

Observations of Palms Made by the Botanist and Explorer Ludwig Leichhardt, During the Australian Overland Expedition of 1844–1845

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Ludwig Leichhardt's journal of the Overland Expedition from Darling Downs to Port Essington, Australia, of 1844–1845 contains some of the first botanical records of a number of Australian palms, as well as many other plants. Leichhardt's account offers insights into species distribution, the condition of the Australian environment at the time of European colonization, and the risks, difficulties and successes of scientific exploration and discovery.

The explorations of Ludwig Leichhardt (b.1813, d. 1848?) place him as one of Australia's most controversial figures of the colonial era (Jack 1921, Chisholm 1955, Dalton 1986, Roderick 1988, Jackes 1990, Maclaren & Cooper 1993, Pearn 2001). Leichhardt had a scientific education at Göttingen and Berlin Universities in Germany. He migrated to Australia in 1842 to pursue his scientific interests and apparently to satisfy a passion for adventure and exploration (Neumayer 1944). After spending two years conducting botanical collecting in southeastern Australia, Leichhardt's ambitions led him to embark on some of Australia's more interesting scientific expeditions (Maiden 1908, Hall 1978, Blake 1955, Barker & Barker 1990, Orchard 1999, Short 2003). His first expedition was the Overland Expedition from the Darling Downs in eastern Australia to Port Essington on the far northern coast, a direct distance of about 2700 km (Leichhardt 1847a, 1847b, Webster 1980). Planned as a six-month trip, the Expedition lasted for 14.5 months, and traversed over 4800 km in a somewhat circuitous route. The exploration party was given up for lost, and their eventual arrival back in Sydney generated controversy and

notoriety for Leichhardt. Encouraged by the success of the Overland Expedition, Leichhardt mounted a second expedition within seven months of his return, this time attempting to cross Australia from east to west (Sprod 1989). However, this was abandoned after eight months because of illness, slow progress and the loss of stock, and Leichhardt returned to Sydney (Bunce 1859, Mann 1888, Turnbull 1983). Not to be daunted, Leichhardt commenced a second attempt at an east-west crossing some six months later. The last contact with this expedition was on 3 March 1848, after which the party was to disappear without a trace, thus adding to Leichhardt's 'mythical' status in Australian folklore (Connell 1980, Simpson 1997).

The Journal of the Overland Expedition

The publication of Leichhardt's diary of the Overland Expedition in the form of a journal was one of the major literary events in Australia at that time (Leichhardt 1847a). Leichhardt's focus was botanical exploration and he was an energetic and observant plant collector, and in the two years between his arrival in Australia in 1842 and his departure on the Overland Expedition in 1844 he had

1. Route of Ludwig Leichhardt's Overland Expedition 1844–1845. Numbers in circles indicate the locations where Leichhardt's first record of palm species occurred. 1. *Livistona nitida*; 2. *Livistona decora*; 3. *Livistona lanuginosa*; 4. *Corypha utan*; 5. *Livistona rigida*; 6. *Livistona inermis*; 7. *Hydriastele wendlandiana*; 8. *Carpentaria acuminata*; 9. *Livistona humilis*; 10. *Livistona benthamii*; 11. *Hydriastele ramsayi*. Map by M. Alewijnse.

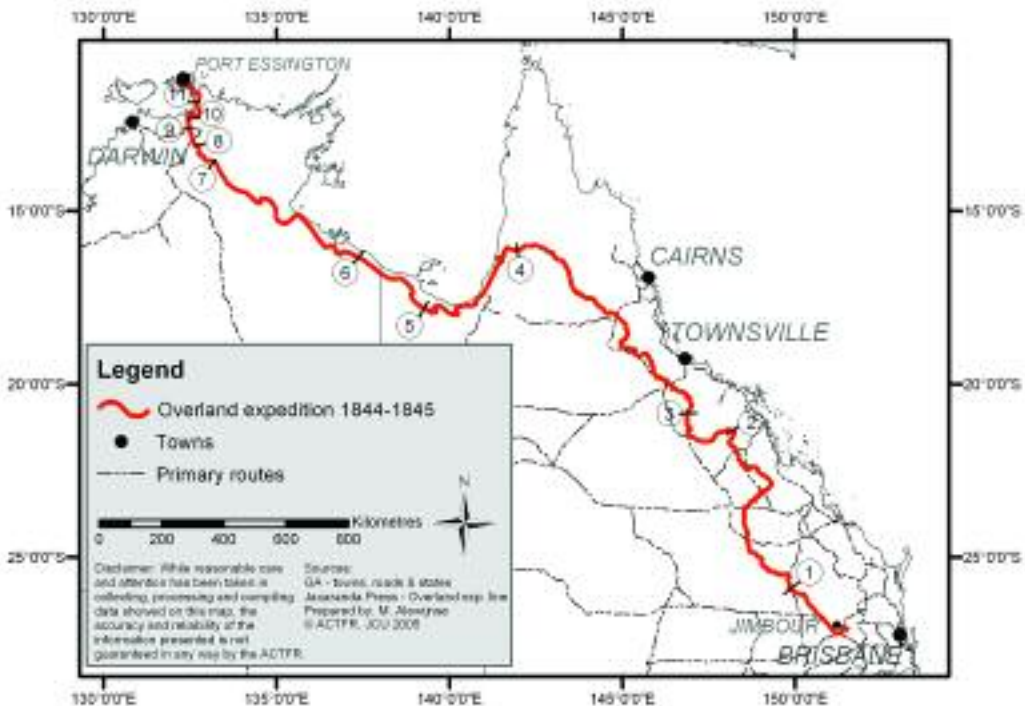


Table 1. Current species name and the name or descriptive terms used by Ludwig Leichhardt to describe palms in his Journal of the Overland Expedition of 1844–1845.

<i>current name</i>	<i>Leichhardt's manuscript names</i>
<i>Carpentaria acuminata</i> Becc.	<i>Seaforthia</i> palm [South and East Alligator Rivers, Cobourg Peninsula]
<i>Corypha utan</i> Lam.	<i>Corypha</i> with a thick trunk swelling in the middle [Mitchell River]
<i>Hydriastele ramsayi</i> (Becc.) W.J. Baker & Loo	<i>Seaforthia</i> palm [East Alligator River], small <i>Seaforthia</i> palm [Cobourg Peninsual]
<i>Hydriastele wendlandiana</i> (F. Muell.) H. Wendl. & Drude	small <i>Seaforthia</i> palm [Jim Jim Creek; Arnhemland Escarpment]
<i>Livistona decora</i> (W. Bull) Dowe	<i>Corypha</i> palm is frequent under the range (Isaac River and Suttor Creek headwaters)
<i>Livistona benthamii</i> F.M. Bailey	stately <i>Corypha</i> palm [South and East Alligator Rivers]
<i>Livistona humilis</i> R. Br.	<i>Livistona inermis</i> R. Br.; <i>Livistona</i> palm [South and East Alligator Rivers; Cobourg Peninsula]
<i>Livistona inermis</i> R. Br.	small fan leaved palm (<i>Livistona humilis</i> R. Br.); small <i>Livistona</i> palm; <i>Livistona</i> palm [western Gulf of Carpentaria; Katherine River headwaters; west Arnhemland Escarpment]
<i>Livistona lanuginosa</i> A.N. Rodd	small <i>Corypha</i> palm [Suttor River]
<i>Livistona nitida</i> A.N. Rodd	<i>Corypha</i> palm [Dawson River catchment]
<i>Livistona rigida</i> Becc.	stream-edge <i>Corypha</i> [Albert and Gregory River catchments]

collected extensively throughout southeastern Australia (Leichhardt 1845, 1846, Orchard 1999). However, many plants in these areas had been previously collected, and Leichhardt's ambitions were ignited with the opportunity to collect in unexplored areas (Politzer 1944, Priessnitz 1991).

During the Overland Expedition, Leichhardt maintained a diary with daily entries, with detailed descriptions of the vegetation and plant species that he encountered (Leichhardt 1847a). With the taxonomic resources available to him, such as those of Brown (1810, 1830) and volumes 1–7 of Candolle and Candolle (1823–1839), Leichhardt was able to recognize undescribed species and make collections of them. However, a number of incidents beset the Expedition, which resulted in the unfortunate loss of all but a few of the thousands of specimens collected during the Expedition. Firstly, the pack-horses carrying his specimens were drowned during an attempt to cross the Roper River on 21 October 1845. Leichhardt's journal described the event: "...Charley came and brought the dismal tidings that three of the most vigorous of them [horses]

were drowned, at the junction of the creek with the river...This disastrous event staggered me, and for a moment I turned almost giddy; but there was no help. Unable to increase the load of my bullocks, I was obliged to leave part of my botanical collection which had been carried by one of the horses. The fruit of many a day's work was consigned to the fire...My collection had the advantage of being almost complete in blossoms, fruit, and seed...." (Leichhardt 1847a, p. 445).

In a letter to G. Duranto of the Paris herbarium [20 May 1846] Leichhardt wrote "... As my collection increased, I surrounded the different packages with green hide, which when dry, formed a fine box round them, and protected them from hard usage to which they were exposed...the time came when I had to open all my fine green hide boxes, to make a poor choice of the dried plants, and to throw the greatest number of them away unable to carry them any farther, as four of my pack horses drowned, and the means of carrying my collections of plants and geological specimens were consequently destroyed. I fully lost 4–5000 specimens. There are however still some very interesting remnants..." (Politzer 1944, Arousseau 1968). Furthermore, on 4



2. *Livistona nitida* near the Palm Tree Creek/Robinson Creek junction.

November 1845, additional losses were incurred when a bullock “*which carried the remainder of my botanical specimens, watched his opportunity, and plunged into a deep pond, where he was quietly swimming about and enjoying himself, whilst I was almost crying with vexation at seeing all my plants thoroughly soaked*” (Leichhardt 1847a, p. 469).

Some 2800 specimens collected by Leichhardt during his six years of collecting in Australia have been located. About 90 of these are type

specimens of various designations (Dowe 2005). In the absence of specimens from the Overland Expedition, the journal itself is the primary botanical reference for that period in Leichhardt’s career. Joseph Hooker (1860, p. cxxi) noted that the journal was at the time of its publication “*....by far the fullest published detailed account of the tropical vegetation of the interior of Australia that we possess.*”

The aim of this paper is to annotate all references to palms in the Journal of the

3. *Livistona decora* at Sandy Creek, tributary of Suttor Creek, Denham Range.



Overland Expedition. The author subsequently visited many of the locations where Leichhardt mentioned palms. Herbarium collections were made at some locations and photos taken. The manuscript names used by Leichhardt and their current names are listed in Table 1.

Extracts from Journal of an Overland Expedition

The Overland Expedition departed Jimbour on the Darling Downs, northwest of Brisbane, on

1 October 1844 (Fig. 1). Heading northwest, Leichhardt followed the Condamine River until 9 October, and then to the north entered the Dawson River catchment on 5 November. Following a creek that enlarged into a stream that Leichhardt named the Dawson River, the expedition passed beside it for some distance until it was joined by a stream lined with *Livistona nitida*, which would be the first palm species to be encountered on the Expedition. Because of the abundance of palms, Leichhardt

named it Palm Tree Creek (Fig. 2). The species is a riparian element on the Dawson River system, where it forms groves in gorges and at the bases of sandstone cliffs as well as on the edges of streams that flow through forests and scrubs on undulating topography.

14 Nov. 1844: "A dense scrub, which had driven us back to the river, obliged me to reconnoiter to the north-west, in which I was very successful; for, after having crossed the scrub, I came into an open country, furnished with some fine sheets of water, and a creek with *Corypha* palms, growing to the height of 25 to 30 ft....

...Several rocky gullies were passed, that were full of palm trees. The valley of Palm-tree Creek extends about nineteen miles from west to east. The ranges which bound it to the south, I called "Lynd's Range", after my friend R. Lynd Esq."

After camping on Palm Tree Creek on 16 November, the Expedition took a westerly course to follow Robinson Creek. Here *Livistona nitida* was similarly abundant, and Leichhardt set up camp on the night of 17 November beneath a grove of palms. *Livistona nitida* is here a conspicuous riparian species, and forms extensive groves on the lower plains of Robinson Creek, as well as the gorges and cliff-bases of upper Robinson Creek in Expedition National Park. The party consumed palm hearts as a welcome dietary addition, apparently causing no ill effects.

17 Nov. 1844, near S25°30'11": "We went about nine miles up the valley, on a south

branch of Palm-tree Creek, which derives its water from Lynd's Range. The fine water-hole which I selected for our camp, was not only shaded by stately *Coryphas* and flooded gums, but the drooping *Callistemon*, the creek *Melaleuca*, and the *Casuarina*, gave it the character of the rivers and creeks of the Moreton Bay district....The tops of the *Corypha* palm eat well, either baked in hot ashes or raw, and, although very indigestible, did not prove injurious to health when eaten in small quantities"

The Expedition followed Robinson Creek and its tributaries until 27 November. Leichhardt observed groves of *Livistona nitida* in gorges and gullies.

25 Nov. 1844, S25°27'12": "The gullies were full of bush-trees, amongst which the Bottle-tree, and the *Corypha*-palm were frequent."

On 27 November, the Expedition headed away from Robinson Creek in a northwest direction, and crossed Expedition Range. *Livistona nitida* again occurred as a riparian species in headwater streams, although the suite of associated plants was *Casuarina*-dominant. At their camp, the consumption of palm heart was once again a welcome addition to their diet.

29 Nov. 1844, near S25°29'19": "Instead of the cypress-pine scrub, the *Corypha*-palm and the *Casuarina* grew here, and invited us to cool shaded waters: the *Corypha*-palm promised a good supply of cabbage."

4. *Corypha utan* in the Mitchell River catchment, southern Cape York Peninsula.



5. *Livistona rigida* on Gregory River. NB. A grasshopper plague had recently descended on the Gregory River area in the days prior to the time the photo was taken, hence the chewed appearance of the leaves.



The next few days were spent negotiating deep gullies and sandstone gorges seeking a northerly route. On 1 December, the party followed Ruined Castle Creek, and to the north along Zamia Creek, so named because of the presence of the cycad *Macrozamia moorei* F.Muell. After leaving Zamia Creek on 7 December, the party headed to the northwest and skirted the eastern and northern slopes of Expedition Range. On 9 December, a series of small northeastern flowing creeks arising in Expedition Range were encountered, many of which were lined with *Livistona nitida*. Further on, the party set up camp once again in the company of palms. This creek was named Erythrina Creek and is near the northern distribution limit of *Livistona nitida*.

9 Dec. 1844, near S24°54'19": "About six miles from our last camp, we came upon a fine creek (with *Casuarinas* and palm-trees), flowing from the mountains on a north-easterly course; and, about three miles further, to the W.N.W., we came to another creek, and numerous palm-trees growing near it. ...We were camped in the shade of a fine *Erythrina*; and the *Corypha*-palm, *Tristania*, the flooded-gum, the silver-leaved Ironbark, *Tripetelus*, and a species of *Croton*, grew around us."

On the 10 December, the expedition ascended Christmas Range and entered the Mackenzie River catchment. The Comet River was encountered on 28 December, the Mackenzie River on 10 January, and the Isaac River on 13



6. *Livistona inermis* in the headwaters of Katherine River, arising in the western Arnhemland Plateau.

February. In the upper reaches of the Isaac River in the vicinity of Denham Range, Leichhardt recorded "The *Corypha* palm is frequent under the range," which refers to isolated populations of *Livistona decora* associated with permanent small headwater springs of the Isaac River gorge, and Cabbage Tree and Sandy Creeks, which flow into Suttor Creek (Fig. 3). To follow, was an extensive tract of country not containing palms.

5 March 1845, near S21°42': "The *Corypha* palm is frequent under the range; the *Ebenaceous* tree, with compound pinnate leaves and unequal leaflets, is of a middle size, about thirty feet high, with a shady and rather spreading crown."

Leaving the Isaac River on 7 March, the party traveled to the northwest and on 8 March entered the southeastern catchment of the Burdekin River system. They located the headwaters of Suttor Creek, and followed it to its junction with Suttor River on 12 March. Here the Suttor River adopts a northwest to

northern course, and being supplied with regular waterholes, camps were made on its banks during the next few days. At the junction of Suttor River and Deep Creek, a population of *Livistona lanuginosa* was first observed on 25 March (Front Cover). This population is near the eastern distribution limit of the species, with the main population occupying the riparian zones of rivers to the west. The Suttor River joins the much larger Burdekin River only a few kilometers north of this site, and interestingly there are no populations of *L. lanuginosa* occurring on the banks of the primary watercourse. Today, the site of the junction of Deep Creek and the Suttor River as seen by Leichhardt is inundated with the waters of Lake Dalrymple, the backflow of the Burdekin Dam constructed in 1987. *Livistona lanuginosa* is otherwise very restricted in distribution, being confined to minor rivers and their tributaries within the central Burdekin River catchment. Leichhardt suggested that Aborigines had removed the tops of many palms at this location,

supposedly to obtain the cabbage. However, this seems improbable as cabbage could be much more easily obtained from palms within reach of the ground. These may have merely been dead individuals of which the stems were still erect.

25 March 1845, near S21° 6': "At the junction of the creek, a great number of small *Corypha* palms were growing, and my companions observed the dead stems of some very high ones, whose tops had been cut off by the natives, probably to obtain the young shoot."

Another tract of habitats lacking palms was to be traversed over the next three months. The Burdekin River system was explored, and eventually exited on 23 May. The Expedition was now well within the tropics and the vegetation had become largely unknown to Leichhardt. The Mitchell River system was entered on 24 May, with the Lynd River being

followed until its junction with the Mitchell on June 15. For the next few days, the Mitchell River was skirted and a camp was established near the river and some of the party presented Leichhardt with the leaves of *Corypha utan*, collected from the banks of the Mitchell, where the species forms extensive groves on the banks of ox-bow lakes, secondary channels and anabranches (Fig. 4). This was the first record of this species in Australia.

21 June 1845, near S16° 9' 41": "We were encamped at a small creek, scarcely a mile from the river, from which John Murphy and Brown brought the leaves of the first palm trees we had seen on the waters of the gulf. They belonged to the genus *Corypha*; some of them were very thick and high"

Following the Mitchell River downstream, vegetation typically associated with the rivers that flow into the Gulf of Carpentaria was observed and recorded by Leichhardt.

7. *Hydriastele wendlandiana* in the Gimbat Creek/Jim Jim Creek area.



Populations of *Corypha utan* tend to become denser in the lower reaches of rivers where it occurs, and this is where the species attains its full potential as towering 20 m tall individuals with massive ventricose stems.

23 June 1845, near S16° 0' 26": "I visited the bed of the river: its banks were covered with a rather open vine brush. Palm trees became numerous, and grew forty or fifty feet high, with a thick trunk swelling in the middle, and tapering upwards and downwards"

The following day, the expedition crossed what Leichhardt recorded as one of the heads of the Nassau River, where an Aboriginal camp was observed. The watercourse is indeed Plain Creek, an upper tributary of the Nassau. The camp of 24 June was established on a lagoon near Dunbar Creek.

24 June 1845 near S15° 59' 30": "The banks of a large lagoon, on which several palm trees

grew, were covered with heaps of mussel-shells."

Corypha utan at this location near Dunbar Creek is close to its southwestern distribution limits on Cape York Peninsula, and populations are mainly confined to stream edges.

25 June, near S15° 51' 26": "It was very broad where Brown saw it last, and, by his account, the brush was almost entirely composed of palm trees."

On 26 June, the expedition turned west in an attempt to traverse the country adjoining the southern Gulf of Carpentaria. Two days later, on 28 June, the party was attacked by Aborigines and the naturalist John Gilbert was killed. Late June, July and most of August were spent negotiating the numerous streams and rivers that enter the southern Gulf of Carpentaria. Palms are absent from these systems, and none occurs again until the Albert



8. *Carpentaria acuminata* in a moist gully on the Arnhemland escarpment.

9. *Livistona humilis* near South Alligator River.



and Gregory River systems that enter the southwestern Gulf of Carpentaria. On 18 August, *Livistona rigida* was encountered for the first time, upstream of the junction of Barclay River and Albert River (Fig. 5). This palm is restricted to the riparian zone, and forms groves along many of the streams in this area.

18 August 1845, near S17° 57' or 17° 52':
 "A narrow belt of brush, with drooping tea-trees, the *Corypha* palm, the *Pandanus*, and *Sarcocephalus*, grew along the water's edge."

Other perennial streams were encountered in the following days. Rivers and streams here are highly braided, running parallel, then joining, and then separating, and the main channels are variously indicated on many maps. The names that Leichhardt applied to the watercourses in this area are open to different interpretations, and it is beyond the scope of this paper to unravel Leichhardt's exact route through the area. Nevertheless, the streams presently known as the Albert River, Barclay River, Beames Brook, Lawn Hill Creek and Gregory River all support significant populations of *Livistona rigida* along their banks. On 20 August, Leichhardt clearly crossed the Nicholson River, based on his description, as it is the only river in that area with the character that he described. Interestingly at this point the Nicholson River does not support any *Livistona rigida* populations along its banks, although some occur upstream.

19 August 1845: "The river was joined by a running creek from south-south-west, which we had to follow up about five miles, where it formed a very narrow channel between thickets of palm trees, drooping tea-trees, *Sarcocephalus*, and particularly *Pandanus*, which crowded round the tiny stream.... Magnificent tea-trees, *Casuarinas*, and *Terminalias*, gave a refreshing shade, and *Pandanus* and *Corypha* palms added to the beauty of the spot.... We again enjoyed here the young shoots of the *Corypha* palm"

Leaving the Nicholson River on 22 August, the Expedition traveled across some of the most environmentally uniform country encountered during the Expedition. On 7 September, an area of sandstone was traversed north-west of Westmoreland, and *Livistona inermis* was observed and recorded for the first time by Leichhardt [though incorrectly named by him as *Livistona humilis*], in the vicinity of what he interpreted to be the van Alphen River. *Livistona inermis* most commonly occurs on sandstone, and is otherwise widely distributed, in suitable habitats, from northwest Queensland to the islands north of Darwin.

7 Sept. 1845, near S16° 35': "The rose-coloured *Sterculia*, and a smooth broad-leaved *Terminalia*, were observed on the sandy flats of the creek; and a small fan-leaved palm (*Livistona humilis*, R. Br.), a small insignificant trunkless plant, growing between sandstone rocks, was here first observed. A



10. *Livistona benthamii* near South Alligator River.

taller species of this palm, as we subsequently found, formed large tracts of forest on the Cobourg Peninsula, and near the Alligator rivers."

During the remainder of September, October and early November, the Expedition traversed habitats mainly devoid of palms. It was during this sector that Leichhardt was forced to abandon 3–4000 botanical specimens because of the drowning of his packhorses, whilst crossing the Roper River on 21 October. Although a large population of *Livistona rigida* occurs on the Roper River in the area around Mataranka, the Expedition crossed the river too far downstream to encounter this species there. By early November, the Expedition reached the watershed of streams with their headwaters in the Arnhemland Plateau. On Snowdrop Creek, an upper tributary of Katherine River, *Livistona inermis* was observed growing in an area of sandstone cliffs and deep rugged gorges (Fig. 6).

9 Nov. 1845, near S13° 38' 28": "Mr. Calvert saw the *Livistona palm*"

At this area near Gimbat Creek in southern Arnhemland, patches of dense vegetation were

becoming more common, particularly associated with sandstone escarpments and perennially moist gullies and permanent streams. Outlying populations of both *Hydriastele wendlandiana* and *Carpentaria acuminata* [respectively named as 'small *Seaforthia*' and '*Seaforthia*' palms by Leichhardt] occur here (Figs. 7 & 8). The former occurs most commonly in areas away from the Arnhemland Escarpment in the north-west of the Northern Territory, while the latter is otherwise distributed throughout the Arnhemland Escarpment and associated gullies, and in a broad arc across the north of the Northern Territory.

13 Nov. 1845: "Very small specimens of the *Seaforthia palm* were here observed for the first time; and the large scarlet fruit of *Eugenia* was found."

The ruggedness of the Arnhemland Escarpment sandstone was proving difficult to traverse, so Leichhardt attempted, on 20 November, an ascent to the coastal plains that now stretched ahead of them. Once on the plains in the headwaters of the South Alligator River, populations of *Livistona humilis* began to appear (Fig. 9).

11. *Hydriastele ramsayi*
on Cobourg Peninsula.



25 Nov. 1845, near S13° 0' 56": "The *Livistona* palm and *Cochlospermum gossypium* grew on the ridges; the tea-tree, the stringy-bark, the leguminous Ironbark and *Eugenia* were useful timber."

Descending the South Alligator River valley during late November, *Livistona humilis* [named as *Livistona inermis* by Leichhardt] became one of the dominant mid-level species in low open woodlands. As the environment changed to swamper or poorly drained formations, Leichhardt's 'stately *Corypha*,' *Livistona benthamii*, formed extensive populations (Fig. 10).

26 Nov. 1845, near S12° 51' 56": "*Livistona inermis*, R. Br. formed small groves; and *Pandanus* covered the hollows and banks of two small creeks with rocky water-holes going to the westward....We crossed the plain to find water, but the approaches of the river were formed by tea-tree hollows, and by thick vine

brush, at the outside of which noble bouquets of Bamboo and stately *Corypha* palms attracted our attention."

By the end of November, the lower areas of the South Alligator River were approached. In areas of better drainage, most often on siliceous sand, populations of *Livistona humilis* [named as *Livistona inermis* by Leichhardt] reach their greatest density.

29 Nov. 1845, near S12° 26' 41": "*Livistona inermis*, R. Br. grew from twenty to thirty feet high, with a very slender stem and small crown, and formed large groves in the stringy-bark forest."

The following day, 30 November, the expedition moved through what is now northern Kakadu National Park on a route toward East Alligator River. Leichhardt recorded more *Livistona humilis* populations, and the use of its cabbage as a vegetable, which severely affected the bowels of some in the

Expedition. The further north they traveled, the more ubiquitous *Livistona humilis* became.

30 Nov. 1845, near S12° 21' 49": "The lower part of the creek on which we were camped was covered with a thicket of *Pandanus*; but its upper part was surrounded by groves of the *Livistona* palm. As our horses had been driven far from camp by the grey horse-fly and a large brown fly with green eyes, which annoyed us particularly before sunset, and shortly after sunrise, we had to wait a long time for them, and employed ourselves, in the meanwhile, with cutting and eating the tops of *Livistona*. Many were in blossom, others were in fruit; the latter is an oblong little stone fruit of very bitter taste. Only the lowest part of the young shoots is eatable, the remainder being too bitter. I think they affected the bowels even more than the shoots of the *Corypha* palm....We made a short Sunday stage through a fine forest, in which *Livistona* became more and more frequent."

At some locations on the flats between the South Alligator River and the East Alligator River, which the Expedition traversed during late November and early December, the low open woodlands are dominated by populations of *Livistona humilis*.

1 Dec. 1845: "We traveled about eleven to twelve miles to the northward, for the greater part through forest land, large tracts of which were occupied solely by *Livistona*."

The Aborigines of the area had become familiar with European settlers, as the Port Essington settlement was established in 1839. As the Expedition passed along, they were offered refreshments including the cabbage of what Leichhardt termed *Seaforthia* palm, which could apply to either *Carpentaria acuminata* or *Hydriastele ramsayi*, as both species occur in this area (Fig. 11).

2 Dec. 1845: "The natives were remarkably kind and attentive, and offered us the rind of the rose-coloured *Eugenia* apple, the cabbage of the *Seaforthia* palm, a fruit which I did not know, and the nut-like swelling of the rhizome of either a grass or sedge."

The area between the South Alligator River and East Alligator River was traversed in early December, and populations of *Carpentaria acuminata* (which Leichhardt named as *Seaforthia* palms) are common here.

4 Dec. 1845: "The *Seaforthia* palm raised its elegant crown far above the patches of vine

brush which we passed at the river side of the ridges."

Near the Murgarella area, the open forests are occupied by extensive populations of *Livistona humilis*.

14 Dec. 1845, near S11° 32' 11": "They were all composed of a clayey ironstone, and clothed with patches of scrub, formed principally of *Calythrix*, and with a more open forest of Cypress pine, white-gum, tea-trees, bloodwood, *Livistona* palms, *Pandanus*, with shrubby *Terminalias* and *Coniogetons*."

The Expedition reached the Cobourg Peninsula in mid December, where *Hydriastele ramsayi* (named as small *Seaforthia* palms by Leichhardt) occurred in the more densely forested areas. The well-drained ridges are occupied by populations of *Livistona humilis*.

16 Dec. 1845, near S11°26'18": "We traveled about five miles over stony ironstone ridges, with extensive groves of *Livistona* palm covering their slopes....In the forest, we met with some few small *Seaforthia* palms, the young shoots of which we obtained with great difficulty, not then knowing how easily the natives strip them of the surrounding leaves and leafstalks."

At a stream flowing into Bremers Bay, populations of *Livistona humilis* and *Hydriastele ramsayi* [as *Seaforthia* palm] were common, although the latter was to disappear in the immediate vicinity of the harbor. Later that day, the expedition arrived at the settlement of Port Essington, where the site of coconut palms lining the entrance and neat rows of houses were noted. The expedition was to spend a month recuperating here from their 14.5-month journey before their return to Sydney on the schooner *Heroine*, and where they arrived on 29 March 1845, welcomed in incredulous and controversial circumstances.

17 Dec. 1845: "We started, with a willing guide, for the goal of our journey, and traveled to the south-west over a hilly country, covered with groves of the *Livistona* palm, which, as we proceeded became mixed with *Seaforthia* (the real cabbage-palm).... The *Seaforthia* palm became very abundant, and at last the forest was formed entirely of it, with trees of every size. Our guide shewed us how we could easily obtain the young shoots, by splitting the leaves and leafstalks; and we enjoyed a fine meal of the cabbage....As we approached the harbour, the cabbage palm became rarer, and entirely disappeared at the head of it....On

the Vollir, we came on a cart road which wound round the foot of a high hill: and, having passed the garden, with its fine Coconut palms, the white house, and a row of snug thatched cottages burst suddenly upon us."

Conclusion

Leichhardt provided a major contribution to the taxonomy of Australian plants by the collections that he made during his six years in Australia, as well as presenting the first literary accounts of many species as part of his diary and journal entries. In his *Journal of the Overland Expedition*, Leichhardt made 34 references to palms, accounting for a total of 11 species. In most cases he provided at least a genus name, including *Corypha*, *Livistona* or *Seaforthia*, and two by a species name, *Livistona inermis* and *Livistona humilis*. It must be noted that only a small number of palms had been described in Australia up to that time, and Leichhardt was guided by the available taxonomy. With the abandonment of 3–4000 specimens after the drowning of his pack-horses, it is not known if Leichhardt collected any of the palms that he mentioned in his journal, in particular those which were undescribed at the time. As for the collection legacy of the Overland Expedition, only about 50 specimens have survived, of which many are small herbaceous species, and unfortunately none are palms.

Leichhardt's journal entries provide an indication of the distribution of species at the time immediately prior to European settlement of northern Australia. Many of the areas where Leichhardt described palms are largely surviving as he saw them, as he traversed some of the more remote parts of Australia, which remain sparsely settled and are presently mostly used for open range cattle grazing. Although many of the populations of palms that Leichhardt described remain, research into other plant species that are more sensitive to the impact of European-style land management practices, indicate decline and possible extirpation in some locations (Benson & Redpath 1997). Indeed Leichhardt's true legacy will be his accurate and compelling first-hand description of a natural environment that is in the process of being completely altered, and fast disappearing in many locations.

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