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Contact PACSOA at:

Palm & Cycad Society of Australia
P.O. Box 1134,
Milton, QLD. 4064, Australia
Website: <http://www.pacsoa.org.au>
Email: pacsoainc@gmail.com

Branch Group Contacts:

Brisbane Palm & Cycad Society
P.O. Box 1134,
Milton, QLD. 4064

Palm & Cycad Society of South Australia
P.O. Box 390,
Prospect, S.A. 5082

Palm & Cycad Society of Mackay
P.O. Box 6639,
Mail Centre,
West Mackay, QLD. 4741

Layout by VC Graphics, Brisbane
art@vcgraphics.com.au

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Growing Palms in North Queensland

Hans Querl

439 Bruce Highway, Hampden Queensland 4741

The summer of 2016–17 was one of the hottest on record, with above normal temperatures day and night. The long awaited wet-season did not arrive, but with that constant heat for so many months, something had to happen.

On March 26, a tropical low, which according to Bureau of Meteorology experts posed no threat to the Queensland Coast, was steadily developing into the most dangerous storm since tropical cyclone Yasi in 2011, and we knew it would mean trouble! On March 28, by then a severe category four storm, it crossed the Whitsunday Coast near Airlie Beach. Conway Exotic Gardens, the property of Dorothy and Norm Silberling, overlooking Repulse Bay, was right in the path of the cyclone. Anyone who has read *Palms & Cycads* issue no 133, will remember the incredible collection of rare palms and Cycads from that property. Tropical cyclone Debbie changed all that. One has to see the damage to believe it.

Here is what Norm had to say:

Tropical Latitudes in Queensland mean cyclones! So it was only a matter of time until Conway was hit again. This time by a slow moving high-end category 4 system called Debbie. As Conway was just to the south of the cyclone eye, our area was exposed for over 34 hours to constant winds over 250 km/hr and gusts maybe 20 or 30 km/hr more!

There is always plenty of warning before a hit, and when we realised it was our turn again, we left the place.

Getting back 5 days later, our place was unrecognisable!!!

Just about every single tree and palm was flat on the ground. The garden was laid out in sections, some of which are so badly damaged that they will have to be left to their devices. No plant got away unscathed, every single one has some damage. Our canopy has fallen victim to TC Debbie, and our south facing hill will soon be exposed to a perpendicular sun.

Miraculously our irrigation system remains largely intact, which is a life-saver for the remaining plant community.

So, life goes on! Trees will grow and eventually form a new canopy, and a new microclimate for understory rainforest plants will be formed, until the next cyclone!!!

Even now, after more than two months, the view from Norm and Dorothy's hill-top home is dramatically changed. Houses that no one thought to exist are suddenly clearly visible. The forest of Conway National Park looks brown instead of green, because the trees have not regrown new leaves. I remember Conway National Park looking like this after Cyclone Ada in 1970.

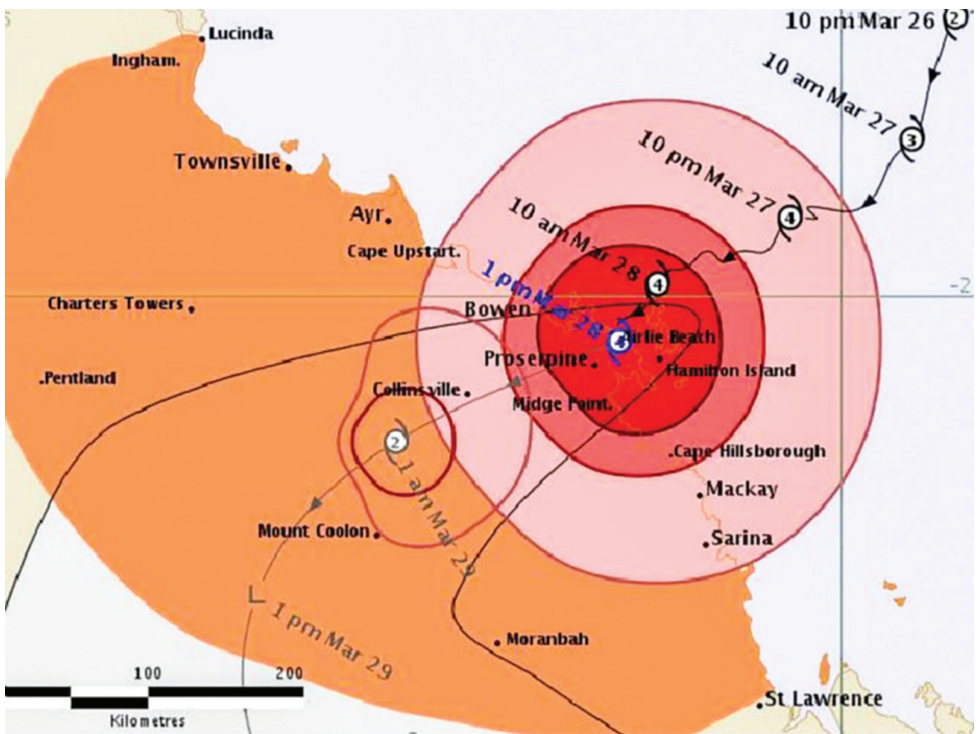
Understandably, Norm is devastated to see many years of hard work and collecting desirable plants destroyed. The task of cleaning up is overwhelming. Where to put all the smashed trees? And where to start? At first, when talking to him, it seemed that he would never plant a tree again. However, I know of people worse off; Norm and

Dorothy's house is OK, and they don't have to live in a tent! I also know that starting again will be a slow and long process.

Perhaps one can learn from such a disaster. There are trees that can withstand a storm better than others. In fact, I noticed that almost all damage done to the palms was caused by other trees! The direct impact of the hurricane-force wind damaged palms, but killed few, most will regrow new leaves. Only a few kilometers from Conway Exotic Gardens I noticed a large stand of *Carpentaria acuminata* with minimal

damage, as no other trees brought them down! Also, on Norm's place, some of the surviving palms and cycads seem to benefit from the sudden exposure to the sun, and start to flower and fruit! I know that Norm will have years to clean up, and I don't envy him, but that is the gamble we take by living in the tropics.

P.S. Hopefully I will be able to report on progress of the resurrection of this property in the future.



Path of Tropical Cyclone Debbie



Above and Below - these *Cycas panzhihuaensis* have thrown out spectacular new flushes after the cyclone





Despite deeply seated root balls, these 3 palms were pulled out and knocked over



A pandanus stem neatly snapped in two – a striking example of the power of wind



A low growing *Licuala ramsayi* survived largely intact



The houses in this suburb were once scarcely visible due to thick tree cover. Now they are completely exposed (Photo Norm Siberling)



The tops have been torn off the exposed Alexandrae palms.
They may or may not recover.



A view of the devastation in Conway National Park behind a damaged *Encephalartos ferox*.



A panorama of destruction, palms, native trees and pandanus take the brunt.



Dioon merolae, thriving post cyclone.



A clump of *Caryota mitis* torn up.





A survey of cyclone damage:
Palms broken (below left), uprooted (above) and leaning (below)



Philip John MacMahon (1857-1911) and the Palm Collection in the old Brisbane Botanic Gardens

John Leslie Dowe

Australian Tropical Herbarium, James Cook University
Smithfield, Qld 4878. john.dowe@jcu.edu.au

Introduction

This paper examines the contribution made by Philip John MacMahon, Curator of the Brisbane Botanic Gardens 1889-1905, to the development of the palm collection during that era. MacMahon's personal interest in palms motivated him to make palms a prevailing feature of the Gardens. When MacMahon became Curator in 1889, the palm collection was well established because of the work of Walter Hill during his previous directorship 1855-81. Hill's annual reports from 1868 through to 1880 included details of the acquisition and first flowering/fruited of many species of palms thus indicating that palms had been received, propagated and planted regularly during Hill's term (Dowe 2016a). [The original Brisbane Botanic Gardens are now known as the City Botanic Gardens, and are not to be confused with the Brisbane Botanic Gardens, Mt Coot-tha, which were founded in 1970].

In 1875, the plant collections in the Gardens were sufficiently mature for Hill to publish his *Catalogue of the plants in the Queensland Botanic Gardens* (Hill 1875). In it were listed about 10,000 plant names, including 115 palm species then cultivated in the Gardens. This number placed the palm collection as one of the largest in any Australian botanic garden at that time (Dowe 2016b), and was a foundation upon which subsequent curators could build. [Walter Hill's palm list can be seen in *Palms & Cycads* No. 130, 2016, pp. 19-22]

Philip John MacMahon

Philip John MacMahon (Fig. 1) was born on 13 December 1857 in Dublin, Ireland, and died on 12 April 1911, Pinalba, Queensland. He had a background in horticulture and garden management in England, being trained at Kew Gardens (1881) and later as Curator of Hull Botanic Gardens 1882-87. In 1887 he travelled to India where he was engaged in forestry activities, but because of illness settled in Melbourne in July 1888 and was employed as a journalist for the *Daily Telegraph* specialising in cultural and scientific subjects. Through a chance meeting with members of a delegation from the Queensland Government in Mildura when examining irrigation systems, he was subsequently offered a position in forest management in Queensland. However, that did not eventuate and he was then appointed as Curator of the Brisbane Botanic Gardens as at that time the position was vacant because of the controversial dismissal of successive overseers, James Pink 1881-86, and Alexander Menzies Cowan 1886-89 (Harrison 1994).

Brisbane Botanic Gardens and the palm collection

When MacMahon commenced as Curator in April 1889, he introduced some landscape projects that were intended to give the Gardens a number of imposing avenues and outlooks. One of these was to establish a long avenue of palms consisting mainly of the Queen Palm, *Syagrus romanzoffiana*



Figure 1. Photographic portrait of Philip John MacMahon, circa 1900, by P.C. Poulsen. John Oxley Library; negative no. 94328.

[which MacMahon named as *Cocos plumosa*]. The avenue was established in two phases, the first planted in 1890, and the second in 1895. The avenue extended across the Gardens from a point nearly opposite Parliament House to the Brisbane River (Fig.2), and when completed consisted of 66 Queen Palms planted 22 feet [7 m] apart, interspersed in the upper section with an occasional plant of either *Howea belmoreana* or *Hedyscepe canterburyana* (Fig. 3), and in the lower section [nearer the river] with Weeping Figs [*Ficus benjamina*] (MacMahon 1891, 1895). A partial avenue of very tall Queen Palms is present today in the Gardens in the same alignment as the original avenue, but it cannot be definitely determined if they are survivors of the original plantings (Fig. 4).

By the early 1890s, MacMahon was fully involved with expanding the palm collection.

However, during this time the Gardens were to suffer a number of major setbacks which temporarily curtailed development and slowed growth of the collection. The first was the reduction in funding, which was a result of a decline in spending by the Queensland Government. Secondly there were four significant floods during the early 1890s. The first was on 13 March 1890, and then three in 1893 on 5 and 19 February and 12 June (Fig. 5). The flood of 5 February had the most impact inundating about 95% of the gardens (Fig. 6), and causing significant damage to the plant collections, infrastructure and buildings. Despite the widespread damage and losses, MacMahon noted in his Annual Report that all the palms remained unaffected by the deposits of mud and sand, and prolonged inundation (MacMahon 1893).

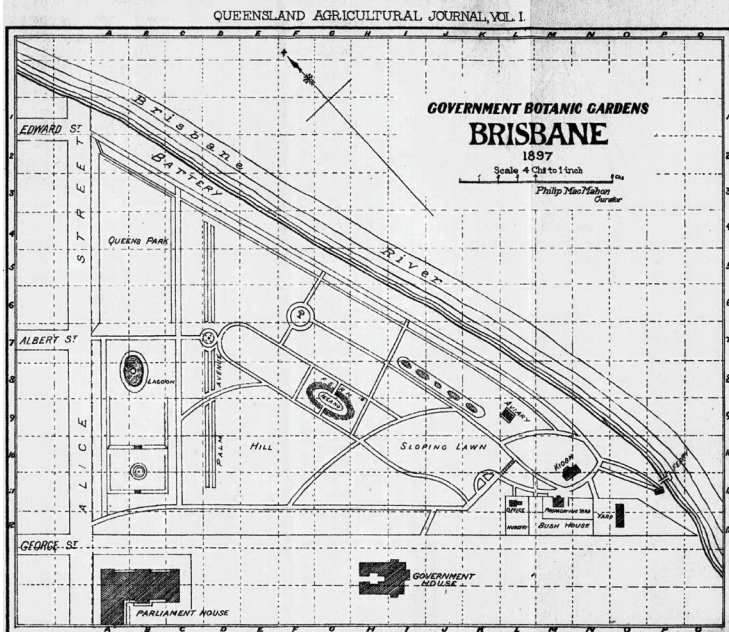


Figure 2 Map of the Brisbane Botanic Gardens, prepared by Philip MacMahon, Queensland Agricultural Journal, Vol. 1.



Figure 3. The upper section of the Queen Palm Avenue, circa 1906.

MacMahon appears to have taken these otherwise disheartening events in his stride (Anon. 1896), and continued to replace and expand the collection. Ultimately, MacMahon saw the 1893 floods as a ‘benefit in disguise’ as the Gardens ‘were greatly overgrown and really needed a wholesale thinning out’ (RBGKew 1893).

In his Annual Report of 1897, MacMahon (1897a) clearly outlined his continuing aspirations for the palm collection in the Gardens:

‘It is my ambition to have a representative of every known species of the palm family in these gardens. They all succeed here, and their number in our collection has recently been largely added to. In a few years the palms recently planted out will give to our gardens a very noble appearance, and make them quite unique amongst the gardens of Australasia.’

The following year, MacMahon (1898a) wrote in his Annual Report that:

‘These Gardens are fast becoming noted for their tropical palms, and the number is being added to. Those recently planted have begun to show vigorous growth and during the year seeds of these magnificent plants have been received from abroad and many seedlings raised.’

In the same year in an article in the *Queensland Agricultural Journal*, he recorded the planting out of many new species (McMahon 1898b). He wrote:

‘Over eighty specimens have recently been planted there [in the palm triangle] – three of each sort. They are just starting into vigorous growth. You may have noticed this of palms more than of any other plant: that after they are planted, they remain without making any growth worth mentioning for a long time, as if they were sulking at being turned out of their snug quarters, and had hardly decided whether to spite you by dying or go on living. But when they do make a start, they grow with comparative rapidity.’



Figure 4. Old Queen palms in the alignment of the original Queen Palm Avenue.
Photo by J.L.Dowe, December 2016.



Figure 5. Map of the Brisbane Botanic Gardens showing the extent of the floods of 1890 and 1893, prepared by Philip MacMahon. Brisbane City Council Historical Collection.



Figure 6. View of Brisbane Botanic Gardens from Parliament House of the flood of 5 February 1893. Fryer Library, University of Queensland.

MacMahon's admiration for palms continued in his subsequent reports and the number of species that were available for exchange increased. He wrote in his 1899 Annual Report (MacMahon 1899a) that:

'The palms planted here a few years ago have grown into very fine specimens and the large number of these beautiful and stately plants distributed in various parts of the grounds are all doing splendidly and forming a distinctive feature in the landscape. The climate of Brisbane is so suitable for those lovely plants, and some of the finest species grow so rapidly and well, that it seems a great pity that they are not more widely planted. We have raised recently in the Gardens quite enough young palms to change the face of the district, if planted by divisional boards and other public bodies. Planting of such specimens as will add to the public enjoyment and instruction is being continued.'

The latter years of the nineteenth century and the early years of the twentieth century saw a combination of an economic depression in Australia and a series of prolonged droughts [now known as the Federation Drought] that affected the eastern part of the continent. These factors severely restricted the maintenance and ongoing development of the Gardens. During one of the drier periods, MacMahon (1899b) made reference to the water requirements of the palm collection in one of his "Horticultural Notes" in the *Queensland Agricultural Journal*:

'Last month a good many tropical palms, &c., were planted out here, and these we will find it necessary to supply with water, but not so much as to force them into unnatural growth. It is well to have all such plants in a condition to take full advantage of the close warm

weather which is coming, and so we shall just keep them alive until the rain and muggy atmosphere force them into growth, and then we shall let Nature take the work in hand, and, beyond keeping down the weeds which always come on in this time of rapid growth, we shall let the palms, &c., alone.'

Despite the drought, new additions were made to the palm collection. With regard to the plantings carried out during the previous years, MacMahon (1900) noted in his Annual Report for 1900 that:

'The palms which I have been careful to plant in good positions throughout the Gardens are now attaining large dimensions and giving to the place that tropical appearance which excites the admiration of all strangers, and creates such a good impression as to the fertility of our soil and climate.'

Although there were limits placed on development of the Gardens by the drought and restricted finances, the number of palms that MacMahon listed for exchange as live plants were maintained at a similar level to previous years (Table 1).

Despite the setbacks, MacMahon's vision for the gardens remained positive, and he clearly stated in his Annual Report of 1903-04 his objectives (MacMahon 1904-05):

'1. To grow and exhibit as many species of plants, native and exotic, as the resources at my command will admit of.

2. To group these in a series of pictures which will appeal to the sense of beauty and harmony.

2. To afford any information possible as to the uses, habitats, and cultivation of such plants.'

MacMahon ended his term as Gardens Curator in November 1905, after which he took on the role of Director of Forests. He is considered to have been an efficient and effective Curator although his most significant legacy was his contribution to forestry in Queensland (Powell 1998; Holzworth 2002). During his directorship, Queensland's timber reserves were greatly increased and extensive surveys of forests completed. The Forestry Department became an internationally recognised entity and MacMahon is credited with providing a sound start to professional forestry in Queensland. It was also during MacMahon's directorship that the first National Parks were declared in Queensland, and he reported on their attributes from a forestry perspective (MacMahon 1909). During an excursion to survey the forest reserves at Fraser Island and Hervey Bay, he died suddenly on 12 April 1911 of heart-failure brought on by dengue fever. He was buried at Maryborough Cemetery on the following day (Fig. 6).

Plant exchange programs

Soon after his appointment as Curator in 1889, MacMahon instigated a vigorous plant and seed exchange program in which he included a large number of palm species. This was based on a number of factors. Firstly, the palm collection had reached a level of maturity in which individual species had attained their reproductive ages and the species were made available for exchange as either plants or seeds. Seeds of palms which had not yet matured were also used in exchange, most likely the excess of donated or purchased seeds that were not required by the Gardens. Many of the palm species that were available as in-coming seed exchanges were rare and unusual tropical species and it is doubtful if they were naturally adaptable



Figure 7. Grave of Philip John MacMahon, Maryborough Cemetery. NB The year of birth is correctly 1857. Photo by J.L. Dowe.

to the warm temperate climate of Brisbane. An examination of the palms listed in Table 1 demonstrates the range of species that were then available in horticulture.

Summary

By his example of the prominent use of palms in the Brisbane Botanic Gardens, MacMahon established a standard by which palms were to become a prevailing horticultural feature in both public facilities and private gardens in Brisbane. His extreme fondness of the Queen Palm in particular, and his extensive use of it in the Botanic Gardens as both an avenue and feature species, initiated its subsequent inclusion in both municipal planting schemes and private

residential gardens (MacMahon 1899b, c; Dowe & Wuschke 2016). By the end of MacMahon's term as Curator, Brisbane was indeed on its way to being a 'City of Palms'

as he envisioned (MacMahon 1897b), a lasting legacy of his personal admiration for palms and an idea that he so often and eloquently expressed.

Table 1. Palms listed for distribution and exchange by Philip MacMahon, in Annual Reports for the Brisbane Botanic Gardens of 1889^a and 1901^b. Nomenclature has been updated to the currently accepted name^c and those used by MacMahon follow in brackets.

^a MacMahon, P. 1890. Appendix 6. Botanic Gardens, Brisbane, 10th May, 1890. Pp. 20-22 in *Annual Report of the Department of Agriculture for the year 1889-90*. James C. Beal: Brisbane.

^b MacMahon, P. 1901. Report of the Director, Botanic Gardens. Pp.26-32 in: Report of the Secretary for Agriculture

for 1900-1901. George Arthur Vaughan: Brisbane.

^c Govaerts, R., Dransfield, J., Zona, S. F., Hodel, D. R. & Henderson, A. 2016. World Checklist of Areaceae. Facilitated by the Royal Botanic Gardens, Kew. Published on the Internet; <http://apps.kew.org/wcsp>.

1889	1901
<i>Acrocomia aculeata</i> [<i>Acrocomia sclerocarpa</i>]	<i>Allagoptera arenaria</i> [<i>Diplothemium maritimum</i>]
<i>Areca madagascariensis</i> [?]	<i>Arenga pinnata</i> [<i>Arenga saccharifera</i>]
<i>Arenga pinnata</i> [<i>Arenga saccharifera</i>]	<i>Brahea armata</i> [<i>Erythea glauca</i>]
<i>Astrocaryum aculeatum</i>	<i>Brahea edulis</i> [<i>Erythea edulis</i>]
<i>Attalea guichire</i> [?]	<i>Butia capitata</i> [<i>Cocos odorata</i>]
<i>Calamus marginatus</i> [<i>Daemonorops marginata</i>]	<i>Calamus australis</i>
<i>Calamus palembanicus</i> [<i>Daemonorops palembanica</i>]	<i>Caryota rumphiana</i>
<i>Caryota mitis</i> [<i>Caryota sobolifera</i>]	<i>Caryota urens</i>
<i>Caryota</i> sp. Siam	<i>Chamaerops gracilis</i> [?]
<i>Caryota urens</i>	<i>Chamaerops humilis</i> [<i>C. arborescens</i> , <i>C. elegans</i>]
<i>Chamaerops humilis</i> [<i>Phoenix humilis</i>]	<i>Coccothrinax argentea</i> [<i>Thrinax argentea</i>]
<i>Coccothrinax argentea</i> [<i>Thrinax argentea</i>]	<i>Hedysepe canterburyana</i>
<i>Corypha utan</i> [<i>Corypha elata</i>]	<i>Hydriastele wendlandiana</i> [<i>Hydriastele douglasiana</i>]
<i>Cryosophila stauracantha</i> [<i>Chamaerops stauracantha</i>]	<i>Latania loddigessii</i>
<i>Cyrtostachys renda</i>	<i>Linospadix monostachyos</i> [<i>Kentia monostachya</i>]
<i>Dictyosperma album</i> [<i>Dictyosperma alba</i>]	<i>Syagrus weddellianum</i> [<i>Cocos weddelliana</i>]

<i>Heterospathe glauca</i> [Ptychanda glauca]	<i>Livistona australis</i>
<i>Howea forsteriana</i> [Kentia forsteriana]	<i>Livistona chinensis</i> [L. olivaeformis]
<i>Licuala</i> sp.	<i>Phoenix acaulis</i>
<i>Livistona chinensis</i> [L. mauritiana, L. olivaeformis, L. subglobosa]	<i>Phoenix canariensis</i>
<i>Livistona jenkinsiana</i>	<i>Phoenix dactylifera</i>
<i>Livistona saribus</i> [Livistona hoogendorpii]	Phoenix paradenis [?]
<i>Nenga pumila</i> [Areca wendlandiana]	<i>Phoenix reclinata</i> [Phoenix spinosa]
<i>Oncosperma fasciculatum</i>	<i>Phoenix rupicola</i>
<i>Oncosperma tigillarum</i> [Oncosperma filamentosa]	<i>Phoenix</i> sp. Zanzibar
<i>Orania sylvicola</i> [Orania macrocladus]	<i>Pritchardia martii</i> [Pritchardia gaudichaudii]
<i>Phoenicophorium borsigianum</i> [Phoenicophorium sechellarum]	<i>Pritchardia thurstonii</i>
<i>Phoenix acaulis</i>	<i>Ptychosperma elegans</i>
<i>Phoenix canariensis</i> [Phoenix tenuis]	<i>Rhapis excelsa</i> [R. flabelliformis, Trachycarpus excelsus]
<i>Phoenix dactylifera</i>	<i>Rhopalostylis sapida</i>
Phoenix gonensis [?]	<i>Roystonea oleracea</i> [Oreodoxa oleracea]
<i>Phoenix paludosa</i>	<i>Roystonea regia</i> [Oreodoxa regia]
<i>Phoenix reclinata</i>	Sabal acaulis [?]
<i>Phoenix sylvestris</i>	<i>Sabal bermudana</i> [Sabal princeps]
<i>Ptychococcus paradoxus</i> [Ptychosperma paradoxum]	<i>Sabal mauritiiiformis</i>
<i>Ptychosperma elegans</i> [Ptychosperma seaforthia]	<i>Sabal minor</i> [Sabal adansonii]
<i>Ptychosperma macarthurii</i> [Kentia macarthurii]	<i>Sabal palmetto</i> [S. blackburniana, S. umbraculifera]
<i>Rhopaloblaste augusta</i> [Areca augusta]	<i>Sabal</i> sp. Trinidad
<i>Roystonea regia</i> [Oreodoxa regia]	<i>Saribus rotundifolius</i> [Livistona rotundifolia]
<i>Sabal mauritiiiformis</i> [Sabal glaucescens]	<i>Syagrus coronata</i> [Cocos coronata]
<i>Saribus rotundifolius</i> [Livistona altissima, L. rotundifolia]	<i>Syagrus romanzoffiana</i> [Cocos plumosa, C. romanzoffiana]
<i>Syagrus romanzoffiana</i> [Cocos plumosa]	
<i>Syagrus sancona</i>	
<i>Syagrus schizophylla</i> [Cocos schizophylla]	
<i>Trachycarpus fortunei</i> [Chamaerops fortunei]	

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Sabal antillensis - A new palm from the Dutch West Indies

Mark Wuschke

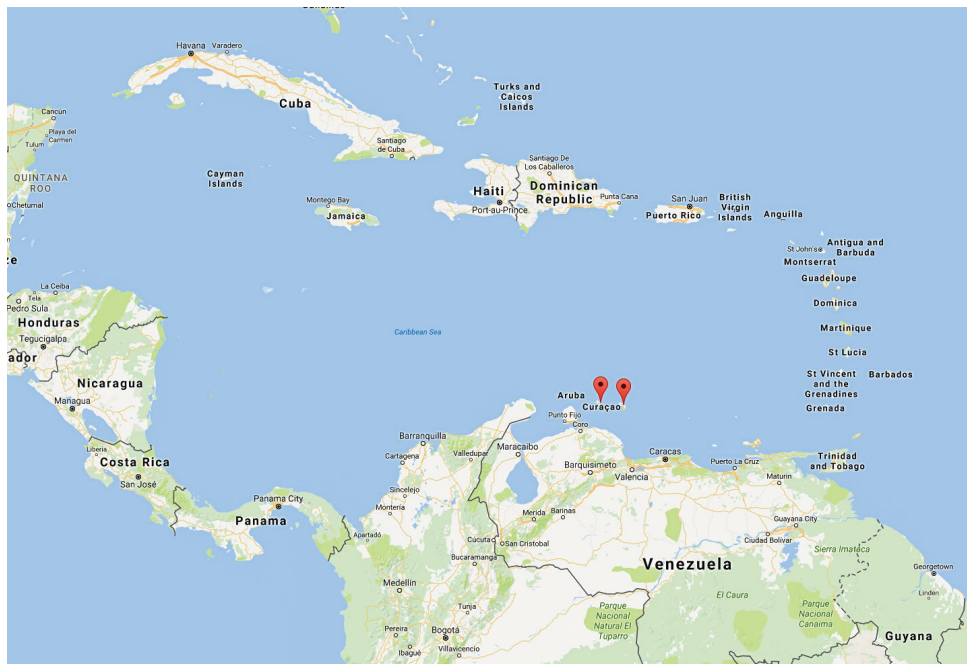
208 Red Cedar Rd, Pullenvale QLD 4069

A new species of *Sabal* palm has been described (April 2017) in the journal *Phytotaxa* by M. Patrick Griffith, John de Freitas, Michelle Barros and Larry Noblick. *Sabal antillensis* Griffith is found only on two small islands in the southern Caribbean, just off the coast of Venezuela. One population is on Curacao in Christoffelpark National Park at 140-260 meters elevation; the other on nearby Bonaire on the southern part of the island on limestone, at near sea-level.

It has a striking appearance, having a very stout trunk for its height, a growth

habit known as “pachycaul”. Specimens observed were no taller than 6 meters, the average being around 4.5 meters. The large fan shaped leaves are distinctive, being closely held with short stout petioles. The flowers and fruits are held within the crown.

The flowers arise in the crown and do not hang below it; the inflorescence is branched to 3 orders. Like all *Sabal* palms they are hermaphrodite, single flowers bear both male and female parts and can self-pollinate. The black seeds are spherical, slightly flattened, 6-9 mm high, and 8-13 mm wide.



Distribution map of *Sabal antillensis*.

Confined to the islands of Curacao (L) and Bonaire (R) off the coast of Venezuela



Sabal antillensis, in habitat Curacao

Of other Sabals, it most closely resembles *S. causiarrum* in leaf and flower structure, but differs in a number of factors: the pachycaul habit, much shorter petioles, more divided leaf segments. Also, the inflorescence is not pendant below the leaves and has larger fruits and seeds.

The population of *Sabal antillensis* is not a new discovery, the presence of palms on Curacao and Bonaire have been known for some time. In 1956 A.L. Stoffers wrote in *Vegetation of the Netherlands Antilles* of the presence of “a not yet identified species of the genus *Sabal*” confined to the hills of northern Curacao. A more recent study by Van Proosdij in 2012 tentatively described them as *Sabal* cf. *causiarrum*. Field and lab study in 2017 revealed these palms do not match *S. causiarrum* or any other *Sabal* and thus a new species.

The small number of mature individuals and small area of occupancy mean it will likely receive IUCN status of Vulnerable. The authors observed the existing plants are seeding abundantly with many younger palms and seedlings.

Reference

Griffith, M.P., et al (2017). *Sabal antillensis* (Arecaceae): a new palmetto species from the Leeward Antilles. *Phytotaxa* 303 (1) p.56-64

Acknowledgement - Photos courtesy of Patrick Griffith



Sabal antillensis, Christoffelpark, Curaçao.



S. antillensis (Left), *S. causiarum* (Right)



Detail of crown, also in Curacao

Depictions of Palms on Coins II - Ancient Carthage

Mark Wuschke

208 Red Cedar Rd, Pullenvale QLD 4069

In an article in *Palms & Cycads* #127 we featured representations of the coconut palm on modern circulating coins of the Philippines. Many other civilisations have come and gone that have revered palms, the date palm in particular. This we know because of their coinage.

Carthage was a city in North Africa near present day Tunis, established by Phoenician traders in the 7th century BC. It thrived on trade and agriculture and soon expanded into a great empire, consisting of lands on the Mediterranean coasts of Tunisia, Algeria, Morocco, Spain, Sardinia and Sicily. When precious metal coinage was first used as a medium of exchange around 650BC, each city issued coins featuring its own imagery, icons, gods and legends. Athens for example issued coinage featuring an owl; Corinth, the winged horse Pegasus.

Prominent of many coins of Carthage is the date palm, *Phoenix dactylifera*. Most likely first cultivated in ancient Mesopotamia, the date palm was spread by humans throughout the Middle East and northern Africa. It was and is a valuable food crop, growing in hot dry arid regions and requiring virtually no rainfall, provided it has access to ground water.

The first coin was minted in Carthage itself, between 300 – 250 BC. The modern practice of “striking” coins, by placing a heated blank between two bronze dies and striking with a hammer, had not yet been invented. This was made by casting; pouring molten bronze into a carved stone mould and letting it cool. Several were made at one

time, the individual disc shaped cavities were connected by little channels or “runnels”, into which the molten metal ran. One of these stone moulds was found in 2000 at Bir Messaouda, near ancient Carthage and created a sensation in the Numismatic world. It is one-half of a pair (the other lost), the images of a horse in reverse is clearly visible.

The “bottom” of this coin shows the unmistakable image of a date palm; the fronds and bunches of dates are clearly visible. The trunk even shows the criss-cross pattern of old leaf bases that is typical of the genus *Phoenix*. At the bottom is the remains of a runnel that was clipped off when the metal cooled and the coins extracted. The “top” of the coin features a horse’s head – the Carthaginians were famed horseman.

The second coin is also minted by the Carthaginians, this time at city of Nova Carthago in Spain (now modern Cartagena). It shows a horse in front of a date palm, and the Phoenician goddess Tanit. Both coins are made of bronze, an alloy of mostly copper with a small quantity of tin. These same coins have been found in cast in silver and gold.

References

Frey-Kupper, Suzanne (2009). A stone Mould from Bir Messaouda (Carthage) for bronze coins of the second Punic War Preliminary Notes. *Schweizerische Numismatische Rundschau* 88, S185-192.

Photos by the author



Stone plaque with moulds for casting Carthaginian coins of the SNG Cop. 307-314 type, found in the 2000 campaign of the University of Amsterdam at Bir Messaouda (Carthage).



Palm Oil App for you Smart Phone

Stuart Marckson

Palm Oil is vegetable oil pressed from the fruit and seeds of the African Oil Palm, *Elaeis guineensis*. It has become extremely popular world wide and is used in a vast number of processed foods because it is versatile, almost tasteless, trans-fat free, and high quality. It is also found in cosmetics and cleaning products. Importantly for growers, it give the highest yield in terms of \$ and volume per hectare.

Global vegetable oil production has doubled between 2000 and 2016, to 185 million tons; product from the oil palm makes up 38% of the world's production and shows no sign of diminishing. Three fourths of palm oil production comes from Malaysia and Indonesia.

All is not good news however. There has been growing concern about palm oil because of where it is grown – in tropical areas with abundant rainfall. Plantations have expanded across the humid tropics, replacing tropical rainforests on a vast scale throughout SE Asia, Tropical America and Africa. It has taken over sugar and rubber plantations as a leading cause of tropical rainforest deforestation.

Consumers who want to help reverse this trend by avoiding palm oil products have a new resource – a smart phone app. It is called POI from the Australian company that created it, Palm Oil Investigations. It is available free from palmoilinvestigationsapp.com . It lets you use your phone's camera to scan the barcode of any product in the supermarket, and it will reveal whether it contains palm oil, and if so where it has been sourced from.

Each food product is rated thus:

- a. POF - Palm oil free
- b. NDP – No Deforestation Policy. Contains Palm oil, but responsibly sourced from plantations on land previously cleared for other purposes.
- c. CSPO – Certified Sustainable Palm Oil. Contains Palm oil but < 5% is from unknown or uncertified sources
- d. MB – Mass Balance. A mixture of certified and uncertified palm oil with no traceability
- e. FAIL – Contains 5 to 94% uncertified or Did not respond for certification request.

2016 Global Vegetable Oil Consumption by source, mT

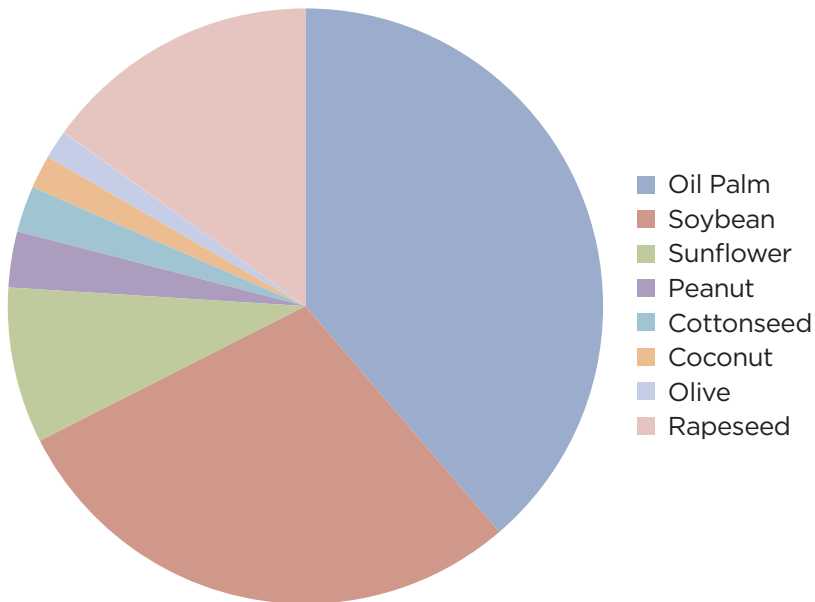
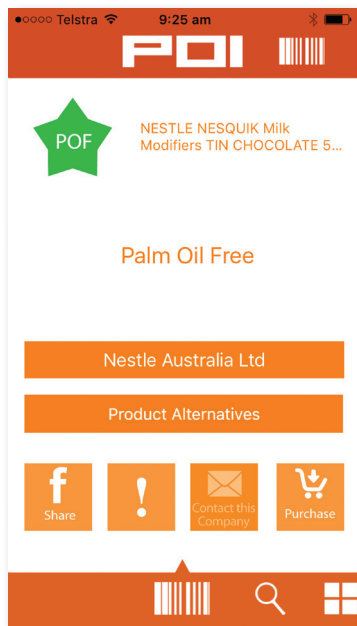


Chart showing consumption of palm oil - Source POI



Sample screen shot from Palm Oil App

