

The Search for *Wodyetia*, The Foxtail Palm

A. IRVINE

*C.S.I.R.O., Division of Forest Research,
P.O. Box 273, Atherton, Queensland 4883, Australia*

Our expedition, consisting of co-worker Don Fitzsimon and myself, left Atherton on the 17th November 1982 in a 4-wheel drive vehicle loaded with provisions, camping gear, collecting gear, and a Canadian canoe. Our aim was to find populations of a palm, believed to be a new genus that had been discovered in the Bathurst Bay area (lat: 14°16'S, long: 144°27'E), some 510 km northwest of Atherton. We also wanted to inspect populations of a species of *Livistona*, in the past often considered to be *L. benthamii*, occurring near Cooktown and the Kennedy River.

Our departure time was chancey, as November is often associated with heavy storms in north Queensland. These storms could prevent us from reaching our destination or prevent us from leaving it. On the first day we camped west of Cooktown on the Endeavour River North Branch. Near Cooktown we noticed some seedlings of the *Livistona* but they were few and far between. One was 5 meters tall, with a stem 2 meters high. They were growing in a heavy gray loam, in the driest part of the stream valley, with *Bombax ceiba* and *Eucalyptus tessellaris*. Here the velocity of the river in flood is low enough to enable seedlings to establish. In the open and semi-closed forests surrounding the stream valley we noticed another palm, *L. muelleri*.

The Endeavour River North Branch is a minor stream and seemed a likely spot for the *Livistona*, but there was no sign of it. The stream is lined with a semi-deciduous mesophyll vine forest, which

changes abruptly to open forest beyond the overflow area. The only palms seen along this stream were *Archontophoenix alexandrae* and *Ptychosperma elegans*.

The next day we returned to the main branch of the Endeavour River near the Cooktown airport, but could not find any adult *Livistona* after much searching along the river and near the airport. Fortunately I had a freshly cut seedling leaf with me and showed it to the airport manager; when we asked if he knew of any adult palms in the area, he remembered seeing some "soft leaf palms" at Barrett Creek, a small tributary of the Endeavour River Right Branch, about 3 km N.E. of the N.W. corner of the airport. Arriving at the creek we were delighted to see prolific stands of the *Livistona*, with individuals up to 30 meters tall.

The creek is lined with mangroves and tides elevate the water table daily. A thin band of rain forest separates the mangroves from surrounding open forest. The *Livistona* occurs predominantly within the rain forest community, but enters the margins of the mangrove and open forest communities. On the rain forest-open forest boundary, it comes into contact with *L. muelleri*. Prominent trees in the rain forest are *Melaleuca leucadendron*, *M. quinquenervia*, *Dillenia alata*, *Buchanania arborescens*, and *Pongamia pinnata*. Other palms present are *Archontophoenix alexandrae*, *Ptychosperma elegans*, and *Licuala ramsayi* (Fig. 2A). The soil is a heavy clay loam, with some silt present, but sand content is low.

Inspection of the *Livistona* revealed



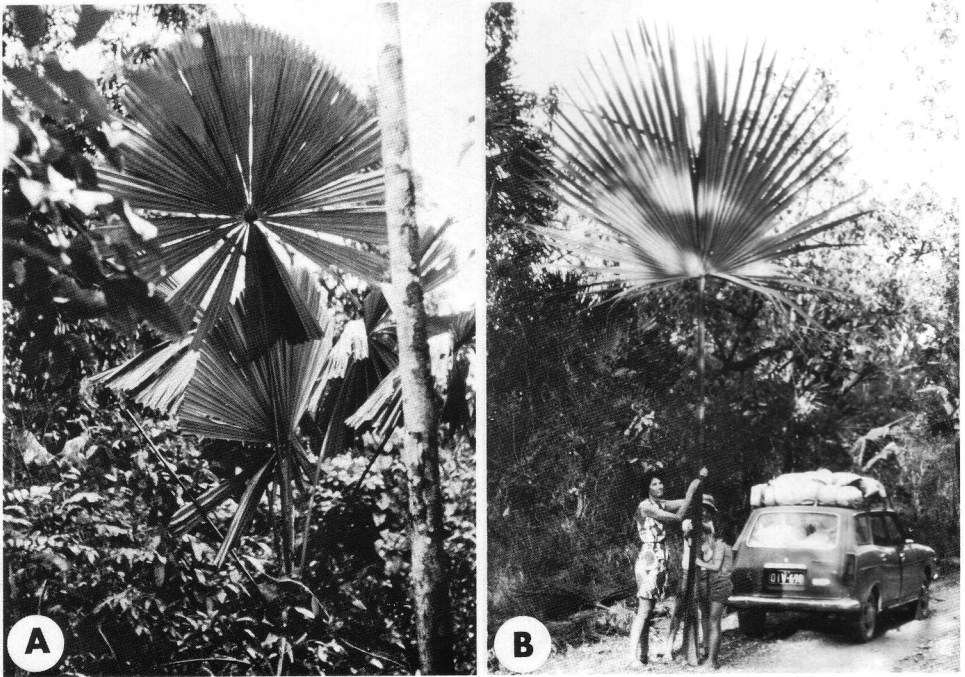
1. *Livistona* species for comparison. A. *L. drudei*, Hen Camp Creek near Bruce Highway, about 2.5 m tall. Note broad palman and more or less pendulous segment tips. B. *L. benthamii*, Swamp Creek near Claudie River, about 2.5 m tall. Note small palman and stiff, slender segments. C. *L. sp.*, Cooktown Fan Palm, Barret Creek, ca. 2.5 m tall. Note broad palman and stiff segment ends.

that it is not *L. benthamii* nor *L. drudei*, but instead a new species. When plants 2–3 meters tall of all three species are compared (Fig. 1A–C), leaf segments of the new species are broader and the fused area of segments is larger than that of *L. benthamii*. Its leaves are larger than those of *L. benthamii* and *L. drudei*. In plants 3–6 meters tall the leaves are generally larger than those of adult plants 10–30 meters tall, whereas the reverse is the case for *L. benthamii* and *L. drudei*. After measuring and processing the *Livistona* material, we left early in the afternoon on our way towards Bathurst Bay. We passed through a basaltic region near Rose Creek, a tributary of the Endeavour River North Branch. Here we saw *Arenga australasica*, growing in the rain forest. We camped overnight at Morgan River and noticed

Archontophoenix alexandrae there. The soil lining the stream is a sandy silt clay loam which is extremely soft when wet; its texture would have made the river impassable, except for numerous stones that had been carted in and deposited on the stream bed at the road crossing.

The next day we managed to drive 156 km, including 40 km out of the way, when we took a wrong turn shortly after Jeannie River and ended up in a mining camp. No palms were seen in this dry stretch of our journey. We camped in a eucalypt woodland at the junction of the Bathurst Bay and Wakooka Creek Tracks, 42 km from our destination.

It took 9 hours to drive to Bathurst Bay, because of some problems in finding the right track, about 5 km after setting off, due to previous activities of geologists.



2. Two palms encountered on the trip. A. *Licuala ramsayi*, Wyruri Holding near Babinda, ca. 4 m tall. B. Leaf of *Corypha elata*, held by Helen, Marc, and Sophie Irvine at Cabbage Tree Creek, 33 km N.W. of Laura.

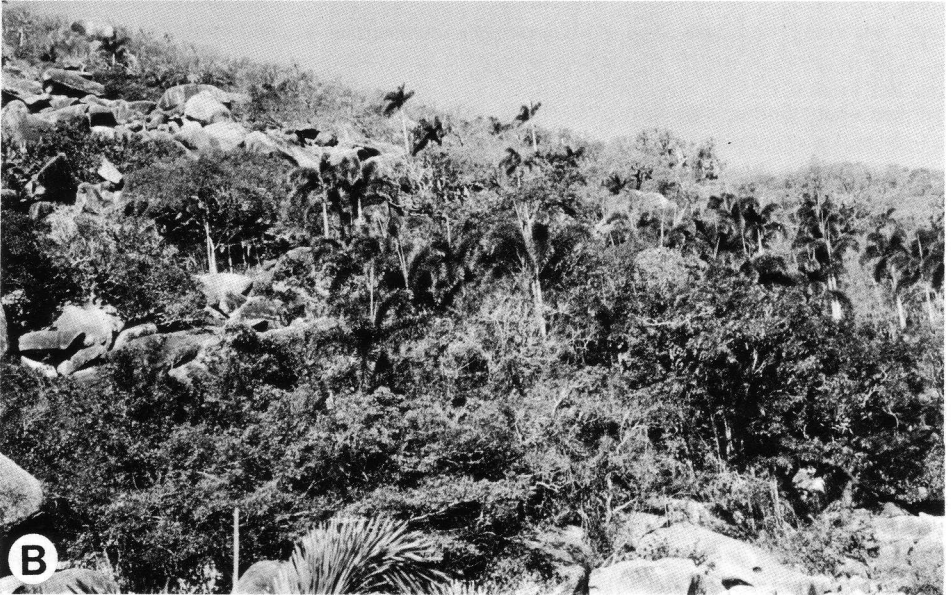
On the way in we passed small stands of *Corypha elata* (Fig. 2B), a fan palm with huge leaves some 3 meters across.

At Bathurst Bay we camped on the lee-side of the beach dune underneath a *Manilkara kauki* tree, which is prized for its nutritious fruit by Aborigines and Torres Strait Islanders. Immediately inland of the dune are large salt flats. Scattered stands of mangroves line water depressions within these flats. About 2 km inland the Melville Range rises to some 620 m above sea level. This range runs north-south and consists of huge granite boulders, exposed by the erosion of a former soil mantle. There were no palms nor any fresh water near our camp site.

Next morning we decided to canoe 7 km across the bay to St. Paul's Hill and search the valley behind, in the Melville Range. This valley was very dry in its broadest part, but as we neared its head,

at the foot of the granite boulders, pools of fresh water appeared in the stream. Rain forest, together with dense populations of *Archontophoenix alexandrae* line the stream, but there was no sign of our mystery palm. After lunch we returned to our canoe and systematically pulled into shore to explore each creek on the way back to camp. I trailed a fishing lure from the canoe and within 5 minutes had caught two Trevally fish for our evening meal. We had walked some 30 km and canoed about 17 km during the day, but had not seen our palm.

The next day we canoed 5 km southwestwards across the bay to the main creek system of the area. It is densely lined with mangroves and upstream has salt flats near its banks. The terrain seemed unlikely, but as the "likely areas" on the first day had proved unproductive, we decided to inspect the area at first hand. As we left

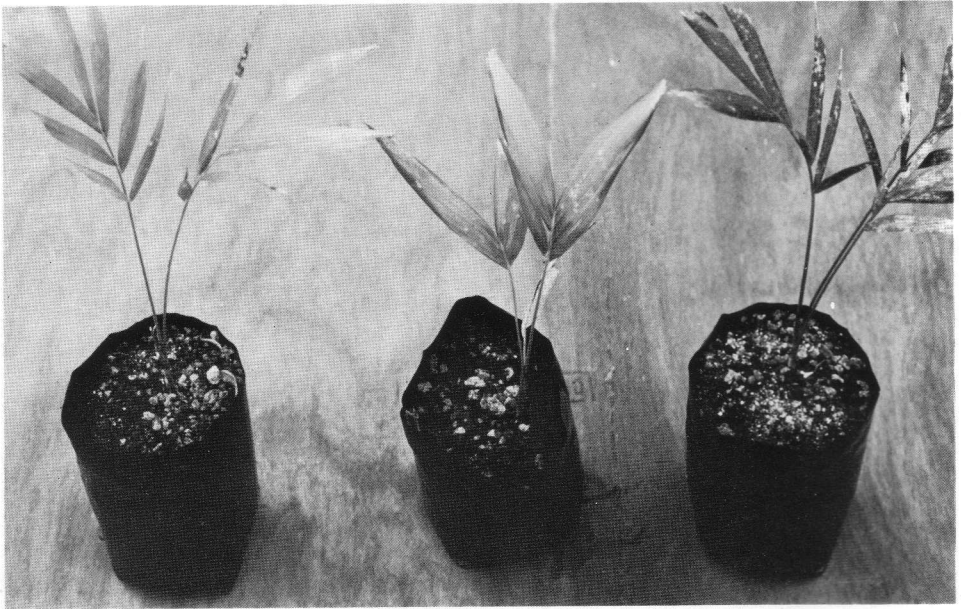


3. A. Large granite boulders in the Melville Range, habitat of *Wodyetia bifurcata*. B. *Wodyetia bifurcata* growing among granite boulders.

the sea and beach behind we suddenly canoed into an almost non-flowing channel, separating the dense mangroves on either side. The silence here was striking.

We could almost hear it, but once again we failed to find the palm.

We had explored for two days without success and were puzzled and becoming



4. Seedlings of *Wodyetia bifurcata* transplanted from the wild.

worried about finding the palm. "Perhaps it only had a small population, as we were led to believe? Perhaps individuals were somewhere among the *A. alexandrae* populations that we had already explored?" These possibilities seemed unlikely, but where was the palm in this rather dry region?

On the third morning we decided to walk to the foot of the ranges behind our camp and cut across the heads of the creek systems as they emerged from the granite boulders. We worked our way some 6 km southwards into a valley which drained into the main mangroves that we had explored previously. The country became drier and the weather hotter. Midday neared with still no sign of our quarry. Don was beginning to feel the heat and mentioned that the country was becoming less and less suitable for palms. I agreed, but said that I would like to reach the main creek ahead before turning back.

Within meters of saying this, I looked towards the rocky hillside above (Fig. 3A)

and immediately jumped with delight. In the boulders, 50 meters above us, was a solitary individual of the palm with bright orange-red fruit. I was ecstatic, while Don, feeling hot and weary, exclaimed "Way up theeear!" Realizing that he needed a rest, I suggested that we walk around the foot of the ridge immediately beside us and have lunch before climbing to the palm. As we rounded the ridge we were delighted to see that the palms had come down to us into the head of an open forest creek, the bed of which was dry.

Excited, I suggested that Don should rest in the shade of an overhanging rock, while I inspected the next small ridge. Past this ridge a small creek occurred, lined with dense closed forest consisting of *Melaleuca leucadendron*, *Dillenia alata*, and *Myristica insipida*. I found flowing water 500 meters upstream. Here, *A. alexandrae* palms dominated the scene. Their presence indicated that permanent water was near, but our mystery palm "Wodyetia" was absent from this moist

closed forest scene. As I emerged from this gully, I disturbed a large wild boar. Fortunately he decided to retreat, although he was not altogether happy about doing so. I climbed the next short, rather steep ridge and overlooked the main creek some 800 meters distant. It was an open forest creek and had scattered individuals of *Wodyetia* along its banks. Looking up at the hills to the east I could see among the boulders, thousands of *Wodyetia*, ascending to the ridge tops some 400 meters above sea level (Fig. 3B).

I returned to Don. We had lunch and then made a collection of leaves and fruiting branches by climbing to the top of adjacent boulders which brought us near the crowns of the palms. We made our way back to camp aiming to return the next day to make more detailed collections and take photographs.

Processing the immediate collection took some time out of the fourth day, but we eventually returned to the palm populations. We completed our work by 6:30 p.m. and commenced the 4 km walk back to camp, laden with palm fruit, fronds, flowering branches, fruiting branches, and collections of other plants associated with palm. Unfortunately we ran out of daylight and spent two hours groping in the dark through scrub and woodland trying to find our way back. Creek gullies were impenetrable depths of deep darkness. The steepness of their edges could not be assessed. Progress became nightmarish. Finally we staggered out on to a salt flat, not far from the sea. We rested for 5 minutes and then made our way to the beach dune. Here we realized that we were 2 km west of our camp, but progress was

much easier, as we staggered back laden, tired, and hungry.

The next day a National Parks Ranger visited us via helicopter. We told him about the palm populations, of which he was unaware. After leaving us he flew over the range and with his aid, we were able to establish that *Wodyetia* is virtually confined to the southern half of the Melville Range and the populations are all within the boundaries of the Melville National Park.

Upon leaving Bathurst Bay we travelled 157 km northwestwards to the Kennedy River at Lakefield. We inspected the *Livistona* growing there and confirmed it to be the same species as that at Barrett Creek near Cooktown. Isolated storms were now occurring in the area, but fortunately did not affect our route back to Atherton. Thus ended a successful palm expedition, with one new genus and one new species.

Wodyetia grows 6–15 meters tall and can be recognized by its slightly bottled, light grey stem, its whitish crownshaft, and its arching fronds with the leaflets crowded together, so that the whole frond resembles a green foxtail (see pp. 158–167). Seed germinates in 2–3 months, but sporadic germination continues for 12 months under glasshouse conditions. Early seedling growth is concentrated into establishing a strong root system, while the first leaf remains a spear for several months. Consequently seed is best sown in deep pots (Fig. 4). One-year-old seedlings are very hardy and will grow in full sunlight. Recently a seedling in the 4-leaf stage has survived two frosts during which the temperature reached 1° C in Atherton.