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PLECTOCOMIOPSIS GEMINIFLORA (GRIFF.) BECC. (ARECACEAE) — A NEW RECORD FOR SINGAPORE.

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INTRODUCTION

Plectocomiopsis geminiflora is an overlooked palm species in Singapore and this paper documents its discovery, key morphological features that distinguish it from a closely related rattan, *Myrialepis paradoxa* (Kurz) Dransf. and discusses why it was overlooked in Singapore's botanical history. This new record brings the list of recorded native palms from 53 species (Chong *et al*., 2009) to 54.

*Plectocomiopsis geminiflo*ra is a rattan of disturbed forests and of primary forests where light gaps form. It has a natural distribution within Southeast Asia, namely Southern Burma, Southern Thailand, the Malay Peninsula, Sumatra, and Borneo (Dransfield, 1982). It belongs to the large palm subfamily Calamoideae which contains the rattans. The species is variable and ecotypes are found in their respective biogeographical regions. There are five species of *Plectocomiopsis* in Southeast Asia. The genus was so named because of its resemblance to *Plectocomia* but in fact, it is more closely related to *Myrialepis paradoxa* in terms of overall morphology and because of this, often confused with the latter (Dransfield, 1982). Supporting this, DNA phylogenetics of the calamoid palms (Baker et al., 2000) resolved a monophyletic clade (classified as Plectocomiinae) that consists of a *Plectocomia* clade sister to the clade that branched to the *Myrialepis* and *Plectocomiopsis* clades.

With this new record, the list of native palms following Chong *et al*. (2009) is revised and summarized to contain 20 genera with 54 species** in two broad categories — the rattans and non-climbing palms:

Rattan genera (7 genera, 33 species)
Calamus (11), *Ceratolobus* (1), *Daemonorops* (12), *Korthalsia* (6), *Myrialepis* (1), *Plectocomia* (1), *Plectocomiopsis* (1).
Non-rattan genera (13 genera, 21 species)
Caryota (1), *Cyrtostachys* (1), *Eleiodoxa* (1), *Iguanura* (1), *Licuala* (3), *Nenga* (1), *Nypa* (1), *Oncosperma* (2), *Orania* (1) *Pholidocarpus* (1), *Pinanga* (6), *Rhopaloblaste* (1), *Salacca* (1).

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A few clusters of this rattan species were discovered in the Macritchie Reservoir area where patches of primary forest fragments remain. The threats to their survival in these areas would be accidental pruning in the reforestation patches or the inability to recruit seedlings in forest fragments.

Plectocomiopsis geminiflora is a large, spiny, clustering, dioecious, hapaxanthic palm. Hapaxanthy means the stem bearing the inflorescences dies after it has finished flowering. The absence of the knee in the leaf sheath is like *Myrialepis* and *Plectocomia* but not the other rattan genera in Singapore (except for *Korthalsia*, which is unlikely to be confused with *Plectocomiopsis geminiflora*). The sheath bears golden-yellow spines up to 1−2 cm long that are variously arranged or sometimes neatly arranged in short rows. The ocrea, the extension of the leaf sheath, is present on young parts but disintegrates and is present as a scar in the old sheaths. There are about 30 leaflets, regularly

**The statement by Whitmore (1985) that "there are as many palms recorded from Singapore island (18 genera, 46 species) as on the whole of mainland Africa (15 genera, 50 species)…" has to be revised. Unfortunately, local extinctions have reduced the Singapore list by 4 genera and 15 species (Chong *et al*., 2009). Based on the current count of African palms (Dransfield *et al*., 2008) and the list of Singapore palms (Chong *et al*., 2009) with additions by Ang *et al*., (2010), this current discovery and considering *Calamus javensis* as extant (pers. obs.) — Africa has 16 genera 65 species (all extant; pers comms, Bill Baker) and Singapore has 16 genera and 39 species (extant). In any case, the African palm diversity is known to be anomalously depauperate, probably due to extinctions in the Tertiary followed by slow diversification rates at that time (Dransfield *et al*., 2008) and any inter-geographical comparisons with African palm diversity may not reflect an especially speciose palm flora even if it has a much larger land area than Singapore.

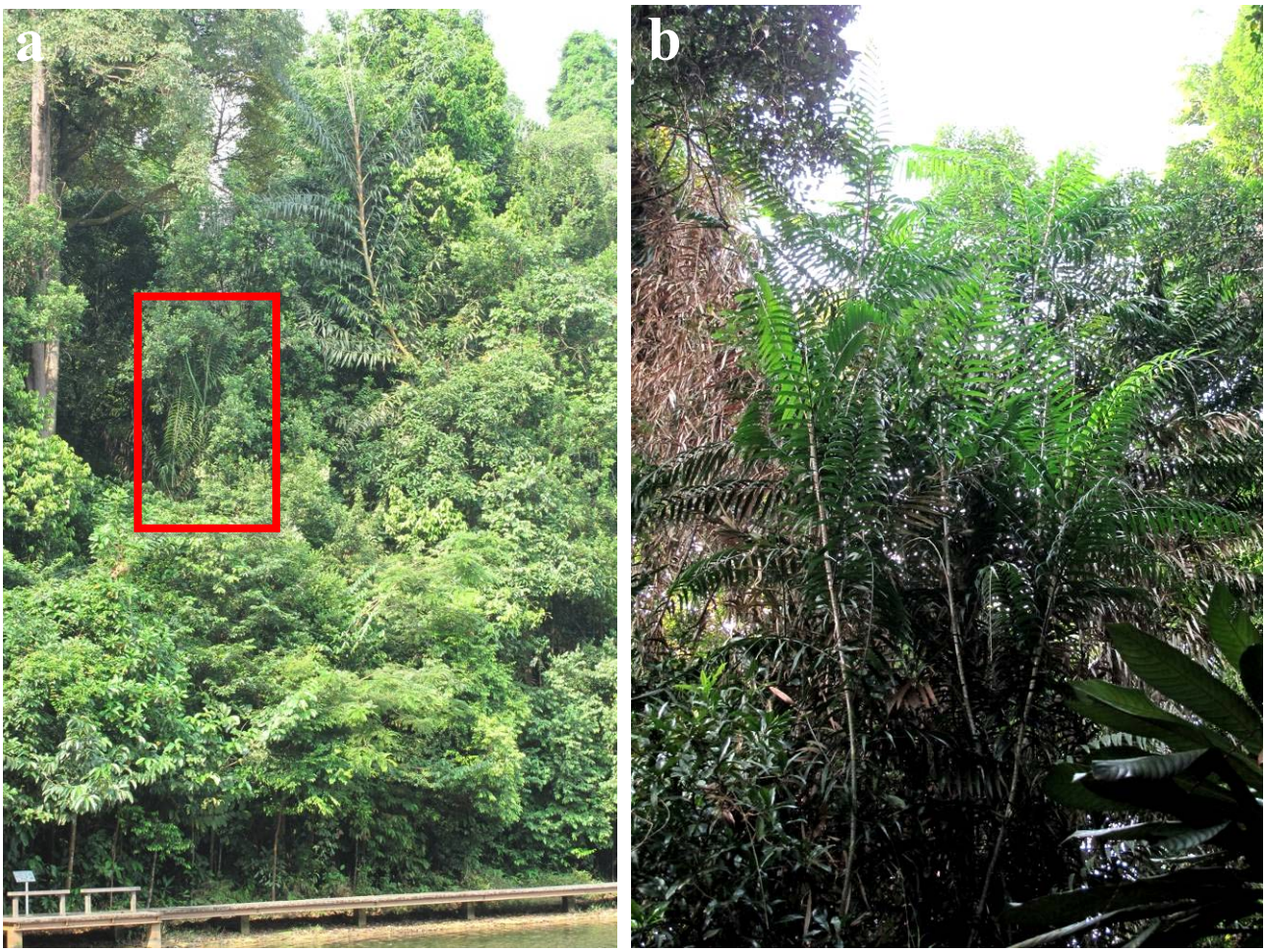

Figure 1. a) Location of *Plectocomiopsis geminiflora* in Macritchie Reservoir, Central Catchment Nature Reserve. This is in a strip of forest fragment that is approximately 30 m wide. The red square indicates the crown of the rattan. To the right is the more robust *Plectocomia elongata* Mart. ex Blume. Three other clusters of this species can be found behind this location across a walking trail; b) *Plectocomiopsis geminiflora* is a clustering palm that has stems up to 30 m long.

arranged on each side of the leaf rachis and the largest can measure up to 40 x 4 cm. The leaflets are shiny green, have the same colour on upper and lower surfaces and characteristically bear short bristles on the margin and long golden bristles to 1.5 cm along the mid-nerve on the adaxial surface. None of the clusters were found in the reproductive state. The following description of the reproductive parts is adapted from Dransfield (1982). The inflorescences have a main axis that is about 40 cm long with first order branches that reach 30 cm long. The prophyll and the subsequent bracts are tubular and both covered with fine golden scaly hairs. Both the male and female flowers are small (about 5 mm long by 2 mm wide). Fruits are spherical to about 3 x 3 cm, with about 32—37 vertical rows of chestnut brown scales.

A survey for local collections of the three genera *Myrialepis*, *Plectocomia* and *Plectocomiopsis* showed that no herbarium specimens have been made of *Plectocomiopsis geminiflora* nor was the species mis-identified for the two other genera. It is surprising that the species has not been collected before considering its accessibility.

COMPARISONS WITH *MYRIALEPIS PARADOXA*

Plectocomiopsis geminiflora is closely allied with the monotypic genus *Myrialepis* and because they resemble each other, the two genera have often been confused in the past. A thorough study of field specimens by Dransfield (1982) established a more defined character set with which to differentiate the two. Table 1 below adapts and summarises the differences using the key and descriptions of Dransfield (1982).

In the field, where more often the plants are encountered in the vegetative state since the palm is hapaxanthic (which means it dies after flowering just once), it is easy to confuse the two by just looking at the arrangement of the spines and general appearance of the stem. The spines on *Plectocomiopsis geminiflora* can closely resemble *Myrialepis paradoxa* by being neatly arranged in horizontal rows in raised combs (but not as whorled as in *Myrialepis paradoxa*), but the distinguishing traits would be firstly, the presence of the ocrea of the leaf sheath in young parts, which

Table 1. A comparison of the vegetative field characters that can be used to distinguish *Plectocomiopsis geminiflora* and *Myrialepis paradoxa*

Bases of Comparison	***Plectocomiopsis geminiflora***	***Myrialepis paradoxa***
Presence of bristles on leaflets	Leaflets with short marginal bristles, and conspicuous long golden bristles to 1−5 cm along the upper surface of the mid-nerve.	Leaflets with no bristles on the margin or mid-vein of the leaflets.
Ocrea characteristics	Ocrea present on young parts, to 3 cm long, grey-brown, tattering, disintegrating and only present as a scar in old sheaths.	Ocrea very inconspicuous or scarcely developed.
Characteristics and arrangement of spines on leaf sheath	Sheaths with abundant golden-yellow spines to 10 mm long, scattered or arranged in rows on raised combs, and not as neatly arranged in whorls.	Sheaths of juvenile stems with neat, distant whorls of long, pale straw-coloured spines to 4 cm long; mature sheaths with much fewer, more or less scattered or slightly grouped spines.

disintegrates leaving a scar in old sheaths and secondly, the marginal and mid-nerve bristles in *Plectocomiopsis geminiflora*.

A more extensive field study of rattans with these search features in mind will no doubt see a wider distribution of this species in the various forest fragments. And until then, it would be necessary to ensure that this hapaxanthic palm doesn't go extinct locally due to accidental pruning or a lack of habitat space.

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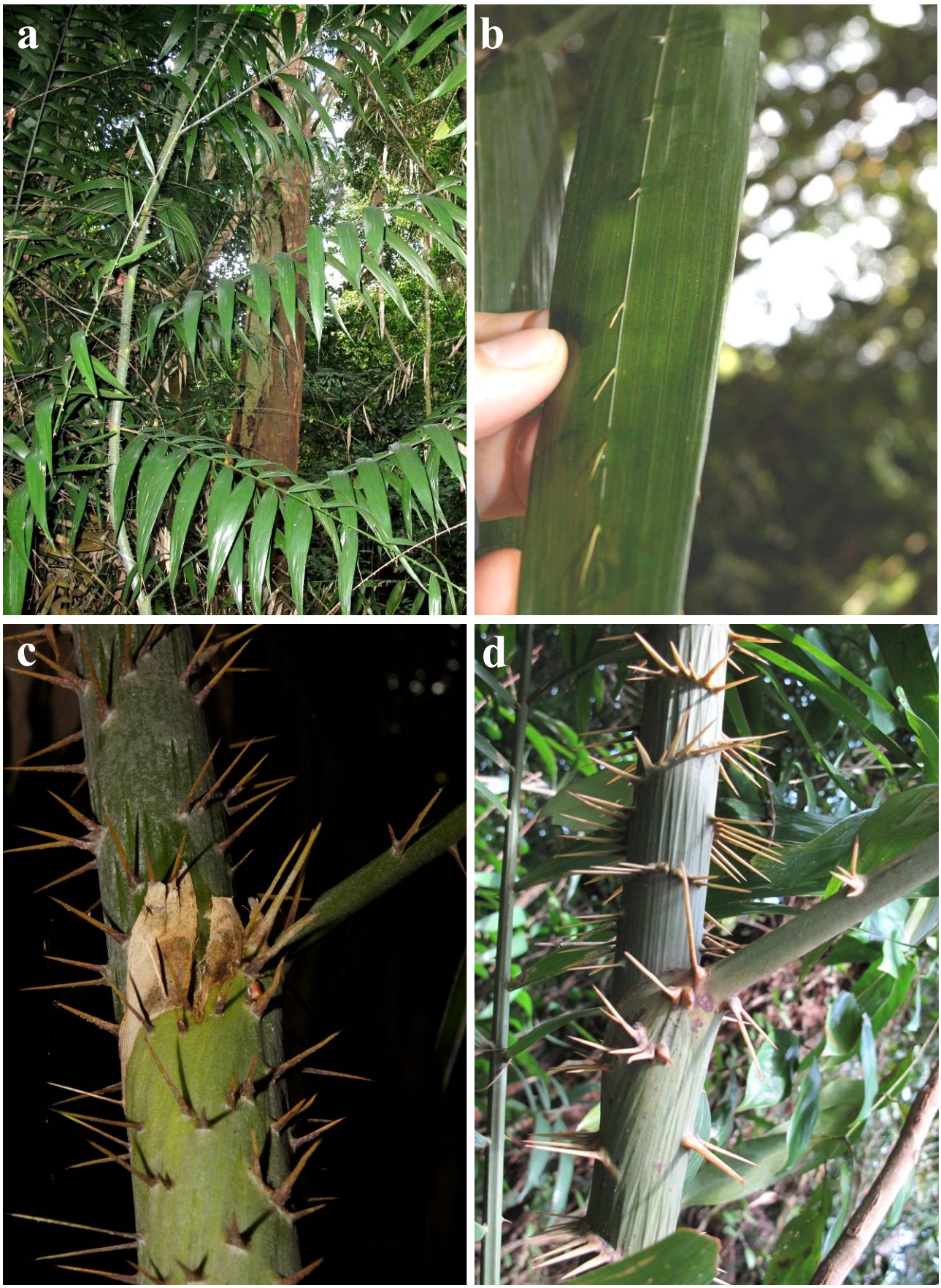

Figure 2. *Plectomiopsis geminiflora*. a) Habit. Stems climbing to 20 m. b) The bristles that are found along the mid-nerve on the adaxial surface of each leaflet. Lamina leaflet width just above thumb = 5 cm. c) Leaf sheath characters — the disintegrating ocrea and scattered spines. Stem diameter just below leaf stalk = 5.5 cm. d) *Myrialepis paradoxa* with absence of a developed ocrea and the whorled arrangement of the leaf sheath spines. Stem width just below leaf stalk = 4 cm.