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## Palms in Northeastern Australia II: Species from the Cooktown Area

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Approximately 30 species of palms occur naturally in mainland Australia. Most of these are found only in the moist, closed or "rain" forests of coastal Queensland and species diversity reaches a peak in the tropical closed forests of northeastern Queensland. In Australia the following genera are almost invariably associated with closed forests—*Archontophoenix*, *Arenga*, *Calamus*, *Hydriastele*, *Laccospadix*, *Licuala*, *Linospadix*, *Normanbya*, and *Ptychosperma*. Species of *Livistona* are more widespread, occurring coastally and in drier areas of eastern, northern, and western Australia; *Carpentaria* and *Gronophyllum* are endemic to the Northern Territory; and *Corypha* is represented in open forested areas of Northern Queensland. *Cocos nucifera* is confined to littoral areas of northeastern Australia and off-shore islands.

The closed forests of eastern Australia, where most of Australia's palms occur, have been the subject of extensive research and have been classified structurally and floristically (Webb 1959, 1968; Everist and Webb 1975). Their disjunct occurrence is shown in Figure 1. In northeastern Queensland (north of Townsville, 19°16' 146°49'), extensive blocks of closed forest occur at Lockerbie, in the McIllwraith Range (including Iron Range), between Cooktown and Mossman, on the Atherton Tableland, and in the Mt. Spec area.

Species from one of these areas, Iron Range, where there is a high degree of palm diversity, have been described (Covacevich and Covacevich 1978). Thirteen species were recorded from the closed forests and open forests adjoining them at Iron Range.

Cooktown is a small, historically significant town 400 km south of Iron Range (Fig. 1). Within 50 km of Cooktown (Fig. 2), most of the palm species from Iron Range occur with several other species. More palm species (18) have been recorded close to Cooktown than in any other area in Australia. This represents an extremely diverse palm flora by Australian standards.

The study area (Fig. 2, Cooktown and surrounds within a radius of 50 km) supports varied vegetation types—complex notophyll vine forest of the northern part of the Mossman Cooktown "block," isolated pockets of riverine vine forest (along the McIvor and Endeavour Rivers), some semideciduous vine forest (Mt. Cook), and open sclerophyll forest and heaths (in the west and north). Palms recorded in this area are set out below, together with data on their occurrence in the study area and their Australian distribution. They are arranged alphabetically by genus and, within genera, by species.

*Archontophoenix alexandrae* (Fig. 3d). *Status*: very common. *Occurrence in study area*: Mossman–Mt Amos, Dowling Range closed forest; Endea-

voir River and McIvor systems. *Australian distribution*: Mackay, NE.Q.—Iron Range, NE.Q. *Notes*: always associated with swamps or drainage lines.

*Arenga australasica* (Fig. 4d). *Status*: only four trees known in area. *Occurrence in study area*: Mt Cook; Williams Creek, a tributary of the Endeavour River. *Australian distribution*: Tully, NE.Q.—Cooktown, NE.Q.; well known on near coastal islands. *Notes*: found in stony creek beds, sandy and red basalt soils.

*Calamus australis* (Fig. 3c). *Status*: very common. *Occurrence in study area*: Daintree Mt Amos, Dowling Range closed forest; Mt Cook. *Australian distribution*: Tully, NE.Q.—?Iron Range, NE.Q. *Notes*: found to about 1000 m frequently along tracks and in other clearings.

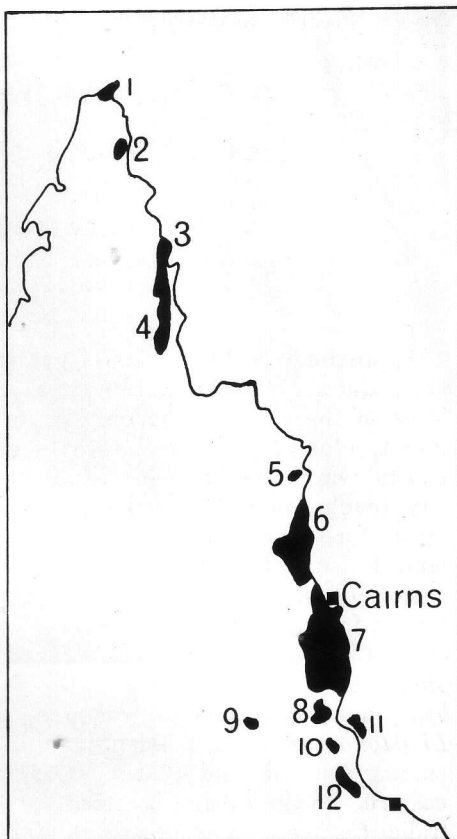
*Calamus caryotoides*. *Status*: common. *Occurrence in study area*: Daintree—Mt Amos, Dowling Range closed forest; Mt Cook. *Australian distribution*: Tully, NE.Q.—?Iron Range, NE.Q. *Notes*: found to about 1000 m.

*Calamus amischus*. *Status*: common. *Occurrence in study area*: Mossman—Mt Amos, Dowling Range closed forest. *Australian distribution*: Mossman, NE.Q.—Cooktown, NE.Q.

*Calamus moti*. *Status*: common. *Occurrence in study area*: Mossman—Mt Amos, Dowling Range closed forests. *Australian distribution*: Mossman, NE.Q.—Cooktown, NE.Q.

*Calamus* species (Fig. 6d). *Status*: common. *Occurrence in study area*: Mossman—Mt Amos, Dowling Range closed forests. *Australian distribution*: Mossman, NE.Q.—Cooktown, NE.Q.

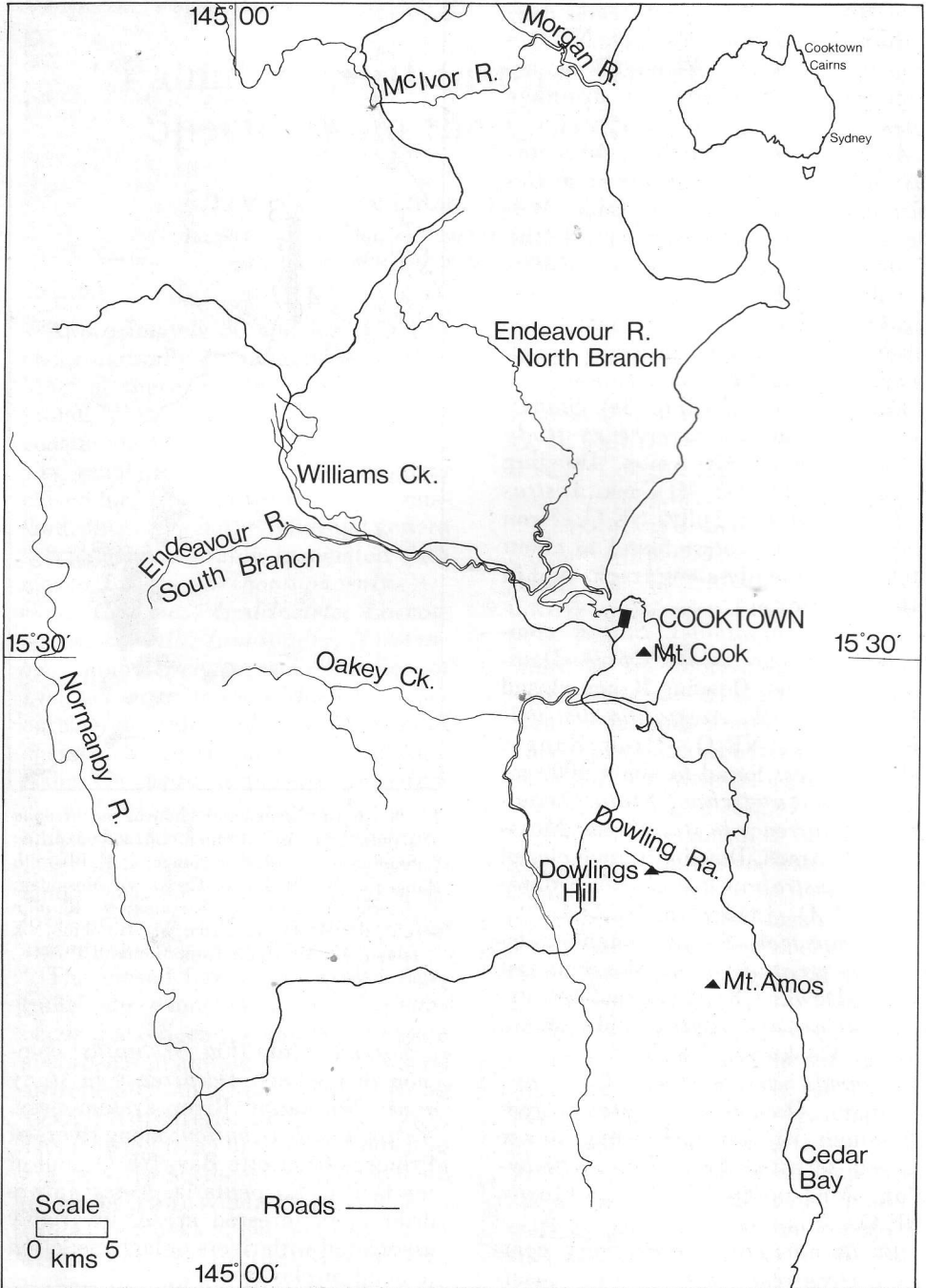
*Cocos nucifera*. *Status*: very common. *Occurrence in study area*: coastally, throughout the area. *Australian distribution*: coastal northeastern Queensland.



1. Northern Queensland showing occurrence of disjunct "blocks" of rain forest. 1, Lockerbie; 2, Shelburne Bay; 3, Iron Range; 4, McIllwraith Range; 5, Mt. Webb; 6, Cooktown—Mossman; 7, Cairns—Atherton; 8, Kirrama; 9, 40 mile scrub; 10, Wallaman Falls; 11, Hinchinbrook Island; 12, Mt. Spec (from Monteith 1979).

*Corypha elata* (Fig. 5). *Status*: common in pockets. *Occurrence in study area*: Normanby River system only. *Australian distribution*: along rivers of Princess Charlotte Bay, NE.Q. and of the Gulf of Carpentaria. *Notes*: favors drier open forested areas, invariably associated with rivers or lagoons; often in sand or clay.

*Hydriastele wendlandiana* (Fig. 4c). *Status*: common in pockets. *Occurrence in study area*: Endeavour and

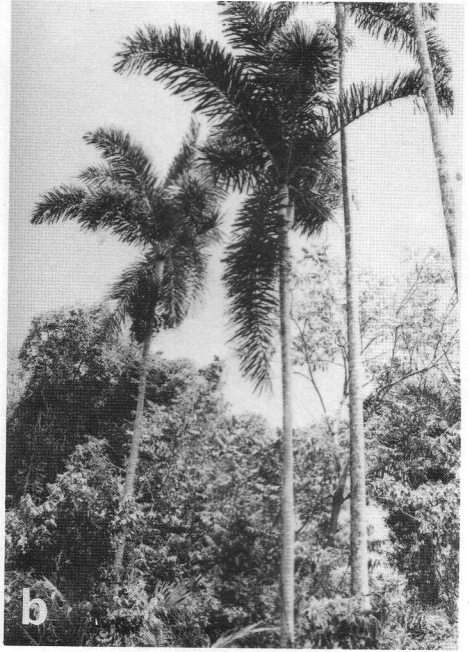


2. Map of the study area.

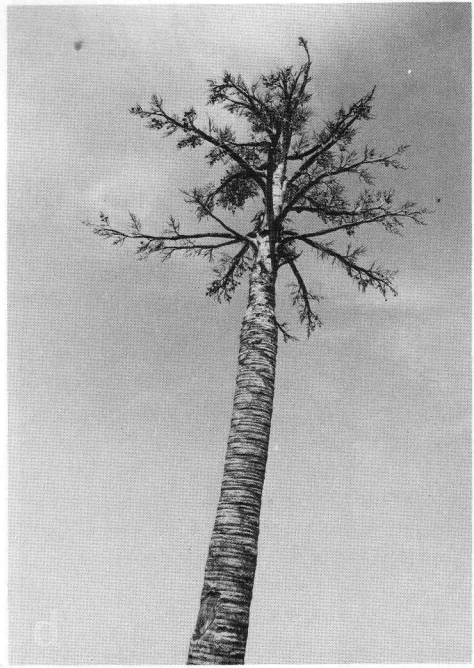
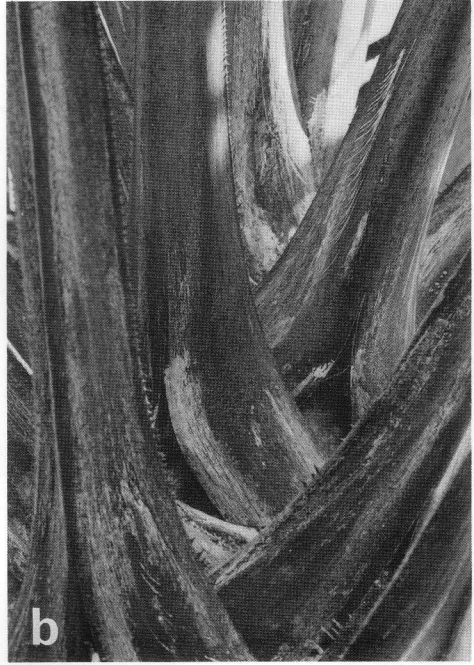


3. Palms of northeastern Australia. a, *Licuala ramsayi* stand; b, *Linospadix intermedia* (?); c, *Calamus australis*; d, *Archontophoenix alexandrae*.





4. Palms of northeastern Australia. a, *Nypa fruticans*; b, *Normanbya normanbyi*; c, *Hydiastele wendlandiana*; d, *Arenga australasica*.



5. *Corypha elata* in northeastern Australia. a, mature trees; b, base of fronds; c, mature tree in fruit; d, dead tree following shedding of fruit.





McIvor River systems. *Australian distribution*: Tully, NE.Q.—tip of Cape York Peninsula and some Torres Strait islands. *Notes*: found only at low altitudes, usually along creeks.

*Laccospadix australasica* (Fig. 6a, b). *Status*: common. *Occurrence in study area*: Daintree—Mt Amos, Dowling Range closed forest. *Australian distribution*: Innisfail NE.Q.—Mt Amos, NE.Q. *Notes*: usually above 700 m.

*Licuala ramsayi* (Fig. 3a). *Status*: very common. *Occurrence in study area*: Mossman—Mt Amos, Dowling Range closed forest; a pure stand occurs near Cedar Bay. *Australian distribution*: Tully, NE.Q.—Iron Range, NE.Q.; ?Jardine River. *Notes*: frequently associated with drainage lines and swampy areas.

*Linospadix intermedia* (?) (Fig. 3b). *Status*: common. *Occurrence in study area*: Mossman—Mt Amos, Dowling Range closed forest. *Australian distribution*: Atherton Tableland, NE.Q.—McIllwraith Range, NE.Q. *Notes*: usually above 200 m.

*Livistona* species (? *decipiens*, ? *benthamii*). *Status*: common. *Occurrence in study area*: north area of the Endeavour River.

*Livistona muelleri* (Fig. 6c). *Status*: very common. *Occurrence in study area*: throughout open forest in the area. *Australian distribution*: Cairns, NE.Q.—tip of Cape York Peninsula. *Notes*: often found in dense stands of clay soils.

*Normanbya normanbyi* (Fig. 4b). *Status*: common. *Occurrence in study area*: Mossman—Mt Amos, Dowling

Range closed forest. *Australian distribution*: Mossman, NE.Q.—Mt Amos, NE.Q. *Notes*: found up to 500 m always in dense closed forest.

*Nypa fruticans* (Fig. 4a). *Status*: dense stands in two localities. *Occurrence in study area*: McIvor and Morgan River estuaries. *Australian distribution*: Ingham, NE.Q.—tip of Cape York Peninsula; not in all estuaries. *Notes*: always associated with brackish water.

*Ptychosperma elegans*. *Status*: very common. *Occurrence in study area*: Mossman—Mt Amos, Dowling Range closed forest; riverine forests of Endeavour and McIvor River systems. *Australian distribution*: Mackay, NE.Q.—Iron Range, NE.Q. *Notes*: a lowland closed forest species, often very close to the coast.

#### LITERATURE CITED

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6. Palms in northeastern Australia. a,b, *Laccospadix australasica*; c, *Livistona muelleri*; d, *Calamus* species.