

Walter Hill: his involvement with palms (Arecaceae), and notes on his herbarium and the expeditions of 1862 and 1873

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Summary

Dowe, J.L. (2016). Walter Hill: his involvement with palms (Arecaceae), and notes on his herbarium and the expeditions of 1862 and 1873. *Austrobaileya* 9(4): 489–507. Walter Hill was the Director of the Brisbane Botanic Garden and Queensland Colonial Botanist 1855 to 1881. Botanical exploration was in its infancy in Queensland at that time, and Hill was the first botanist to record palm species on Cape York Peninsula and north-east Queensland during expeditions of 1862 and 1873 respectively. He observed or collected 18 species during these expeditions including *Archontophoenix alexandrae* (as *Ptychosperma alexandrae*), *Arenga australasica* (as *Sagus farinifera* and *S. blackallii*), *Calamus aruensis* (as *Zalacca* sp.), *Calamus australis*, *Caryota albertii* (as *Caryota urens*), *Cocos nucifera* (as coconut), *Hydriastele costata* (as *Pinanga* sp.), *H. wendlandiana* (as *Areca* sp.), *Laccospadix australasicus* (as *Kenti*), *Licuala ramsayi* (as *Livistona* sp.), *Linospadix minor* (as *Areca minor*), *L. palmerianus* (as *Areca* sp.), *Livistona decora*, *L. drudei*, *L. muelleri* (all as *L. inermis*), *Normanbya normanbyi* (as *Cocos normanbyi*), *Oraniopsis appendiculata* (as a 'beautiful palm') and *Ptychosperma elegans* (as *Seaforthia elegans*). Hill was nomenclaturally associated with seven palm taxa, only two of which, *Areca minor* W.Hill (*Linospadix minor*) and *Cocos normanbyi* W.Hill (*Normanbya normanbyi*), are accepted as valid taxa and the others are invalid names of no taxonomic standing, and include *Areca northiana* W.Hill ex Hemsl., *Pinanga smithii* W.Hill, *Ptychosperma hillii* W.Hill, *Ptychosperma kennedyana* W.Hill and *Sagus blackallii* W.Hill. Notes are also provided on Hill's herbarium and the itineraries of the expeditions of 1862 and 1873 are outlined.

Key Words: Arecaceae, Palmae, palms, Queensland flora, Brisbane Botanic Garden, Cape York Expedition 1862, Colonial Botanist, Ferdinand Mueller, North-East Coast Expedition 1873, Walter Hill

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Introduction

Walter Hill (b.1820–d.1904) (**Fig. 1**) was the first Superintendent and later Director of the Brisbane Botanic Garden 1855–1881, and Queensland Colonial Botanist 1859–1881. His expertise was in horticulture having been trained and employed in the Edinburgh Botanical Garden, 1841–1843, and Kew Gardens, 1843–1851, before migrating to Australia in 1852 (Hill 1844; Queensland 1904; Maiden 1910). Upon his appointment as Superintendent of the Brisbane Botanic Garden in 1855, Hill's primary interest was in the introduction of potentially economically important plants through experimental and acclimatisation projects (Hill 1873, 1880a; Bailey 1904; Everist 1982; Clements 1999; McKinnon 2009). The Brisbane Botanic Garden is now known as City Botanic

Gardens, Brisbane and herein abbreviated as BBG. Although his interest was in useful and economic plants, the development of BBG as a horticultural exemplar was also amongst his ambitions. Despite not being a taxonomist by training or inclination, Hill nevertheless made some attempts at systematics, but his few publications were mainly disparaged by other botanists and much of his novel nomenclature was not taken up in the taxonomic literature.

This paper examines Hill's involvement with palms (Arecaceae). The two major expeditions, in 1862 and 1873, in which he observed and/or collected palm specimens are examined as background to his contribution to palm taxonomy, both as a collector and as a taxonomist. Source information was obtained from Hill's Annual Reports of the Brisbane Botanic Garden and other official accounts. Specimen data were mainly obtained online from APNI (2016), AVH (2016), the Kew

Herbarium Catalogue (2016), and other sources as indicated. Correspondence items were obtained through the Mueller Correspondence Project, Royal Botanic Gardens Melbourne and Global Plants (2016). Plant taxonomy follows the APC (2016). The species names that were used by Hill are maintained at first reference but with corrected spelling, and current names are included, in square brackets, where appropriate. Quotes from letters and publications are verbatim, with retained original spelling, and author comments within quotes are included in square brackets.



Fig. 1. Portrait of Walter Hill. Photographer and date not known. With permission of the Queensland Herbarium.

Excursions, Collections and Taxonomy

Although Hill was a consistent and methodical botanical collector, the extant specimens that can be attributed to him are relatively few in number considering the duration of his career. Based on herbarium databases and literature citations, about 780 specimens have been located. The herbaria that hold Hill specimens include MEL (c. 525) and K (c. 85), and with small numbers in BM, BRI, CNS, GH, HO, LE, NSW, NY and PERTH (AVH 2016; Global Plants 2016; Kew Herbarium Catalogue 2016). Following examination of the major publications relevant to Hill's time, i.e. *Flora Australiensis* (Bentham 1863–1878) and *Fragmenta Phytographiae Australiae* (Mueller 1858–1882), at least 140 citations were found for which specimens have not been located. It is probable that many specimens collected by Hill were either lost or destroyed through various causes, and in particular the result of the unsuitable, and ultimately destructive conditions in which his own herbarium was kept in the Director's residence in BBG (Hill 1873, 1875a, 1876). As an example of specimen loss, Hill (1862a) reported that he had collected at least 50 plant specimens when he visited Port Denison (Bowen) whilst returning from the Cape York Expedition in 1862, but only a few specimens from that location have been located. On the subject of specimen collecting, Hill (1864) wrote that because of his increasing duties in the BBG and as Selector of Agricultural Reserves, that his duties had:

precluded me from devoting so much time as I wished to collecting contributions to the work on the Australian Flora, by Mr. George Bentham, President of the Linnaean Society. My visit, however, to the northern shores last year, in H.M. ship "Pioneer", enabled me to collect some new specimens of the flora, which were forwarded to Sir W. Hooker, Kew. It will not be out of place to mention, that during this visit I met with *Santalum album* [*Santalum lanceolatum* R.Br.], the tree which furnishes the sandal-wood of commerce, - in the first place on the banks of the Endeavour River [extant at K], and subsequently at Port Denison [not located].

By his own account, Hill collected significant numbers of specimens during the ascent/descent of the Bellenden Ker Range in 1873, but only about 30 have survived. Hill reported that the expedition experienced persistently wet weather during the event and it is probable that many specimens would have perished through damp and mould even before returning to Brisbane. Not unexpectedly, Hill's known palm collections are limited and amount to fewer than 25 specimens comprising about nine taxa (**Table 1**), although his reports and other documentation suggests that he had the opportunity to collect many palm specimens during his travels.

It is unclear if Hill's appointment as Colonial Botanist required that he undertake taxonomic assessment of the Queensland flora, or if he was expected to describe new species. Among his first taxonomic tasks was to identify the specimens collected by Eugene Fitzalan during the Burdekin Expedition of 1860 (Dowe 2015), but Hill (1860a) was only able to identify the specimens, at best, to the family level, thus demonstrating his lack of expertise in such an undertaking. His primary interest lay undoubtedly in the introduction of economically important plants and the assessment of potential agricultural lands, but he was nevertheless expected to make herbarium specimens during his expeditions and other travels (Dalrymple 1874).

Walter Hill's Herbarium

The basis of all plant taxonomy is a functional and enduring herbarium. The earliest documentation relating to the herbarium that Hill maintained in BBG dates from 1857, when Mueller (1858), in a lecture given before the Royal Philosophical Society of Victoria, 5 August 1857, noted that the exhibited specimens were 'selected from a Herbarium formed by Mr. Hill, the Superintendent of the Brisbane Botanic Gardens.' Mueller went on to describe Hill as 'a gentleman of keen observation, and great ardour for botanical research.' Hill's herbarium was housed in the Director's residence (also known as the cottage) in the BBG. The building commenced construction

in August 1859 and was completed in 1861 (Queensland Government 1859, 1861). Hill (1862b) wrote that he had 'succeeded in forming the nucleus of a Public Botanical Library and Museum', with the museum to notionally include an operational herbarium, and which were subsequently opened to the public in 1864 (Hill 1864). It became apparent that the Director's residence was not suitable for such a purpose because of 'dampness' and insects. Alterations to the flooring of the building in 1873 were not altogether successful in 'keeping that portion of the building as dry as it ought to be'. Hill (1873) wrote that he had:

lost two valuable collections of indigenous plants deposited there, and another I brought with me when I left Kew, and which was considered a valuable collection in the mother country. I have still a fair variety of specimens of indigenous plants, including grasses, but it requires arrangement, which can be done when the room is put in a fit state ... it is impossible for me to do justice to the Botanical Museum and Library in the way in which the duties ought to be fulfilled. In every other establishment of the kind in Australia, the Director of the Botanic Gardens has one or more skilled assistants to help him in the clerical and general work; – unfortunately I have had little of any such aid.

Hill (1875a) later reported on what was the state of the library and herbarium, writing that the building was:

unfit in its present condition for books, or for dried specimens where with to form a herbarium, few additions have been made to it in either department [during 1874]. I had occasion first to refer to its dilapidated condition in my annual report for the month of March 1871...Shortly afterwards the room was re-floored and the backs of the book cases lined with boarding, in order to check the action of the damp. This partially succeeded for a time, but ere long the evil complained of became worse than ever... It grieves me much to have again to state that the binding, and in many cases even portions of the works have been completely destroyed by the white ant and other insects...from the same causes I have had almost the whole of my valuable collection of dried specimens, the labour of twenty years in this colony, and also a highly valuable collection, brought with me from Kew, nearly completely destroyed.

Table 1. Palm specimens collected by Walter Hill, providing location, year (if known) and herbarium record data

Taxa [current name]	Specimen details and notes
<i>Archontophoenix alexandrae</i>	Cape York, 1878, <i>W.Hill s.n.</i> : MEL 2148270
<i>Archontophoenix alexandrae</i>	Cape York, undated, <i>W.Hill s.n.</i> : MEL 2148412–2148413
<i>Areca alicae</i> [<i>Areca triandra</i>]	<p>Ex cult., Brisbane Botanic Garden, undated, <i>W.Hill s.n.</i>: holo: MEL 1010446–1010450.</p> <p>Notes: The specimen on which Mueller (1879) described <i>Areca alicae</i> was most probably from a cultivated plant at Brisbane Botanic Garden, that had been incorrectly labelled as having been collected by Hill at ‘c. 10 miles N of Trinity Bay’, but undated. Hill visited Trinity Bay in 1873 and 1876. However, <i>Areca triandra</i> was listed as cultivated in BBG in 1875 (Hill 1875b) and flowered for the first time in 1879 (Hill 1879). It is most possible that the specimen was incorrectly labelled in the Brisbane Botanic Garden, as the chance of it being collected in Trinity Bay, from what could only have been a cultivated plant, is highly unlikely. Mueller (1879), in the protologue and in correspondence to Odoardo Beccari, associated it with <i>Areca triandra</i> but otherwise described it as <i>A. alicae</i>.</p> <p>[Mueller to Beccari, 1879, 5 April, University of Florence, Science Library: Botany, Archives, Beccari 12/32), ‘Herewith, dear Dr Beccari, I send you the fruits of a new <i>Areca</i> from Trinity Bay. The species is allied to <i>A. triandra</i> & <i>A. oxycarpa</i>. I have sent the description to Dr von Regel’s Garten-Flora’.]</p>
Arecaceae	Moreton Bay, undated, <i>W.Hill s.n.</i> : MEL 2217991
<i>Areca minor</i> [<i>Linospadix minor</i>]	Bellenden Ker Range, ranges near Mourilyan Harbour, Moresby River, Russell River, 1873, <i>W.Hill s.n.</i> : holo: MEL 0079767–0079769
<i>Linospadix monostachyos</i>	Queensland, 1862, <i>W.Hill 130</i> : K 000209500
<i>Linospadix monostachyos</i>	Mount Lindsay, undated, <i>W.Hill s.n.</i> : MEL 2195651
<i>Linospadix monostachyos</i>	Moreton Bay, undated, <i>W.Hill s.n.</i> : MEL 2072876
<i>Linospadix monostachyos</i>	Moreton Bay, undated, <i>W.Hill s.n.</i> : K 000209490
<i>Livistona drudei</i>	Port Denison, undated, <i>W.Hill 41</i> : K 000209793
<i>Livistona</i> sp. (labelled as <i>L. lorophylla</i>)	Queensland, 1862, <i>W.Hill 21</i> : K 000209064
<i>Cocos normanbyi</i> [<i>Normanbya normanbyi</i>]	Daintree River, [1873], <i>W.Hill s.n.</i> : holo: K 000321303. This specimen appears to be a mixture of collections. The leaf is attributed to Hill, and fruit and flowers to other collectors. The leaf was chosen as the holotype by Dowe (2010). Therefore the specimen includes the holotype to which other elements have been added.

<i>Normanbya normanbyi</i>	Daintree River, undated, <i>W.Hill s.n.</i> : MEL 2148941
<i>Veitchia arecina</i> [here identified as <i>Normanbya normanbyi</i>]	Ex cult., Brisbane Botanic Gardens, May 1881, <i>W.Hill s.n.</i> : K 000736216. Notes: Two original labels accompany this specimen: (1) <i>Cocos normanbyana</i> , Brisbane Hort?, W.Hill 1881 (on the packet containing flowers). (2) (<i>illegible</i> under shades in Museum), <i>Areca northeiana</i> , (cf. <i>Kentia exorrhiza</i>), Cardwell, W.Hill May 1881 (letter). According to the specimen slips, Beccari identified it as <i>Veitchia</i> sp in 1911; H.E. Moore Jr proposed that it was the holotype of <i>Veitchia hookeriana</i> Becc. in 1957; and Zona & Fuller identified it as <i>Veitchia arecina</i> Becc. in 1999. Examination of the specimen by this author suggests the correct identity is <i>Normanbya normanbyi</i> .
<i>Ptychosperma</i> sp.	Cape York, undated, <i>W.Hill s.n.</i> : MEL 2195043
<i>Ptychosperma elegans</i>	Ex cult. Brisbane Botanic Garden, 1875, <i>W.Hill s.n.</i> : MEL 2148953. Notes: The original seeds or plants were possibly collected at Cape York by Walter Hill in 1862. A letter to Mueller, 22 June 1875, accompanied this specimen in which Hill wrote 'the palm found by me at Cape York ... The habit resembles the <i>Seaforthia elegans</i> [<i>Ptychosperma elegans</i>], and grows about the same height ... I found it growing about 50 yards from the <i>Caryota urens</i> [<i>Caryota albertii</i>] at Cape York.'

Through the demise of Hill's herbarium, and with a general absence of taxonomic actions on his behalf, it can be interpreted that managing a herbarium and active taxonomy were seen by those who appointed him as peripheral to his principal work of plant introduction, agricultural development and forest conservancy. He exhibited no explicit interest, or capability, in developing the BBG as a centre for taxonomic research *per se*, and left such activities to others, for example Ferdinand Mueller, Government Botanist of Victoria, to whom Hill sent a regular supply of specimens, and to F.M. Bailey, Keeper of the Herbarium at the Queensland Museum. Hill supported the establishment of a 'complete collection' in Brisbane when responding to a request from the Acclimatisation Society as to what would be the most useful furniture for the Museum herbarium (Legislative Assembly 1875). The Museum herbarium

was established in 1874 (Bailey 1879). Lewis Bernays (Bernays 1873) of the Queensland Acclimatisation Society, wrote in a letter to the Secretary of Public works, that:

I desire to be permitted to draw your attention to the fact that the colony of Queensland possesses no herbarium of her flora, and in this respect stands almost, if not quite, alone among the Australian colonies.

Bailey (1873) also articulated the need for a public herbarium where specimens could be 'compared and identified'. The Museum herbarium proposal was approved by the Secretary of Lands in May 1874, with £100 being provided. A letter to Bernays included the proviso for the establishment of the herbarium if 'sufficient accommodation can be found in the present Museum building for the purpose...and also to provide suitable furniture for their preservation and exhibition' (Queenslander 1874). In

1875, management of the herbarium was passed from the Acclimatisation Society to the Museum (Queenslander 1876), and by 1877, F.M. Bailey was acting as Keeper of the Herbarium (Everist 1982; Mather 1987; George 2009). Hill (1874a) supported the formation of a herbarium at the Museum, in response to the problems associated with his own herbarium at BBG. In a letter from Charles Coxen (1874) to Secretary of Lands, 5 May 1874, he paraphrased that it was Hill's opinion that:

there is not sufficient accommodation for the purpose [of a herbarium] at the Botanic Gardens, and that his various duties occupy his time too much to admit of his devoting sufficient leisure to this new object.

The establishment of the Museum Herbarium can be seen as contributing to the cessation of the herbarium at the BBG.

There are only about nine of Hill's specimens presently in BRI. It appears that no specimens were transferred to the new herbarium at the time of Hill's retirement in 1881, but that these specimens had been redistributed to BRI from MEL in the early 20th century. However, it is known that the books from the 'extensive botanical library, previously kept in the Curator's cottage at the Botanic Gardens' were transferred to the Museum in 1881 (Board of Trustees 1882). At the time of Hill's retirement in 1881 (Legislative Assembly 1881; McKinnon 2009), the role of Queensland Colonial Botanist was taken on by F.M. Bailey based at the Museum, and the responsibility of horticultural activities associated with the BBG was given to the head gardener James Pink. It is from the Museum Herbarium that the present-day collection in the Queensland Herbarium was to develop (Holland 2005; Henderson *et al.* 2006).

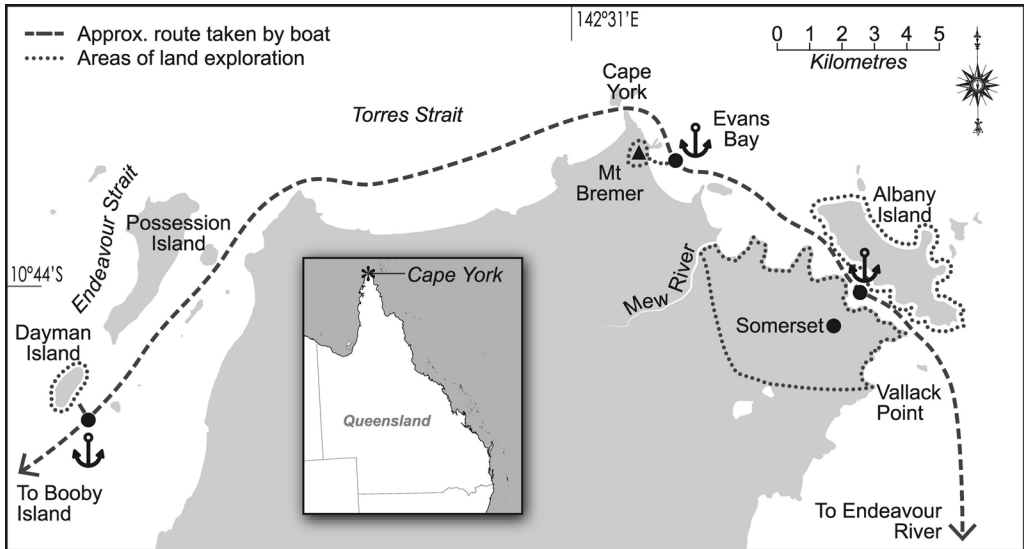
Cape York Expedition, August/October 1862

Apart from being Director of the Brisbane Botanic Garden and Queensland Colonial Botanist, Hill also held the positions of Selector of Agricultural Reserves and Officer-in-Charge of Forest Nursery Reserves.

This allowed him to travel very widely in Queensland. However, there are only two expeditions, the Cape York Expedition of 1862 and the North-East Coast Expedition of 1873, which are of interest with regard to his observations, collection and taxonomy of palms, and it is these expeditions that will be investigated here. There are no noteworthy contemporary accounts of Hill's involvement in the Cape York Expedition, but detailed descriptive accounts of the North-Coast Expedition include those by Jones (1976), Sanderson (2005) and Lavarack (2015). In the following, a general assessment of Hill's botanical pursuits is provided but with an emphasis on his palm related activities.

The Cape York Expedition of 1862, sponsored by the Queensland Government, was intended to facilitate the establishment of a settlement on the northernmost point of Australia, and which was to function as an administrative centre for northern Queensland (Bowen 1864). The expedition was under the direction of Commodore George Burnett, accompanied by Governor George Bowen and with Captain F.C.B. Robinson as the commander of the *HMS Pioneer*, the ship used for the expedition. Hill's primary role was to assess the agricultural and pastoral capabilities of locations visited (Bowen 1864). The expedition departed Brisbane (27 Aug. 1862) and camped at a number of locations whilst *en route* to Booby Island, in western Torres Strait, which they reached in 13 days (9 Sept.). Fast travel times were expedited by favourable south-east winds under sail as there was only enough fuel to drive the steam engines for the return voyage. The expedition spent 14 days in the Cape York area (9–22 Sept.), including Dayman Island (10–11 Sept.), Evans Bay (12–15 Sept.), Albany Island and the adjacent mainland around Somerset (15–22 Sept.) (**Map 1**). The details reported here are based on two reports provided by Hill (1862a, 1862b) and a published account by Bowen (1864).

Hill's first mention of palms was at Fitzroy Island (3 Sept.), where he noted that the 'valleys are filled with dense scrub, occupied by *Calamus australis* (lawyers), *Seaforthia*



Map 1. Exploration route taken during the Cape York Expedition, 1862. Prepared by Claire Burton, Cairns Regional Council.

elegans [*Ptychosperma elegans* (R.Br.) Blume] and that 'the trees in the forest ground consist principally of the genus *Eucalyptus*, acacias, *Erythrina*, with *Livistonia inermis* [*Livistonia muelleri* F.M.Bailey] gracing now and then its ridges.' At this time, Hill appears to have identified all *Calamus* species as *C. australis* Mart., although a number of species occur on Fitzroy Island. Similarly, *Livistonia* species other than *L. australis* (R.Br.) Mart., such as *L. decora* (W.Bull) Dowe, *L. drudei* F.Muell. ex Drude and *L. muelleri* were commonly, though incorrectly identified as *L. inermis* R.Br., a distinct taxon originally described from islands in the Gulf of Carpentaria, and an example of the imprecision of the identity of Australian palms at that time. The delimiting of species and genera of Australian palms only started to be resolved with subsequent works by Mueller (1865a, 1870, 1878) who described new species and genera, and Wendland & Drude (1875) who provided the first monograph of Australasian palms with many new species and reassessments of generic limits.

Hill examined Dayman Island (11 Sept.) but did not report any palms from there. The travellers sailed on to Evans Bay (12–15

Sept.) where Hill ventured as far inland as Bremer Peak [Mount Bremer]. Near the coast, Hill noted that the forest was 'occupied with some noble plants of *Caryota urens* [*Caryota albertii* F.Muell. ex H.Wendl. & Drude] [and] *Seaforthia elegans* [*Ptychosperma elegans*]. In what was possibly the first record of *Arenga australasica* (H.Wendl. & Drude) S.T.Blake & H.E.Moore for Australia, Hill noted that:

one of the most interesting plants gathered in the neighbourhood of Evans' Bay was a palm not hitherto mentioned as Australian. It is the *Sagus farinifera* (one of the sago producing palms) found in the East Indies; a single plant was first seen in the scrub, near the top of Bremer Peak, and afterwards a clump of it was found in one of the small scrubs close to the Bay.

Hill's identification is problematical, as *Sagus farinifera* Gaertn. [*Raphia farinifera* (Gaertn) Hyl.] is an African species used for starch (from the pith) and fibre (from the leaves), and my interpretation of Hill's description as a 'clump', i.e. clustering palm, and location 'near the top of Bremer Peak' suggest he was observing *Arenga australasica*, and through want of a correct identification named it as *Sagus farinifera*.

The expedition then moved to Port Albany (15–22 Sept.) after which ensued a thorough examination of Albany Island and the adjacent mainland as far inland as Somerset, and along the coast as far west as Mew River and as far east as Vallack Point. Hill described the forest immediately inland from the coast as having a great variety of plants:

among which are five species of palms, viz. – *Caryota urens* [*Caryota albertii*], *Seaforthia elegans* [*Ptychosperma elegans*], *Areca* sp. [possibly *Hydriastele wendlandiana* (F.Muell.) H.Wendl. & Drude], *Zalacca* sp. [possibly *Calamus aruensis* Becc.], and a species of *Pinanga* [*Hydriastele costata* F.M.Bailey]. The latter rises to a height of 110 feet.

Again, Hill's difficulties with the identities of palms were exacerbated by the lack of knowledge of Australian palms at that time. Palm species, in general, were then grouped into a few very broadly characterised genera, and it is into those that Hill placed his taxa. The palms that he observed in this area included an *Areca* sp, which I interpret as *Hydriastele wendlandiana*; *Zalacca* sp. as juveniles of *Calamus aruensis*; and *Pinanga* sp. which was described by Hill as rising to 110 feet (33 m) in height, as *Hydriastele costata* as it is the only palm in that area to attain such stature. On this basis, Hill was the first to record these species in Australia, albeit by the best available identities available to him. Hill did not record if he made collections of any palms during the Cape York Expedition. However, there are specimens of *Archontophoenix alexandrae* (F.Muell.) H.Wendl. & Drude and *Ptychosperma elegans* in MEL (see **Table 1**), which are suspected (by me) to have been taken from cultivated plants at BBG, most likely grown from seedlings or seeds originally collected by Hill from Cape York during the 1862 expedition. The specimens of *Archontophoenix alexandrae* are uncharacteristically neat and well-prepared thus suggesting that the specimens were carefully prepared from cultivated specimens, whilst the specimen of *Ptychosperma elegans* was accompanied by a letter from Hill to Mueller, 22 June 1875, in which he wrote that 'the palm found by me at Cape York ... The habit resembles the

Seaforthia elegans [*Ptychosperma elegans*], and grows about the same height ... I found it growing about 50 yards from the *Caryota urens* [*Caryota albertii*] at Cape York.' This specimen is also uncharacteristically neat and well-prepared. In his treatment of Arecaceae in *Flora Australiensis*, Bentham (1878) cited specimens of *Kentia wendlandiana* F.Muell. [*Hydriastele wendlandiana*] collected by Hill from Cape York, but no specimens have been located at either K or MEL.

The expedition departed Port Albany (22 Sept.), and during the return voyage made stops at Endeavour River (26–27 Sept.), Dunk Island (28–29 Sept.), Tully River and Hull River (29–30 Sept.), Hinchinbrook Channel (30 Sept.), Bowen (1–6 Oct.), Keppel Bay (8 Oct.), Fitzroy River (10–18 Oct.), Port Curtis (18–21 Oct.), Maryborough (22–23 Oct.) before completing the expedition in Brisbane (23 Oct.). Although Hill provided agricultural capability descriptions for most of these locations, there were no further observations of palms after leaving Port Albany.

Results of the Cape York Expedition

It appears that Hill sent many of the specimens collected during this expedition to the Hookers at Kew (Hill 1863; Jackson 1901), and a smaller number to Mueller in Melbourne (Mueller 1865b). There was very little novel taxonomy involving Hill's specimens from this expedition. However, there were a number of important discoveries such as *Rhodomyrtus macrocarpa* Benth. from Albany Island, and the cycads *Catakidozamia hopei* W.Hill [*Lepidozamia hopei* (W.Hill) Regel] collected from the Tully River area and described in the *Gardener's Chronicle* (Hill 1865), and *Bowenia spectabilis* Hook. ex Hook.f. described by Hooker (1863) who noted that it was collected by Hill:

the zealous and able head of the Brisbane Botanic Garden, [who] rediscovered it in Rockingham Bay, and sent a young living plant, with full-grown dried leaves and a male cone, to the Royal Gardens, Kew, in 1863.

Although Hill observed and recorded a number of palm species at Cape York, there are only a few specimens that are extant. He

also appears to have obtained seeds or live plants, including palms, which he brought to Brisbane to cultivate in BBG, and it is from these that later specimens were sometimes collected (see **Table 1**).

Queensland North-East Coast Expedition, September/December 1873

According to Dalrymple (1874), the North-East Coast Expedition was undertaken on behalf of the Queensland Government, with the intention to:

explore all rivers, inlets, etc., between Cardwell and the Endeavour River; to ascertain how far the said rivers are navigable for small craft; to ascertain the nature of the soil on or near the banks for agricultural purpose; and to assist the curator in collecting botanical specimens.

The party consisted of 26 personnel with George Elphinstone Dalrymple, Officer in Charge; Sub-Inspector F.M. Tompson, Second in Command; Sub-Inspector Robert Johnstone, Officer in Charge of Native Mounted Police; Walter Hill, botanist; and the remainder consisting of ships' masters, seamen, boatmen and Native Police Troopers. The vessels initially used were the cutters *Flying Fish* and *Coquette*, and later, after they became inoperable, the schooner *Flirt* was commissioned. A towed whaleboat was used to enter small channels and streams. The following travel and collecting scenarios are compiled from four sources, Dalrymple (1874), Hill (1874b, 1874c) and Johnstone (1874).

The expeditioners assembled at Cardwell in the few weeks before departure (29 Sept. 1873) and made their first camp on Dunk Island (29–30 Sept.). As the cutters were unsuitable for on-board accommodation, the intention was to go ashore each night to make camp. At Dunk Island, Hill reported that 'the vegetation is composed of the genera *Hellenia* [*Alpinia*], *Musa*, *Calamus*, *Brassaia* [*Schefflera*], *Myristica*, *Wormia* [*Dillenia*], *Alstonia*, *Eucalyptus*, *Acacia*, &c., &c.'

They departed Dunk Island, passing North Barnard No. 3 (30 Sept–1 Oct.), and Mourilyan Harbour and Moresby River (1–4

Oct.). At Moresby River, Hill wrote that 'the natural vegetation is composed of *Calamus*, *Livistona*, *Cardwellia*, &c., &c.'. *Livistona* can here be interpreted as *Licuala ramsayi* (F.Muell.) Domin. Dalrymple wrote that during their stay at Mourilyan Harbor 'Mr. Hill protected by the native police, made a large collection of botanical treasures'. At this location, the party was accompanied by Philip Henry Nind, a planter looking for new sugar cropping areas. At the navigational limit of the Moresby River, Dalrymple noted that 'Mr. Nind discovered a very beautiful new tree orchid with a stem some seven feet long'. This orchid was described by Hill (1874b) as *Dendrobium nindii* W.Hill. The Johnstone River (named by Dalrymple) was entered and explored (4–14 Oct.). Upstream of Coquette Point, Hill wrote:

from Nind's Creek up to the head of boat navigation...the genera are chiefly *Musa*, *Colocasia*, *Costus*, *Hellenia* [*Alpinia*], *Arundo*, *Bambusa* [*Mullerochloa*], *Calamus*, *Ficus*, &c., &c., which are very abundant.

During this part of the exploration, Dalrymple named the Walter Hill Ranges, noting that 'Mr. Walter Hill, by exploration of the rich alluvial lands north and south of this range, has honourably connected his name to it'. In this area, Dalrymple (1874) named Bamboo Creek and Banana Island because of the prevalence of those plants at those places. Hill (1874b) named *Musa jackeyi* W.Hill and *M. charlioi* W.Hill from this area, the former a distinctive banana with short erect fruit (4–7 cm long × 2–4 cm wide), and the latter described with a dinghy-green rather than black stem and with a nodding rather than erect inflorescence. They departed Johnstone River (14 Oct.), and the expedition sailed north to Frankland Islands (14–15 Oct.). On the south-east end of Frankland Island No. 1 [Russell Island], Dalrymple (1874) noted that there were:

about two dozen fine cocoanuts [*Cocos nucifera* L.], the only grove of these useful and graceful trees along the whole coast, nestled under the steepest part of the wooded hill, they are in full bearing and vigorous growth, and give quite an oriental character to the island.

As coconuts were a desirable addition to their diets, Dalrymple:

sent the Native Police Troopers up the trees, and obtained a supply of ripe and drinking coconuts, the latter containing about a pint of water, which resembles delicately fruit-flavored *con sucré*, and is a delicious and cool drink in the early morning.

Hill (1874c) also wrote about this population noting that:

on the extreme end of the island we found two clumps of cocoanut-trees, extending for about fifty yards inland, but within reach of the sea spray. They were twenty-eight in number; thirteen of them were bearing, and the others will bear in the course of two or three years. Three or four of them were about fifty feet in height. The trunks, in some cases, were much cut; and two trees had been felled, no doubt for the purpose of obtaining the nuts.

Up to that time, this population of coconuts was the only one recorded on the entire east coast of Queensland. It has been interpreted as possible evidence of a pre-European (i.e., pre-1770) presence of the species in Australia (Dowe & Smith 2002).

Trinity Inlet was explored (15–18 Oct.), with camps set up on Double Island (18–23 Oct.), Snapper Island (23–24 Oct.), Endeavour River (24–29 Oct.), to as far north as Three Isles (29–31 Oct.), then returning south to North Frankland Island [Normanby Island] (31 Oct.–1 Nov.) and South Barnard Island (2–7 Nov.). The expedition returned to Cardwell (7–18 Nov.) where the personnel were reorganised, and the schooner *Flirt* was commissioned to complete the Expedition. The cutters *Flying Fish* and *Coquette* were decommissioned because of their unseaworthiness. During this period (15 Oct.–18 Nov.), Hill made no specific reports on palms although he described the vegetation at many locations in broad themes of agricultural and pastoral capabilities.

Queensland North-East Coast Expedition, second stage

Following reorganisation of the expedition, they departed Cardwell (18 Nov.) to complete the remainder of their explorations, which were to visit areas to the north which showed

promise but which they had not been able to explore on the previous portion of the expedition. The Russell River was entered (18 Nov.) and they sailed upstream to the junction with the Mulgrave. The night camp was set up on the Frankland Islands where they were becalmed (19–20 Nov.). On the return of suitable sailing conditions they again entered the Russell River and travelled up it and the Mulgrave River to the limits of navigation (20–25 Nov.).

The ascent of Bellenden Ker Range

For this part of the expedition, discrepancies exist between the dates in the various reports but I have followed those given by Hill (1874c).

In what was to be the most productive botanical venture of the entire expedition, Dalrymple (1874):

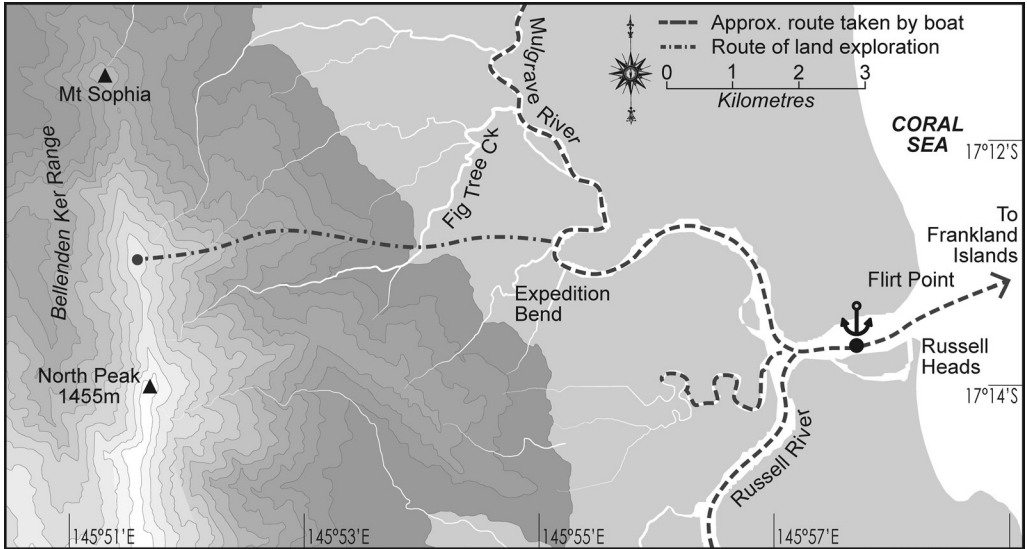
decided upon despatching Mr. Johnstone and Mr. Hill, with eight troopers, to ascend the mountain [Bellenden Ker Range] on the following morning [26 November], every necessary preparation was completed that night. Rations for five days were divided and packed in eight canvas haversacks, which I had made for the purpose, to be carried by the troopers. They also carried some machetes for cutting through the dense jungle, canvas water bags to carry a supply of water for camping on the higher spurs and summits of the range, their rifles, and ammunition.

The party was boated upstream on the Mulgrave River to Expedition Bend [near Deeral Landing] (**Map 2**), Hill (1874c) writing that:

on the 26th November, a party, consisting of Sub-Inspector Johnstone, myself and eight native troopers, started to ascend Bellenden-Kerr, by what appeared to be a promising leading spur.

Hill described the first section of about two miles [3.2 km] as:

low ground, which after much wet weather must become a swamp. The vegetation consisted of the *Barringtonia careya*, F.M. [*Planchonia careya* (F.Muell.) R.Knuth]; *Ptychosperma alexandrae*, F.M. (the Alexandra palm) [*Archontophoenix alexandrae*], *Calamus australis*, Mart. (Lawyer Cane), *Bambusa arundinaceae*, Retz (Bamboo cane) [*Mullerochloa moreheadiana* (F.M.Bailey) K.M.Wong], *Pandanus aquaticus*, F.M. (Screw



Map 2. Estimated exploration route of the ascent of Bellenden Ker Range during the North-East Coast Expedition 1873. Prepared by Claire Burton, Cairns Regional Council.

pine) [*P. solmslaubachii* F.Muell.], &c., &c. Whilst on the higher portion of the ground were *Wormia alata*, R.B. [*Dillenia alata* (R.Br. ex DC.) Martelli]; *Dysoxylon oppositifolium*, F.M. [*D. oppositifolium* F.Muell.]; *Aglaiia elaeagnoidea*, Benth, Lawyer cane, Bamboo cane, Screw pines, and others.

During this section they crossed a broad creek at a place that Hill called Davy's Crossing and informally named the stream as 'Bellenden River', present-day Fig Tree Creek. Hill noted that 'the bed was filled with large granite boulders, many of which were covered with a creeping fern (*Hymenophyllum demissum*, Swartz).' Trees along the banks included '*Castanospermum*, *Eugenia*, *Brucea*, *Ximenia*, *Elaeocarpus*, *Owenia*. &c., &c.'

Upon ascending the leading spur and setting up camp for the first night, Hill wrote that:

it took us four and a-half hours to make a distance of one and a-half miles [2.4 km], through a complete mass of bamboos, lawyers, and screw pines; and then camped for the night on a small incline between two ridges at an elevation of only 1,250 feet [380 m].

Plants in the vicinity of the camp were:

Erioglossum edule, Bl.; *Cupania robertsonii* [*Rhysotoechia robertsonii* (F.Muell.) Radkl.], F.M.; *Atalaya salicifolia*, Bl.; *Harpullia leichhardtii*, F.M.; *Castanospermum australe*, Cunn.; *Mimusops parvifolia*, Br.[*Mimusops elengi* L.]; *Achras pohlmantiana*, F.M. [*Planchonella pohlmantiana* (F.Muell.) Pierre ex Dubard], &c., &c. The thick growth of the *Pandanus* was not one of the least obstacles we had to encounter in the ascent. There were here one tree fern (*Alsophila rebecca*, F.M.) [*Cyathea rebecca* (F.Muell.) Domin] and also the fine climbing fern (*Gleichenia hermannii*, R.B.) [*Dicranopteris linearis* (Burm.f.) Underw.], which runs up to a height of fifty or sixty feet, and extends so much that in places we had to cut our way through it.

On the following morning (27 Nov.) they continued the ascent and Hill noted that the:

bamboos continued until we had reached an altitude of two thousand feet [610 m]. We still had to make a road through the lawyer cane, and *Pandanus*, the walking-stick palm (*Areca monostachya*) [*Linospadix* spp.] also growing thickly. It was at this height that I met with two new species of palm. One [*Oraniopsis appendiculata* (F.M.Bailey) J.Dransf., A.K.Irvine & N.W.Uhl] was a beautiful plant about twenty feet [6 m] high with leaves or fronds twenty feet [6 m] long, and the stems about

nine inches [23 cm] in diameter. This not being the right season to obtain either flower or fruit, I was, unfortunately unable to name the palm. The other is, I believe, a *Kenti* [*Laccospadix australasicus* H.Wendl. & Drude]; it is about twelve feet [4 m] in height, and three inches [8 cm] in the diameter of the stem, with suckers shooting from the bottom. I also noticed a new orchid (*Anoectochilus*) and a small tree fern (*Alsophila Robertiana*) [*Cyathea robertiana* (F.Muell.) Domin] that I had before observed on the Moresby River. The tree fern (*Alsophila Rebeckae*) was the most difficult to get through, being entangled with *Smilax elliptica*, R.Br., [*Smilax australis* R.Br.] and *Flagellaria indica*, Willd., &c.

Hill's reports on the palms *Oraniopsis appendiculata* and *Laccospadix australasicus* were the first reports of these two species, although the latter had been previously collected by Dallachy in 1866 at 'Rockingham Bay' (Dowe 2010). Hill did not proceed with or initiate any taxonomic description of these new palms. They set up their second camp during the day, 'at a height of 1,700 feet [520 m], being only 500 feet [152 m] higher than we were on starting in the morning'. From here they attempted to reach the summit, but only managed to get to an altitude of about 3,300 feet [1005 m] before night-fall forced them to descend to their camp. Near the camp, Hill observed a 'superb Proteaceae tree [*Alloxylon wickhamii* (W.Hill ex F.Muell.) P.H.Weston & Crisp], about sixty feet [18 m] in height, with glorious crimson blossoms'.

He went on to note that they:

had to contend with the *Calamus*, *Pandanus*, and the *Alsophila rebeckae* was the greatest annoyance we met. On our way up we passed a new species of *Dammara* [*Agathis* sp.]. Also a *Podocarpus*, both small trees and not in fruit.

Hill also noted an abundance of *Moriea robinsoni* [*Helmholtzia acorifolia* F.Muell.] and the *Kenti* [*Laccospadix australasicus*], of which neither was in flower.

The following day (28 Nov.), they again attempted to reach the summit along the crest of a rocky ridge, noting that the trees and shrubs were stunted. Hill wrote that they took three hours to reach the foot of the last incline which he estimated was 800 ft [240 m] from the summit. Resting at this place, Hill:

found a very handsome tree fern [*Dicksonia herbertii* W.Hill], a botanical description of which is given below [see Hill 1874b]. It was about 40 feet [12 m] high, and twelve inches [30 cm] in diameter four foot [1.2 m] from the ground. The stem has a singular red appearance, as have also the fronds, which are clothed with bristles. I procured four plants of it.

At his location he found *Moriea robinsoni* [*Helmholtzia acorifolia*] in flower, and noted that:

the beautiful palm [*Oraniopsis appendiculata*] I noticed on the previous day; it is from forty to sixty feet [12–18 m] in height; no flower or fruit was to be seen; I obtained two young plants with difficulty as they appear to be scarce, probably because the fruit is a favorite food with some birds or other animals. We reached the top of the range about noon.

On the summit crest, Hill noted that it was

covered with stunted trees and shrubs. During our short stay – an hour – I collected the following: - *Helicia ferruginea*, F.M. [possibly *Orites fragrans* F.M.Bailey]; *Carnarvonia araliifolia*, F.M.; *Pittosporum ferrugineum*, Ait.; *Bursaria spinosa*, Caron; *Melaleuca foliolosa*, Cun. [possibly *Leptospermum wooroonooran* F.M.Bailey]; *Trochocarpa laurina*, R.B. [probably *T. bellendenkerensis* Domin]; *Alsophila rebeckae*, F.M. [*Cyathea rebeckae*]; *Tmesipteris tannensis* Bhdh [probably *T. truncata* (R.Br.) Desv.]; *Kenti* [*Laccospadix australasicus*], *Tradescantia* [*Aneilema*], &c., &c..

At the highest point reached 'the aneroid barometer showed that we were 5,300 feet [1615 m] above the level of the sea'. This height is inaccurate, as the highest point on the Bellenden Ker Range is at Centre Peak some 2.5 km to the south, at 1582 m elevation. Hill noted that the summit was covered in cloud and mist and 'so thick that I could not proceed any distance to collect'. It can be assumed that they could not gain a true visual idea of their location with regard to proximity to higher points, but they could only guess if they were at the highest point. From an estimate of possible tracks, terrain and travel time, the highest point they may have reached was an unnamed peak, at about 1250 m elevation about 2 km north of North Peak (**Map 2**). This differs from the proposal by Lavarack (2015) in which it was claimed that

the party ascended to as far as North Peak. An assessment of the terrain and travel times precludes this estimation, though the actual route taken and the location of camp sites are at best an educated guess considering the discrepancies that exist between the reports of Hill (1874c) and Johnstone (1874).

After only one hour on the summit ridge, they descended to the foot of the incline to set up camp where they spent the night (28 Nov.). At this third camp Hill:

saw a fine specimen of *Platyserium alaicorne* var. *unique* [*Platyserium hillii* T.Moore], and a splendid tree, one of the *Dammara* [*Agathis* sp.], which could not be less than one hundred and twenty feet in height, with a barrel four feet through... there were several lofty trees about the place, amongst which I noticed *Cardwellia sublimis*, F.M., *Darlingia spectatissima*, F.M. [*Darlingia ferruginea* J.F.Bailey], *Elaeocarpus foveolatus*, F.M., also others whose name I could not determine, through being unable to obtain specimens. I gathered some seeds of *Erioglossum edule*, Bl., and of *Kenti* [*Laccospadix australasicus*], and a few of *Areca minor* [possibly *Linospadix palmerianus* (F.M.Bailey) Burret]. There were scarcely any plants in flower or fruit.

They started the descent at 6.00 am (29 Nov.), with their first stop on a crest at about 9.00 am to take observations. Hill wrote that he 'gathered all that was to be had in leaf, flower, or fruit' during this respite. From the location, views were obtained of the Mulgrave River and Trinity Inlet. About half an hour after leaving the observation point:

a thunder storm, accompanied by a heavy fall of rain, broke upon us and put a stop to all collecting; hiding from view even the tops of the trees. We had some difficulty in finding the beautiful Proteaceae tree [*Alloxylon wickhamii*] we saw when ascending the range, but fortunately managed to come across it again, and secured specimens.

The party rendezvoused with the awaiting whaleboat at Expedition Bend, and they were on board the *Flirt* by 6.30 pm of the same day.

Continuation of the Expedition

The expedition continued with further exploration of the Russell River (30 Nov.–4 Dec.). Upstream of Cowrie Point, Hill wrote that 'the principal trees, &c., are *Cardwellia*,

Grevillea, *Aleurites*, *Bambusa* [*Mullerochloa*], *Calamus*, *Musa*, *Hellenia* [*Alpinia*], &c., &c'. The area proved botanically interesting to the whole expedition party, with Dalrymple naming *Crinum* Lily Creek, for the abundance of lilies, and *Olfersia* Creek, for ferns which adorned its course; however, neither of these names are in current use.

Departing Russell River (4 Dec.), camps were made on Fitzroy Island (4–5 Dec.), Mossman River (5–6 Dec.), and the Daintree River (6–10 Dec.). The Daintree River (named then by Dalrymple) was previously unexplored, so some time was spent in reaching the limit of navigation and assessing the surrounding country for agricultural potential. At about 16 miles [26 km] upstream of the Daintree River estuary, Hill wrote that:

the mangrove is replaced by the *Hibiscus*, and the land is densely covered with tropical vegetation, consisting chiefly of the genera *Mimusops*, *Wrightea*, *Cordia*, *Cocos* [*Normanbya*], *Costus*, with numerous other trees and shrubs, &c., peculiar to the district.

Hill's observations and collections of what he described as *Cocos normanbyi* [*Normanbya normanbyi*] was the first record of this species which is prevalent on the banks of the Daintree River and areas further north (Hill 1874b).

After departing the Daintree River (10 Dec.) the expedition turned south to visit Fitzroy Island to collect water, and camp was made on Frankland Island No. 1 [Russell Island] (then informally named Cocoanut Island by Dalrymple because of the coconuts on the south-east corner of the island) for the night (10–11 Dec.). Hill commented on changes he observed at Fitzroy Island since he first visited in 1862, noting that the *Livistonas* had been cut down, writing that the:

wanton injury that has been perpetrated, for the many handsome tree-palms (*Livistonia inermis* [*Livistonia muelleri*]) which used to adorn the lightly-clad forest ridges, all have been destroyed, with one exception.

A reason for the palms demise was not proffered. After the Frankland Island camp was vacated (11 Dec.), they visited the

Johnstone River (11–17 Dec), Mourilyan Harbour (17–20 Dec.) where ‘Mr. Hill was landed on the north shore, under Hilda Hill, to plant cocoanuts, coffee, &c., &c.’ and at ‘Camp Point, with Native Mounted Police Corporal Sam and three troopers, to collect botanical specimens on Georgie Hill’. Next camps were at No. 2 South Barnard Island (20–21 Dec.), Dunk Island (21–22 Dec.) and via Hull River to Cardwell (22 Dec.). The expedition was wound down at Cardwell (23 Dec.), where ‘the surplus stores and all specimens and curios, &c., &c., were landed from the schooner [*Flirt*] and she was paid off’.

Results of the North-East Coast Expedition

The North-East Coast Expedition was among Hill’s most successful botanical ventures, with regard to the collection and description of new species. About 100 specimens can be attributed to this expedition, most of which were sent to Mueller in Melbourne. Of these, about 20 represent type materials (AVH 2016; Global Plants 2016) and most of the new taxa were described by Mueller (1874a, 1875), with some being published as early as April 1874, just four months after the return of the expedition to Brisbane. Six new species were described by Hill (1874b), in an appendix to his Annual Report of May 1874, with this being his single most important taxonomic endeavour. A seventh species was included among the new species, named as *Oreocallis wickhamii* W.Hill [*Alloxylon wickhamii* (W.Hill & F.Muell.) P.H.Weston & Crisp], but it had been previously published as *Embothrium wickhamii* W.Hill ex F.Muell, in April 1874, therefore predating Hill’s name by one month. The appendix also included the protologues of two new palms, *Areca minor* W.Hill [*Linospadix minor* (W.Hill) Burret] and *Cocos normanbyi* W.Hill [*Normanbya normanbyi* (W.Hill) L.H.Bailey], as well as a new fern, *Dicksonia herbertii* W.Hill, an orchid, *Dendrobium nindii* W.Hill and two bananas, *Musa jackeyi* W.Hill and *M. charlioi* W.Hill. As with the Cape York Expedition of 1862, Hill also collected seeds and seedlings which he propagated and grew at BBG.

Despite the new botanical discoveries made by Hill on the Bellenden Ker Range, he regretted the lack of any ‘valuable botanical discoveries’ from the viewpoint of large numbers of specimens. Hill explained his perceived short-comings:

by the fact that for three out of four days for which the party was provisioned, we had to cut a pathway the whole distance along a razor-back ridge, in many places only eighteen inches in diameter.

He otherwise noted that he secured ‘some species that are new, and several others that are rare and interesting’.

Hill’s attempt at taxonomy unfortunately did not engender much confidence from other taxonomists. Mueller (1874b), in a letter to Edward Ramsay, 24 July 1874, wrote that:

Mr Hills recent Report on the bot. Garden of Brisbane, which document you likely will have seen, has appended to it descriptions of two supposed new Palms, namely *Areca minor*, a tufty palm only 2–5 feet high, from Moresby & Russell River and the Bellenden Ker Ranges fruit nearly 1” long reddish; – the *Cocos normanbyi*, 60 feet high from the Daintree-River. I am however satisfied, that Mr Hill, though he ventured to send the palms out as novelties in an official document, has not sufficient literary means and knowledge to ascertain the exact specific or even generic position of such palms.

In a subsequent letter from Hill (1874d) to Mueller, 18 August 1874, Hill, with reference to his attempt at generic positioning for the palms, wrote that he had sent Mueller:

a small tin box containing one seed of the *Cocos*, and some of the *Areca*. I have no doubt but what you will be able to make the latter to be another genera. Both fruits are red when ripe. I have had them in spirit of wine’.

After receiving the seeds, Mueller (1874c) wrote to Edward Ramsay, 9 Sept. 1874, stating that he had ‘saved’ Hill’s palm names from taxonomic obscurity, in that:

when Mr Hills palm fruits arrived, that his supposed *Cocos*! is an *Areca*, near the common Indian Betel nut (*A. catechu*), and his supposed *Areca* is a true *Kentia*. It is singular, that he should venture to send descriptions almost of no diagnostic value and on such ill digested data, as he obtained, into an official report. To protect him to some extent, I have

placed his name along with mine as authority of the Normanby palm, so that his dedication may not be destroyed; and that is more than likely anyone else would have done for him! Pray do not mention this to any one, until you get the new number of the fragmenta, which is printed, but not yet issued.

Mueller redesignated Hill's palms into what he considered to be their correct genera, and in all cases cited Hill as the original author. He moved *Areca minor* into *Kentia*, creating *K. minor* (W.Hill) F.Muell. (Mueller 1874d) and later as *Bacularia minor* (W.Hill) F.Muell. (Mueller 1878) [*Linospadix minor*]. For *Cocos normanbyi*, Mueller moved it into *Areca*, as *A. normanbyi* (W.Hill) F.Muell. (Mueller 1874d), and later as *Ptychosperma normanbyi* (W.Hill) F.Muell. (Mueller 1878) [*Normanbya normanbyi*]. Hill made neither subsequent attempts at taxonomic publishing, nor any reference to taxonomy as such in any of his annual reports.

Walter Hill's obscure palm names

The only other publication by Hill which can be interpreted as having taxonomic implications for palms was the *Catalogue of Plants Growing in the Queensland Botanic Gardens*, in which Hill (1875b) introduced two new palm names, *Pinanga smithii* W.Hill and *Sagus blackallii* W.Hill (**Table 2**). These and other novel names were applied by Hill to specimens (also in other families) that he had collected during his travels and had subsequently grown in BBG; however, these are invalid names as publication criteria were not met (Dowe 2004). Other new palm names were introduced by Hill arbitrarily in his annual reports, including *Ptychosperma kennedyana* W.Hill (Hill 1879) and *P. hillii* (Hill 1880a), neither of which can be related to any known taxa. A further name, *Areca northiana* W.Hill ex Hemsl., was associated with a palm that the English botanical artist

Table 2. Palms observed, described and/or collected by Walter Hill during the Cape York Expedition of 1862.

Current name	Hill's nomenclature	Location
<i>Arenga australasica</i>	<i>Sagus farinifera</i> and <i>Sagus blackallii</i>	Mt Bremer and Evans Bay
<i>Calamus aruensis</i>	<i>Zalacca</i> sp.	near Somerset
<i>Caryota albertii</i>	<i>Caryota urens</i>	Evans Bay and near Somerset
<i>Hydriastele costata</i>	<i>Pinanga</i> sp.	near Somerset
<i>Hydriastele wendlandiana</i>	<i>Areca</i> sp.	near Somerset
<i>Calamus australis</i>	<i>Calamus australis</i>	Fitzroy Island
<i>Ptychosperma elegans</i>	<i>Seaforthia elegans</i>	Evans Bay, near Somerset and Fitzroy Island
<i>Livistona muelleri</i>	<i>Livistona inermis</i>	Fitzroy Island

Marianne North painted in the BBG when she visited in 1880 (North 1892). The name was cited in a caption for the painting in the published catalogue of North's paintings in Kew Gardens (Hemslay 1882) (**Table 2**).

Conclusion

Although Hill's primary contribution to Queensland was through horticulture, he

was sometimes not so highly regarded by his contemporaries in that area. Of the BBG, Bancroft (1879) wrote that 'scarcely anything can be said in praise' and that Hill was 'a man of little polish, harsh to his workmen, who are repeatedly changed. Yet, with all his faults, he has done many useful things'. He was otherwise supported by others who applauded his attempts at facilitating a sugar industry in

Queensland (Anon. 1870), in his horticultural expertise in the BBG (Rodeur 1871), and as a horticultural pioneer in Queensland (see Hill 1860b, 1862d, 1862–1882). Some thought he was unfairly criticised and that he received little support from the Government compared to other botanic gardens directors (Censor 1880). Frederick Manson Bailey gave only scant acknowledgement to Hill's work as a collector and taxonomist (e.g., Bailey 1878), and in Hill's obituary described him as 'more of a gardener than a botanist' (Bailey 1904). Hill's attempts at taxonomy were disparaged by Mueller who was particularly critical of Hill's palm taxonomy (Mueller 1874b, c), noting that Hill did not have the ability to undertake taxonomic work. Mueller claimed to have 'saved' Hill's new palm species from 'obscurity' when he placed Hill's species into their 'correct' generic positions but otherwise, though guardedly, retained Hill as first author and with himself as revising author. The desire to achieve scientific outputs, in the sense of independent publications and empirical research, appear not to have been a part of Hill's *modus operandi*.

Despite his shortcomings as a taxonomist, Hill's contribution to the fledgling colony of Queensland was significant, particularly during the early days of his appointments through his roles as Director of Brisbane Botanic Garden, Colonial Botanist and Selector of Agricultural Reserves. Hill (1873) articulated his aspirations, when he wrote that:

I have considered it my duty to devote my best energies, because in so young a colony as this the introduction of new plants of use within Queensland, or of ornamental value otherwise, ought to be a leading object with institutions such as the one of which I have the control.

It appears that the quality of Hill's work declined toward the end of his career, to the point of his termination by enforced retirement in 1881 by the Secretary of Lands, and with accompanying accusations of theft and wilful damage (Legislative Assembly 1881). The accusations were 'proved' and accepted by a board set up to investigate the matter but no action was taken by the Government on

their decision (Brisbane Courier 1881). Hill retired on a pension to his property Canobie Lea south of Brisbane where he propagated and grew tropical fruits (Queenslander 1904; McKinnon 2009).

Overall, Hill's contribution to Australian palm botany was relatively meagre. However, he was more than capable of distinguishing new species in the field, providing descriptive accounts, and detailing the use of palms in some of his reports (Hill 1862c, 1880b). Hill was instrumental in introducing numerous new palm species into the gardens of Queensland, and established Brisbane Botanic Garden as one of the most important and influential gardens in regards to palms and their cultivation in Australia, a legacy that continues into the present.

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