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The vascular plant flora and vegetation of the islands associated with Singapore's first Marine Park (II): Pulau Tekukor

Sherry M. X. Hung*, K. Y. Chong, Alex T. K. Yee, Reuben C. J. Lim, Jolyn W. Loh, Louise Neo, W. W. Seah, S. Y. Tan and Hugh T. W. Tan

Department of Biological Sciences, National University of Singapore, 14 Science Drive 4, Singapore 117543, Republic of Singapore; Email: sherryhungmx@gmail.com (*corresponding author)

Abstract. Pulau Tekukor has 151 vascular plant species from 61 families, of which 86 species are native, 44 are non-native, and 21 are cryptogenic weeds. The native species include one presumed nationally Extinct species, 10 nationally Critically Endangered species, four nationally Endangered species, seven nationally Vulnerable species, 63 species that are not nationally threatened, and one that has not been accessed. The 5.07-ha island consists of 4.01 ha of natural vegetation and 1.06 ha of other landscape features.

Key words. checklist, Pulau Tekukor, Marine Park, Singapore, vascular plants

INTRODUCTION

Pulau Tekukor (1°13′50.57″N, 103°50′16.07″E) is an island south of Singapore Island that used to be an ammunition storage site, and measures approximately 650 m long and 100 m wide. In 1980, reclamation projects at the western half of the island expanded it by 1.43 ha, from 3.64 ha to the current total land area of 5.07 ha (Ministry of Culture, 1971). Pulau Tekukor hosts a variety of natural habitats, such as rocky cliffs and sandy beaches (Fig. 1). It is also known to have healthy populations or large mature individuals of several locally rare plant species, such as *Fagraea auriculata* (Gentianaceae) and *Tristaniopsis obovata* (Myrtaceae) (Tan et al., 2007; Chong et al., 2009). A survey in 2005 found that the plant species richness on the island is relatively high, with approximately 110 species of vascular plants, of which at least 22 species are nationally threatened (Tan et al., 2007). While the southwestern coast of Pulau Tekukor will be conserved as part of the Marine Park, it is also necessary for the other terrestrial sites on the island with unique habitats or threatened species to be preserved as well. This study presents information on the vascular plant species found on Pulau Tekukor, and the vegetation types on the island. Such data will be useful in understanding the floristics and vegetation of the island for conservation purposes.

MATERIAL AND METHODS

A checklist of all the vascular plant species presently and previously found on Pulau Tekukor was compiled from four sources: present floristic surveys conducted in this study, previous floristic surveys by H. T. W. Tan et al. (unpublished data), and the herbarium records of the Singapore Botanic Gardens' Herbarium (SING), and Herbarium, Lee Kong Chian Natural History Museum, Faculty of Science, National University of Singapore (SINU) (Appendix 1). All plant species names and their respective authorships were cross-checked with The Plant List (2013), an online plant species database. The national status of each species was retrieved from the Singapore Red Data Book (Tan et al., 2008) and the checklist of Singapore's vascular plant flora by Chong et al. (2009).

A map illustrating the shoreline and vegetation types on Pulau Tekukor was drawn according to visual interpretation of two satellite images of 27 April 2007 and 22 April 2013 from Google Earth 7.1.2.2041 (Google Inc., 2013), at a map scale of 1:2000. Visual features of the vegetation types were used to aid classification. For example, natural forests have a dense canopy cover formed by large tree crowns, and appear as dark green vegetation on the satellite image. On the other hand, natural scrub areas appear lighter coloured owing to the less dense vegetation cover by smaller plants. The area of each vegetation type was then calculated using ArcGIS®9 ArcMap™ Version 9.3.1 (ESRI, 2009), with the World Geodetic System 1984 (WGS84) and Universal Transverse Mercator Coordinate System, Zone 48 North (UTM48N) projections.

Floristic surveys and ground truthing were conducted for all accessible areas on the island on two separate occasions on 5 November 2014 and 27 August 2015, with the aid of a Garmin GPSMap® 62S Global Positioning System (GPS) receiver, which records locations within ± 4 m of accuracy. The main objective of the floristic surveys was to verify and supplement the list of vascular plant species recorded from the previous surveys, with an emphasis on native species. Additionally, the geographic coordinates of nationally threatened plant species that were not widespread throughout the island were recorded using the GPS receiver, and the localities were indicated on the vegetation map. Plants that

Fig. 1. Natural coastal shoreline of Pulau Tekukor, showing a stretch of sandy beach, rocky shore, and a cliff covered by beach vegetation. (Photograph by: Sherry Hung Ming Xuan).

could not be identified with certainty in the field, or which were not previously documented in the records of SING and SINU, were collected as voucher specimens. These specimens were subsequently matched with identified specimens in SING and/or SINU.

OBSERVATIONS AND RESULTS

The vascular flora of Pulau Tekukor consists of one species of a fern ally (lycophyte), 15 species of ferns, and 135 species of angiosperms. In total, there are 151 species belonging to 61 families (Appendix 1). Out of these, 86 species (57.0%) are native, of which 22 species (14.6%) are threatened, meaning that they are nationally classified as presumed nationally Extinct, Critically Endangered, Endangered, or Vulnerable (Table 1; Fig. 2). There are 65 (43.0%) non-native or exotic species, but this figure may be an underestimate, as more attention was given to compiling the list of native species (Table 1; Fig. 2).

Within the natural forested area, an abundance of *Tristaniopsis* species (Myrtaceae) was found around the area marked as point 25 on the vegetation map (Fig. 3). As individuals could not be identified to species in the field, it was estimated that there are more than 20 mature individuals from the genus *Tristaniopsis* (Fig. 4A). Subsequent examination of the voucher specimens revealed that the Critically Endangered *Tristaniopsis obovata* and Endangered *Tristaniopsis whiteana* (Myrtaceae) are most likely the species that are highly abundant in the forest. Further north on a vertical cliff located within the coastal forest is a mature *Fagraea auriculata* tree, marked as point 6 on the vegetation map (Fig. 3). This is also a critically endangered species and several saplings were seen growing on the face of the cliff (Fig. 4B) and across the island.

Pulau Tekukor also hosts large populations of *Nepenthes rafflesiana* (Nepenthaceae), and one group of them was marked as point 13 on the vegetation map (Fig. 3). This vulnerable species was found to be widespread on the island, especially on the faces of the vertical cliffs exposed to strong winds from the sea that render the site only suitable for scrubby growth

(Fig. 5A). The non-native species, *Acacia auriculiformis* (Leguminosae), is also relatively widespread on the island. This naturalised species was more common along the southwestern half of the island, around sites that had been subjected to human disturbance.

Table 1. National conservation status categories of the vascular flora of Pulau Tekukor.

	Status category	Number of species	Percentage of species
Native species		**86**	**57.0%**
	Presumed nationally Extinct	1	0.7%
	Nationally Critically Endangered	10	6.6%
	Nationally Endangered	4	2.6%
	Nationally Vulnerable	7	4.6%
	Not nationally Threatened	63	41.7%
	Unassessed	1	0.7%
Non-native species		**44**	**29.1%**
	Casual	4	2.6%
	Naturalised	30	19.9%
	Cultivated only	10	6.6%
Cryptogenic weed species		21	13.9%
Total		**151**	**100.0%**

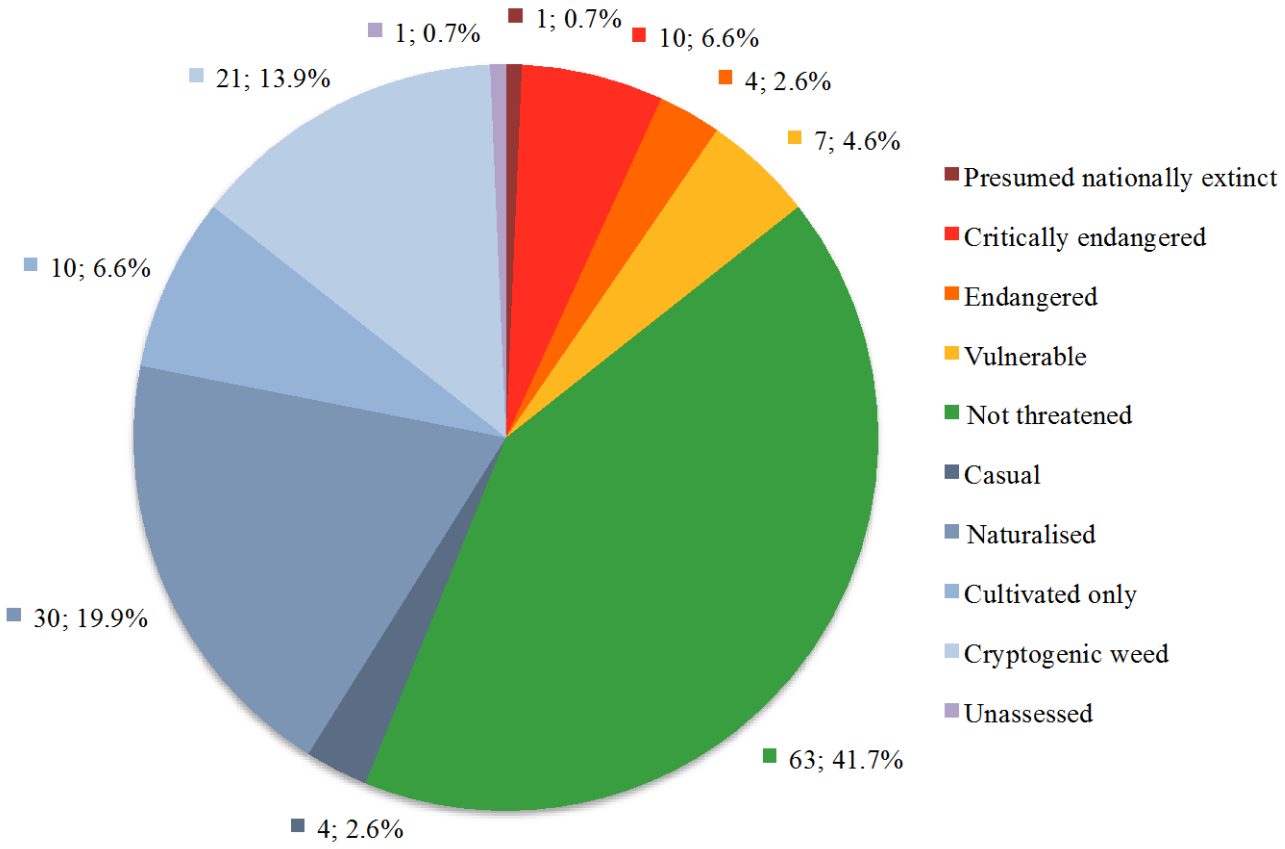

Fig. 2. Pie chart illustrating the number and proportion of species that belong to each national conservation status category for Pulau Tekukor.

Pulau Tekukor is covered by mainly natural vegetation (4.01 ha, 79.1%; Table 2; Fig. 3).

Table 2. Area (ha) and proportion (%) for each vegetation type on Pulau Tekukor.

		Area (ha)	Proportion (%)
Natural vegetation		**4.01**	**79.1**
	Coastal forest	1.70	33.5
	Coastal scrub	2.31	45.6
Others		**1.06**	**20.9**
	Bare ground	0.05	1.0
	Built-up structures (buildings, roads)	1.01	19.9
Total		**5.07**	**100.0**

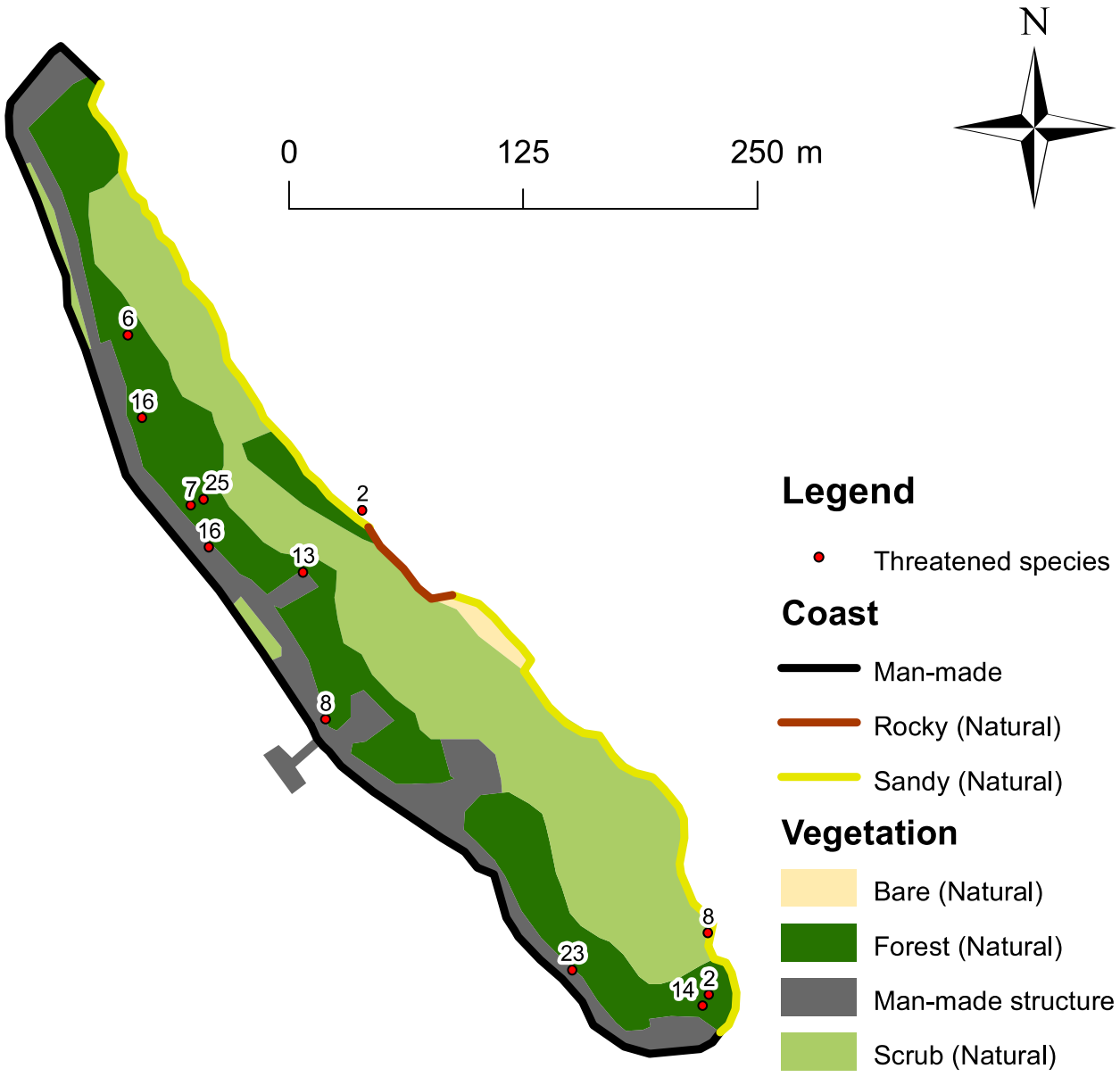

Fig. 3. Vegetation map of Pulau Tekukor. The numbers indicate the positions of individuals of non-widespread, nationally threatened species: 2 = *Calophyllum inophyllum*; 6 = *Fagraea auriculata*; 7 = *Ficus kerkhovenii*; 8 = *Ficus superba*; 13 = *Nepenthes rafflesiana*; 14 = *Peltophorum pterocarpum*; 16 = *Planchonella obovata*; 23 = *Syzygium palembanicum*; 25 = *Tristaniopsis* species.

Fig. 4. A, Two individuals of *Tristaniopsis* species found in abundance within the natural forested area. (Photograph by: Chong Kwek Yan); B, Several saplings of the Nationally Critically Endangered *Fagraea auriculata* growing on the face of the cliff below the mature tree. (Photograph by: Sherry Hung Ming Xuan).

DISCUSSION

There are many threatened species on the island, and as some of them have relatively large wild populations, attention should be paid to ensure the persistence of the native genetic stock. For example, several saplings of *Fagraea auriculata*, a Critically Endangered species, were found growing on a vertical cliff within the natural coastal forest of Pulau Tekukor (Fig. 4B), and this species may be propagated readily by air-layering. From our experience, it can also be easily propagated using root cuttings. Results from a study by Yeo et al. (2011) that examined the effectiveness of air-layering for the mass propagation of *Fagraea auriculata* revealed a high successful rooting rate, where 94.2% of the samples had signs of rooting, and rooted branches were subsequently planted at different sites in the Kent Ridge campus of the National University of Singapore (Yeo et al., 2011). Such experiments can be conducted on threatened species found on the islands in ex-situ conservation efforts. This strategy can be employed in the conservation of other species on the island, such as *Rhodomyrtus tomentosa* (Fig. 5B) and the highly abundant but threatened *Tristaniopsis* species. Further experiments can be conducted to examine the genetic variability of individuals in the wild populations and the native stock propagules, so that saplings can be harvested from an assemblage of genotypes. Resulting propagules would then be genetically diverse, thus increasing the species' ability to adapt to changing environmental conditions (Reusch et al., 2005; Leger & Espeland, 2010).

As the demand increases for using plants of native provenance in horticultural landscaping, it is necessary for wild species populations to be conserved as sources of propagation. Doing so not only maintains a steady supply of native species available, but also ensures the long-term conservation of the species (Yeo et al., 2011). Therefore, a deeper understanding of the traits of threatened species and suitable propagation methods would enhance conservation efforts.

Readers should be aware that plants growing in such public parks maintained by the National Parks Board are protected. Any activities relating to "trees, plants, etc." described in Section 8 of the Parks and Trees Act may not be conducted without permission from the Commissioner of Parks and Recreation (Tan & Tan, 2013).

Fig. 5. A, A large population of the nationally Vulnerable *Nepenthes rafflesiana* growing on the vertical face of the cliff facing the sea; B, A large shrub of *Rhodomyrtus tomentosa* along the road. (Photographs by: Chong Kwek Yan).

CONCLUSIONS

The compilation from past records and recent field surveys found 151 vascular plant species belonging to 61 families, of which 86 species are native. Out of these, 22 species are threatened, i.e. presumed nationally Extinct (one species), nationally Critically Endangered (10 species), nationally Endangered (four species) and nationally Vulnerable (seven species). The locations of these threatened species and vegetation were also mapped. The island hosts several large populations of threatened species, such as *Fagraea auriculata* and *Tristaniopsis* species, and rare habitats such as coastal forest and coastal scrub (79.1% of total land area), as well as sandy beach and rocky shores. Several of the threatened species found on the island are potential sources of native propagules for conservation and reforestation.

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APPENDIX 1

This is a checklist of all the vascular plants present on Pulau Tekukor, and divided into sections for fern allies, ferns, and angiosperms. It was compiled based on findings from the present floristic surveys, as well as data from previous floristic surveys by H. T. W. Tan et al. (unpublished data), and the herbarium records of the Singapore Botanic Gardens' Herbarium (SING) and Herbarium, Lee Kong Chian Natural History Museum, Faculty of Science, National University of Singapore (SINU).

Status categories: CA = casual; CO = cultivated only; CR = Critically Endangered; CW = cryptogenic weed; EN = Endangered; NA = naturalised; NE = Presumed Nationally Extinct; NT = not threatened; VU = Vulnerable; UA = unassessed

S/No.	Fern Ally Species	Family	Status	Previous Records				2014/ 2015
				SING	SINU	HTTW	Koh	
1.	*Lycopodiella cernua* (L.) Pic. Serm.	Lycopodiaceae	NT	–	–	+	–	+

S/No.	Fern species	Family	Status	Previous Records				2014/ 2015
				SING	SINU	HTTW	Koh	
1.	*Amblovenatum opulentum* J.P. Roux	Thelypteridaceae	EN	–	–	–	–	+
2.	*Asplenium nidus* L.	Aspleniaceae	NT	–	–	+	–	+
3.	*Blechnum orientale* L.	Blechnaceae	NT	–	–	+	–	–
4.	*Davallia denticulata* (Burm. f.) Mett. ex Kuhn	Davalliaceae	NT	–	–	+	–	–
5.	*Dicranopteris linearis* (Burm. f.) Underw.	Gleicheniaceae	NT	–	–	+	–	+
6.	*Lygodium flexuosum* (L.) Sw.	Lygodiaceae	NT	–	–	+	–	–
7.	*Lygodium microphyllum* (Cav.) R. Br.	Lygodiaceae	NT	–	–	–	–	+
8.	*Nephrolepis auriculata* Trimen	Oleandraceae	CW	–	–	+	–	+
9.	*Nephrolepis biserrata* (Sw.) Schott	Nephrolepidaceae	CW	–	–	–	–	+
10.	*Phymatosorus scolopendria* (Burm. f.) Pic. Serm.	Polypodiaceae	NT	–	–	+	–	–
11.	*Pteris vittata* L.	Pteridaceae	CW	–	–	+	–	+
12.	*Pyrrosia piloselloides* (L.) M.G. Price	Polypodiaceae	NT	–	–	–	–	+
13.	*Stenochlaena palustris* (Burm. f.) Bedd.	Blechnaceae	NT	–	–	+	–	+
14.	*Taenitis blechnoides* (Willd.) Sw.	Pteridaceae	NT	–	–	+	–	–
15.	*Taenitis interrupta* Hook. & Grev.	Pteridaceae	UA	–	–	+	–	–

S/No.	Angiosperm Species	Family	Status	Previous Records				2014/ 2015
				SING	SINU	HTTW	Koh	
1.	*Acacia auriculiformis* Benth.	Leguminosae	NA	–	–	+	–	+
2.	*Adinandra dumosa* Jack	Pentaphylacaceae	NT	–	–	+	–	+
3.	*Alstonia angustifolia* Wall. ex A.DC.	Apocynaceae	NT	–	–	–	–	+
4.	*Alstonia angustiloba* Miq.	Apocynaceae	NT	–	–	+	–	+
5.	*Alstonia scholaris* (L.) R. Br.	Apocynaceae	CO	–	–	–	–	+
6.	*Asystasia gangetica* (L.) T.Anderson	Acanthaceae	NA	–	–	+	–	+
7.	*Asystasia nemorum* Nees	Acanthaceae	UA	–	–	+	–	–
8.	*Axonopus compressus* (Sw.) P.Beauv.	Poaceae	NA	–	–	+	–	+
9.	*Azadirachta indica* A.Juss.	Meliaceae	CA	–	–	+	–	+
10.	*Baphia nitida* Lodd.	Leguminosae	CA	–	–	–	–	+
11.	*Brachiaria mutica* (Forssk.) Stapf	Poaceae	NA	–	–	+	–	–
12.	*Bromheadia finlaysoniana* (Lindl.) Miq.	Orchidaceae	NT	–	+	+	–	–
13.	*Buchanania arborescens* (Blume) Blume	Anacardiaceae	NT	–	–	+	–	+

S/No.	Angiosperm Species	Family	Status	Previous Records				2014/ 2015
				SING	SINU	HTTW	Koh	
14.	*Caesalpinia crista* L.	Leguminosae	VU	–	–	+	–	–
15.	*Calophyllum inophyllum* L.	Clusiaceae	CR	–	–	+	–	+
16.	*Caryota mitis* Lour.	Arecaceae	NT	–	–	+	–	+
17.	*Cassytha filiformis* L.	Lauraceae	NT	–	–	+	–	+
18.	*Casuarina equisetifolia* L.	Casuarinaceae	NT	–	–	+	–	+
19.	*Centrosema pubescens* Benth.	Leguminosae	NA	–	–	+	–	–
20.	*Chloris barbata* Sw.	Poaceae	NA	–	–	+	–	–
21.	*Citrus japonica* Thunb.	Rutaceae	CO	–	–	+	–	–
22.	*Cocos nucifera* L.	Arecaceae	NA	–	–	+	–	+
23.	*Commelina diffusa* Burm.f.	Commelinaceae	CW	–	–	+	–	–
24.	*Commersonia bartramia* (L.) Merr.	Malvaceae	NT	–	–	+	–	–
25.	*Cyanthillium cinereum* (L.) H.Rob.	Compositae	CW	–	–	+	–	+
26.	*Cyperus rotundus* L.	Cyperaceae	CW	–	–	+	–	–
27.	*Dactyloctenium aegyptium* (L.) Willd.	Poaceae	NT	–	–	+	–	–
28.	*Dalbergia candenatensis* (Dennst.) Prain	Leguminosae	NT	–	–	+	–	–
29.	*Dendrolobium umbellatum* (L.) Benth.	Leguminosae	NT	–	–	+	–	+
30.	*Desmodium heterophyllum* (Willd.) DC.	Leguminosae	CW	–	–	+	–	+
31.	*Desmodium triflorum* (L.) DC.	Leguminosae	CW	–	–	+	–	–
32.	*Dianella ensifolia* (L.) DC.	Xanthorrhoeaceae	NT	–	–	+	–	+
33.	*Digitaria radicosa* (J.Presl) Miq.	Poaceae	CW	–	–	+	–	–
34.	*Diospyros discolor* Willd.	Ebenaceae	CO	–	–	+	–	+
35.	*Duranta erecta* L.	Verbenaceae	CO	–	–	+	–	–
36.	*Elaeocarpus pedunculatus* Wall. ex Mast.	Elaeocarpaceae	NT	–	–	–	–	+
37.	*Emilia sonchifolia* (L.) DC. ex DC.	Compositae	CW	–	–	+	–	–
38.	*Eragrostis amabilis* (L.) Wight & Arn.	Poaceae	CW	–	–	+	–	–
39.	*Eriachne pallescens* R.Br.	Poaceae	VU	–	–	+	–	–
40.	*Eriochloa procera* (Retz.) C.E.Hubb.	Poaceae	CW	–	–	–	–	+
41.	*Erythroxylum cuneatum* (Miq.) Kurz	Erythroxylaceae	NT	–	–	+	–	+
42.	*Eulophia graminea* Lindl.	Orchidaceae	CW	–	–	+	–	–
43.	*Euphorbia hirta* L.	Euphorbiaceae	NA	–	–	+	–	–
44.	*Fagraea auriculata* Jack	Gentianaceae	CR	–	–	+	–	+
45.	*Fagraea fragrans* Roxb.	Gentianaceae	NT	–	–	+	–	+
46.	*Ficus benjamina* L.	Moraceae	CW	–	–	+	–	+
47.	*Ficus consociata* Blume	Moraceae	CR	–	–	+	–	–
48.	*Ficus grossularioides* Burm.f.	Moraceae	NT	–	–	+	–	+
49.	*Ficus kerkhovenii* Koord. & Valeton	Moraceae	CR	–	–	–	–	+
50.	*Ficus microcarpa* L.f.	Moraceae	NT	–	–	+	–	+
51.	*Ficus religiosa* L.	Moraceae	NA	–	–	+	–	+
52.	*Ficus superba* Miq.	Moraceae	EN	–	–	+	–	+
53.	*Fimbristylis cymosa* R.Br.	Cyperaceae	NT	–	–	+	–	–
54.	*Fimbristylis dichotoma* (L.) Vahl	Cyperaceae	CW	–	–	+	–	+
55.	*Guettarda speciosa* L.	Rubiaceae	EN	–	–	–	–	+
56.	*Gynochthodes sublanceolata* Miq.	Rubiaceae	NT	–	–	+	–	+
57.	*Halophila ovalis* (R.Br.) Hook.f.	Hydrocharitaceae	NT	+	–	–	–	–
58.	*Ilex cymosa* Blume	Aquifoliaceae	NT	–	–	+	–	+
59.	*Imperata cylindrica* (L.) Raeusch.	Poaceae	CW	–	–	+	–	+
60.	*Ipomoea pes–caprae* (L.) R. Br.	Convolvulaceae	NT	–	–	+	–	+
61.	*Ischaemum muticum* L.	Poaceae	NT	–	+	+	–	+
62.	*Ixora finlaysoniana* Wall. ex G.Don	Rubiaceae	CO	–	–	+	–	+
63.	*Kyllinga polyphylla* Willd. ex Kunth	Cyperaceae	NA	–	–	+	–	–
64.	*Lantana camara* L.	Verbenaceae	NA	–	–	+	–	+
65.	*Mangifera indica* L.	Anacardiaceae	CA	–	–	+	–	+
66.	*Melastoma malabathricum* L.	Melastomataceae	NT	–	–	+	–	+
67.	*Mimosa pudica* L.	Leguminosae	NA	–	+	+	–	+

S/No.	Angiosperm Species	Family	Status	Previous Records				2014/ 2015
				SING	SINU	HTTW	Koh	
68.	*Morinda citrifolia* L.	Rubiaceae	CW	–	–	+	–	+
69.	*Morinda umbellata* L.	Rubiaceae	NT	–	–	+	–	+
70.	*Moringa oleifera* Lam.	Moringaceae	CO	–	–	–	–	+
71.	*Moringa pterygosperma* Gaertn.	Moringaceae	CO	–	–	+	–	+
72.	*Muntingia calabura* L.	Muntingiaceae	NA	–	–	+	–	+
73.	*Myrica esculenta* Buch.–Ham. ex D. Don	Myricaceae	NT	–	–	+	–	+
74.	*Nepenthes rafflesiana* Jack	Nepenthaceae	VU	–	+	+	–	+
75.	*Oldenlandia corymbosa* L.	Rubiaceae	CW	–	–	+	–	+
76.	*Oncosperma tigillarium* (Jack) Ridl.	Arecaceae	VU	–	–	–	–	+
77.	*Oxalis barrelieri* L.	Oxalidaceae	NA	–	–	+	–	+
78.	*Paederia foetida L.*	Rubiaceae	NT	–	–	+	–	+
79.	*Pandanus odorifer* (Forssk.) Kuntze	Pandanaceae	NT	–	–	+	–	+
80.	*Pandanus amaryllifolius Roxb.*	Pandanaceae	CA	–	–	+	–	–
81.	*Pandanus singaporensis* Kaneh.	Pandanaceae	CR	–	–	–	–	+
82.	*Pandanus tectorius* Parkinson ex Du Roi	Pandanaceae	CO	–	–	–	–	+
83.	*Passiflora laurifolia* L.	Passifloraceae	NA	–	–	+	–	+
84.	*Passiflora suberosa* L.	Passifloraceae	NA	–	–	+	–	+
85.	*Peltophorum pterocarpum* (DC.) K.Heyne	Leguminosae	CR	–	–	+	–	+
86.	*Phyllanthus acidus* (L.) Skeels	Phyllanthaceae	CO	–	–	+	–	–
87.	*Phyllanthus urinaria* L.	Phyllanthaceae	NA	–	–	+	–	+
88.	*Pittosporum ferrugineum* W.T.Aiton	Pittosporaceae	VU	–	–	+	–	–
89.	*Planchonella obovata* (R.Br.) Pierre	Sapotaceae	VU	–	–	+	–	+
90.	*Ploiarium alternifolium* (Vahl) Melch.	Bonnetiaceae	NT	–	–	+	–	+
91.	*Pluchea indica* (L.) Less.	Compositae	NT	–	–	+	–	–
92.	*Plumeria rubra* L.	Apocynaceae	CO	–	–	–	–	+
93.	*Porophyllum ruderale* (Jacq.) Cass.	Compositae	NA	–	–	+	–	–
94.	*Proiphys amboinensis* (L.) Herb.	Amaryllidaceae	CO	–	–	+	–	–
95.	*Ptychosperma macarthurii* (H.Wendl. ex H.J.Veitch) H.Wendl. ex Hook.f.	Arecaceae	NA	–	–	+	–	+
96.	*Rhodamnia cinerea* Jack	Myrtaceae	NT	–	–	+	–	+
97.	*Rhodomyrtus tomentosa* (Aiton) Hassk.	Myrtaceae	NT	–	+	+	–	+
98.	*Scaevola taccada* (Gaertn.) Roxb.	Goodeniaceae	NT	–	–	+	–	+
99.	*Schizachyrium sanguineum* (Retz.) Alston	Poaceae	NE	–	–	+	–	–
100.	*Scleria levis* Retz.	Cyperaceae	CW	–	–	+	–	+
101.	*Scoparia dulcis* L.	Plantaginaceae	NA	–	–	+	–	–
102.	*Scyphiphora hydrophylacea* C.F.Gaertn.	Rubiaceae	NT	–	–	+	–	+
103.	*Spermacoce articularis* L.f.	Rubiaceae	CW	–	–	+	–	–
104.	*Spermacoce exilis* (L.O.Williams) C.D.Adams ex W.C.Burger & C.M.Taylor	Rubiaceae	CW	–	–	+	–	–
105.	*Spermacoce ocymoides* Burm.f.	Rubiaceae	NA	–	–	+	–	+
106.	*Sphagneticola trilobata* (L.) Pruski	Compositae	NA	–	–	+	–	+
107.	*Sporobolus fertilis* (Steud.) Clayton	Poaceae	NT	–	–	+	–	+
108.	*Sporobolus indicus* (L.) R.Br.	Poaceae	NT	–	–	+	–	–
109.	*Stachytarpheta indica* (L.) Vahl	Verbenaceae	NA	–	–	+	–	–
110.	*Synedrella nodiflora* (L.) Gaertn.	Compositae	NA	–	–	+	–	–
111.	*Syzygium cumini* (L.) Skeels	Myrtaceae	NA	–	–	–	–	+
112.	*Syzygium lineatum* (DC.) Merr. & L.M.Perry	Myrtaceae	NT	–	–	–	–	+
113.	*Syzygium palembanicum* Miq.	Myrtaceae	VU	–	–	+	–	+
114.	*Syzygium zeylanicum* (L.) DC.	Myrtaceae	NT	–	–	+	–	+
115.	*Taliparitiliaceum* (L.) Fryxell	Malvaceae	NT	–	–	+	–	+
116.	*Terminalia catappa* L.	Combretaceae	NT	–	–	+	–	+

S/No.	Angiosperm Species	Family	Status	Previous Records				2014/ 2015
				SING	SINU	HTTW	Koh	
117.	*Tetracera indica* (Christm. & Panz.) Merr.	Dilleniaceae	NT	–	–	–	–	+
118.	*Thalassia hemprichii* (Ehrenb. ex Solms) Asch.	Hydrocharitaceae	CR	+	–	–	–	–
119.	*Thunbergia alata* Bojer ex Sims	Acanthaceae	NA	–	–	+	–	–
120.	*Tridax procumbens* (L.) L.	Compositae	NA	–	–	+	–	+
121.	*Tristaniopsis obovata* (Benn.) Peter G.Wilson & J.T.Waterh.	Myrtaceae	CR	–	–	+	–	+
122.	*Tristaniopsis whiteana* (Griff.) Peter G.Wilson & J.T.Waterh.	Myrtaceae	EN	–	–	+	–	+
123.	*Tylophora flexuosa* R. Br.	Apocynaceae	NT	–	–	+	–	+
124.	*Vigna marina* (Burm.) Merr.	Leguminosae	NT	–	–	+	–	–
125.	*Vitex pinnata* L.	Lamiaceae	NT	–	–	+	–	+
126.	*Wollastonia biflora* (L.) DC.	Compositae	NT	–	–	+	–	–
127.	*Ximenia americana* L.	Olacaceae	NT	–	–	+	–	+
128.	*Xylocarpus granatum* J.Koenig	Meliaceae	NT	–	–	+	–	+
129.	*Xylocarpus rumphii* (Kostel.) Mabb.	Meliaceae	CR	–	–	+	–	–
130.	*Youngia japonica* (L.) DC.	Compositae	NA	–	–	+	–	–
131.	*Zoysia matrella* (L.) Merr.	Poaceae	NT	–	–	+	–	+