968 (BH, NOU); Mont Panié, on trail to summit, in open shrubby vegetation dominated by *Araucaria montana*, 570 m elev., 12 Jun. 1995 (juv.), J.-C. Pintaud & M. Olivier 208 (NOU, NY, P); 211 (ster.) (P); id. 26 Jul. 1995 (juv.), J.-C. Pintaud & P.-O. Albano 238 (P); id. 17 Jan. 1996 (pist. fl.), J.-C. Pintaud 318 (BH, BRI, K, NY, P); id. 18 Mar. 1996 (pist. fl.), J.-C. Pintaud 341 (leg. D. R. Hodel), (NOU); id. 5 Jun. 1996 (juv.), J.-C. Pintaud & D. R. Hodel 367 (NOU).

*Distribution.* *Kentiopsis piersoniorum* occurs in a very limited area on the east slope of Mt Panié where it mainly occupies one valley and adjacent hills and ridges at (400)500–800(1000) m elevation.

*Ecology.* *Kentiopsis piersoniorum* grows as an emergent, gregarious, dominant, exposed tree in shrubby to forested vegetation on steep slopes and ridges on schists. Associated palm species include *Basselinia velutina*, *Chambeyronia lepidota*, *Moratia cerifera*, and *Brongniartikentia lanuginosa*. Mass germination occurs in the dense stands.

*Phenology.* Anthesis occurs from November through April; fruits mature from August through October (Fig. 2). The two accessible individuals

from which all collections have been made (including Moore's) at 570 m elevation on the trail to the summit of Mt Panié have flowered once in two years (1995–1996), and the large proportion of sterile individuals in the main population on the opposite ridge southward suggests that flowering may be normally biennial or even more infrequent, with the production of only a single inflorescence each time.

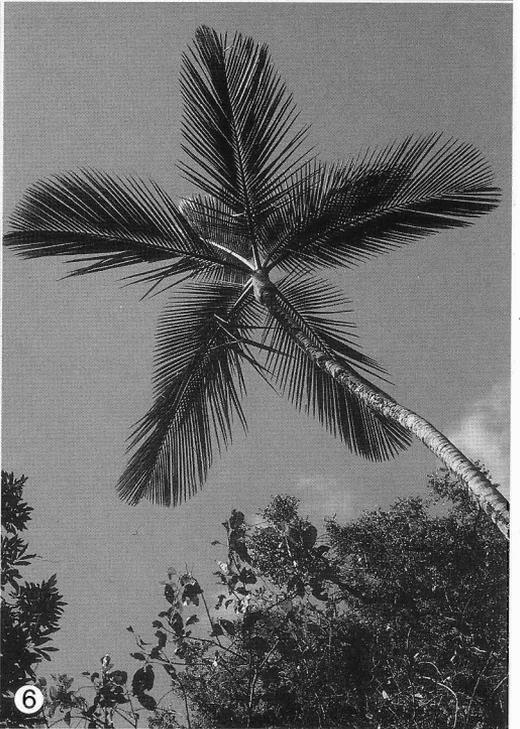
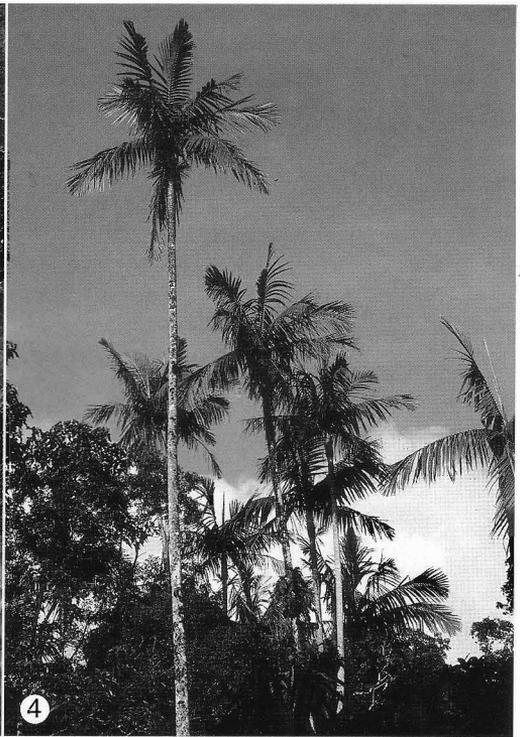
*Conservation status.* Status is low risk but conservation dependant (LRcd, proposed according to IUCN [1994]). Although very abundant at the place where it occurs, *K. piersoniorum* is restricted to several hundred hectares of forest only. The population of *K. piersoniorum* is afforded some protection, especially against fire, since it occurs entirely in the Mt Panié Botanical Reserve where its habitat is undisturbed and difficult to access.

*Taxonomic history.* H. E. Moore, Jr. first collected this species in 1971. Despite vegetative differences, Moore assigned it to *Mackeeea magnifica*, basing his decision on his incomplete collection consisting only of immature fruits. We were able to collect this palm in flower in 1995–1996, the more complete material showing it to be a distinct species.

*Derivation of name.* The epithet honors the Pierson families, Robert and Geneviève of Tontouta and their sons and daughters-in-law, Jean and Chantal, and Gilles and Marie-Christine of Nouméa, who have gone to exceptional measures to increase our knowledge of New Caledonia palms and encourage and support our work leading to a book on this island's extraordinary palms.

*Kentiopsis piersoniorum* is an impressive and spectacular palm. The sharply recurved, grayish leaves and glaucous crownshaft are remarkable, even among the many palm species with recurved leaves on Mt Panié and the strikingly glaucous color of the inflorescence contrasts aesthetically with the glossy brown buds, pink petals, white filaments and yellow anthers of the staminate flowers. Unfortunately for visitors, the breathtaking populations of *K. piersoniorum* are hardly accessible.

*Kentiopsis piersoniorum* is distinctive by the complete staminodial ring but also by its low rate of reproduction and long delay (one month) between anthesis of staminate and pistillate flowers in the same triad. *Kentiopsis piersoniorum* resembles *K. magnifica* in inflorescence mor-



3. *Kentiopsis magnifica*: emergent in remnant forest at Col d'Amos, 500 m (see Centerfold, left, for color). 4. *Kentiopsis oliviformis*: tall trees standing at the edge of a gallery forest in Boghen valley, 50 m (see Centerfold, right, for color). 5. *Kentiopsis piersoniorum*: a group in low montane forest, Mont Panié, 700 m. 6. *Kentiopsis pyriformis*: habit.



7. *Kentiopsis pyriformis*: view of the crown at Goro, 50 m. 8. *Kentiopsis pyriformis*: newly opened, pink inflorescence.

phology, both species having stout glaucous and sparsely scaly branches, glossy-brown buds and unequal bracteoles, the inner one sepal-like, but they differ markedly in flower shape and structure, leaf shape, and indument. The two species occur about 50 air kilometers apart.

**4. *Kentiaopsis pyriformis*** Pintaud & Hodel **sp. nov.** (Figs. 6–9)

*Kentiaopsis oliviformi* (Brongn. & Gris) Brongn. affinis sed foliorum vaginis glabrescentibus cerceis cupreis vel vinosis, inflorescentiis effusis ramis principalibus angulatis, floribus masculis symmetricalibus, staminibus 11–20 differt. Typus: New Caledonia, Goro, mouth of Kuebini River, 50 m elev., 22° 16' S, 167° E, 6 Dec. 1995, *J-C Pintaud & D. R. Hodel 303* (holotypus P; isotypi BH, BRI, K, NOU, NY).

Subcanopy to emergent palm. Trunk 10–18 m tall, 10–22 cm dbh, brown becoming gray, sometimes enlarged or bulging at the base, adventitious roots visible. Leaves 7–12, ascending to spreading, moderately recurved or nearly straight; leaf sheath 70–130 cm long, copper-colored or purplish red, with a thin cover of glaucous-white wax and minutely punctulate with tiny brown lacerate scales abaxially, splitting in the distal 1/4–1/3 opposite petiole and there bearing small auricles 1 cm long or terminating on petiole with two wings 10 cm long; petiole 20–45 cm long (sometimes to 2.6 m long in trunkless juveniles), glabrescent, green or reddish to purplish; rachis 2.5–3 m long, petiole and rachis variously covered initially by thin feltlike indument of brown-centered, white-margined scales; pinnae 40–58 on each side, median ones 110–130 × 5–8 cm, proximal two pairs continuing into lorae, all acute, coriaceous, one-ribbed, ascending and held in open V or borne in one plane and flat to slightly pendulous, green and glossy adaxially, midrib and sometimes secondary ribs bearing abaxially membranous, medifixed ramenta in groups of 2–20. Inflorescences 1–2, 60–100 cm wide, spreading, branched to four orders; peduncle 6–10 cm long; prophyll 40–50 × 20 cm, splitting into two halves; first peduncular bract 50–60 × 15–18 cm, beaked, slightly exceeding the prophyll, both bracts pale green or dark purple, glabrescent to variously tomentose abaxially; rachis 30–40 cm long with 10 main branches 2–10 cm long, 1–4 cm wide, sharply angled, dorsiventral-

ly flattened, brownish green to bright purple; peduncle and rachis with thin indument of brown-centered, white-margined minute scales; bracts subtending branches small, triangular-obtuse to acuminate and finally reduced to a ridge; rachillae 100–400, slender, 20–30 cm long, 0.5 cm diameter, folded and mucilaginous in inflorescence bud, rounded, glabrescent, very pale green to cream-colored in bud, becoming brown or dark purple. Flowers in horizontal triads of a central pistillate flower flanked by two median-lateral earlier-opening staminate flowers; triads in proximal 2/3 and sometimes nearly to apex of rachillae, paired staminate flowers only distally, or sometimes paired staminate flowers on unisexual rachillae; bracts subtending triads a thin, rounded, sharp-edged lip to 1 mm high; staminate flowers in bud 6 × 3.5–4 mm, glossy brown, almost symmetrical; calyx 2.5 mm high and 3.5 mm in diameter, cupular, sepals keel-like, truncate or broadly rounded apically; petals ovate, boat-shaped, spreading at anthesis, adnate to the receptacle basally and with a swollen pulvinus just above, pinkish adaxially; stamens 11–20, just exceeding petals, filaments free or nearly so, 2.5 mm long, slender, slightly fluted, white, straight, and not attenuate apically, anthers 2–2.5 mm long, slender, dorsifixed 1/3 up from base, connective white, not tanniferous; pistillode 1–1.5 mm high, much shorter than filaments and petals, conical to columnar and fluted or rarely spindle-shaped; outer bracteole surrounding pistillate flower 1–2.5 mm high, sepal-like or not, inner bracteole 2.75 mm high, always sepal-like, sometimes forming a tube with the outer bracteole; pistillate flowers 5–6 × 3–4.5 mm, rhomboid and laterally compressed or globose-ovoid; calyx 4–4.5 × 4–4.5 mm, cupular, sepals strongly bowl-like to cup-shaped; petals bowl-like to cup-shaped, scarcely exceeding or much exceeding sepals; stamens 3, 0.5–0.9 mm high, toothlike, thin, membranous; gynoecium 4–5.5 × 2.5–3 mm, stigmatic lobes recurved, angled, laying between corolla lobes or short, erect; ovule laterally attached or pendulous. Fruits to 17 × 7 mm, oblong, purplish pink, fruiting perianth 6 × 8 mm, stigmatic residue subapical; mesocarp with abundant, mostly elongate, but at times wandering or reticulate fibers not adherent to endocarp, tannin cells in a thick layer between fibers and endocarp; endocarp whitish, fragile. Seeds 10–12 × 5–6 mm, pyriform, rarely ± ellipsoid,