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The vascular plant flora and vegetation of the islands associated with Singapore's first Marine Park (I): The Sisters' Islands

Sherry M. X. Hung[1*], K. Y. Chong[1], Alex T. K. Yee[1], Reuben C. J. Lim[1], Jolyn W. Loh[1], Louise Neo[1], W. W. Seah[1], S. Y. Tan[1], Aloysius X. Y. Teo[1], Karenne Tun[2], Collin H. Y. Tong[2], K. S. Koh[2] and Hugh T. W. Tan[1]

[1]Department of Biological Sciences, National University of Singapore, 14 Science Drive 4, Singapore 117543, Republic of Singapore; Email: sherryhungmx@gmail.com (*corresponding author)
[2]Coastal and Marine Branch, National Biodiversity Centre Division, National Parks Board, Singapore Botanic Gardens, House 6, 1 Cluny Road, Singapore 259569, Republic of Singapore

Abstract. The Sisters' Islands, consisting of Small Sister's Island and Big Sister's Island—officially known as Pulau Subar Darat and Pulau Subar Laut, respectively, support 144 vascular plant species from 59 families, of which 90 species are native, 34 are non-native, and 20 are cryptogenic weeds. The native species include 10 nationally Critically Endangered species, eight nationally Endangered species, 14 nationally Vulnerable species, and 58 species that are not nationally threatened. The 2.76-ha Small Sister's Island has 0.94 ha of coastal forest, 1.80 ha of managed vegetation, and 0.02 ha of built-up structures. The 4.53-ha Big Sister's Island has 1.67 ha of coastal forest, 2.84 ha of managed vegetation, and 0.02 ha of built-up structures.

Keywords. checklist, Pulau Subar Darat, Pulau Subar Laut, Singapore, Sisters' Islands, vascular plants

INTRODUCTION

In July 2014, the Singapore government announced the establishment of Singapore's first Marine Park. Located southeast of Sentosa in Singapore's southern seas (Fig. 1), the Marine Park consists of Pulau Subar Darat and Pulau Subar Laut (unofficially and popularly known as Small Sister's Island and Big Sister's Island, respectively, and together as the Sisters' Islands), and their surrounding waters, as well as the western coasts of both Pulau Tekukor and St. John's Island (officially known as Pulau Sakijang Bendera) (Fig. 2). Altogether, the Marine Park consists of 40 ha of marine and terrestrial areas selected because of their diverse habitats, which include sandy shores, coral reefs, and sea grass beds. The main objectives of the park are conservation, research, education, and outreach, and conservation efforts will involve rare marine species, such as the Neptune cup sponge (*Cliona patera*), which was initially presumed to be globally extinct owing to overharvesting, but was rediscovered near the coast of St. John's Island (Lim et al., 2012). The Marine Park also facilitates marine research in Singapore. For example, one of the on-going marine research projects plans to reintroduce the endangered giant clam underwater off Big Sister's Island (M. L. Neo, pers. comm.).

Small Sister's Island (1° 12′57.80″N, 103° 49′57.92″E) and Big Sister's Island (1° 2′50.88″N, 103°50′05.40″E) are separated by a narrow channel. Reclamation works in the 1970s expanded Small Sister's Island by 1.95 ha from 0.81 ha, and Big Sister's Island by 2.91 ha from 1.62 ha, respectively (Ministry of Culture, 1971). Currently, Small Sister's Island has a land area of 2.76 ha, while Big Sister's Island is 4.53 ha. A study by Koh et al. (2002) found that Small Sister's Island had the highest vascular plant taxon richness among the four islands surveyed. H. T. W. Tan and others also conducted floristic surveys on the islands in the 1990s and 2000s (unpublished data; see Appendix 2). The Sisters' Islands are the only islands in Singapore listed as 'Marine Nature Areas' under the Parks and Waterbodies Plan (URA, 2014).

This study presents baseline information on the vascular plant flora and vegetation of the two islands. It was motivated by two questions—first, what vascular plant species are found on the islands? Second, what vegetation types occur on them? Floristic data are important for identifying important areas of high conservation value, especially where nationally threatened species are found. Vegetation maps display spatially explicit distribution information for the islands. Both kinds of information will be valuable for establishing conservation strategies, biodiversity loss mitigation efforts, monitoring of the islands' biodiversity and habitats, and developing impact mitigation strategies for future development.

MATERIAL AND METHODS

A comprehensive checklist of all the vascular plant species presently and previously found on the two islands was compiled from this study's floristic surveys, as well as data from previous floristic surveys by H. T. W. Tan et al. (unpublished data), Koh et al. (2002), and the records of the Singapore Botanic Gardens' Herbarium (SING) and the Herbarium, Lee Kong Chian Natural History Museum, Faculty of Science, National University of Singapore (SINU) (Appendix 1). All plant species names and their respective authors were cross-checked with an online database, The Plant List (2013).

Fig. 1. Map of Singapore showing the location of the Marine Park.

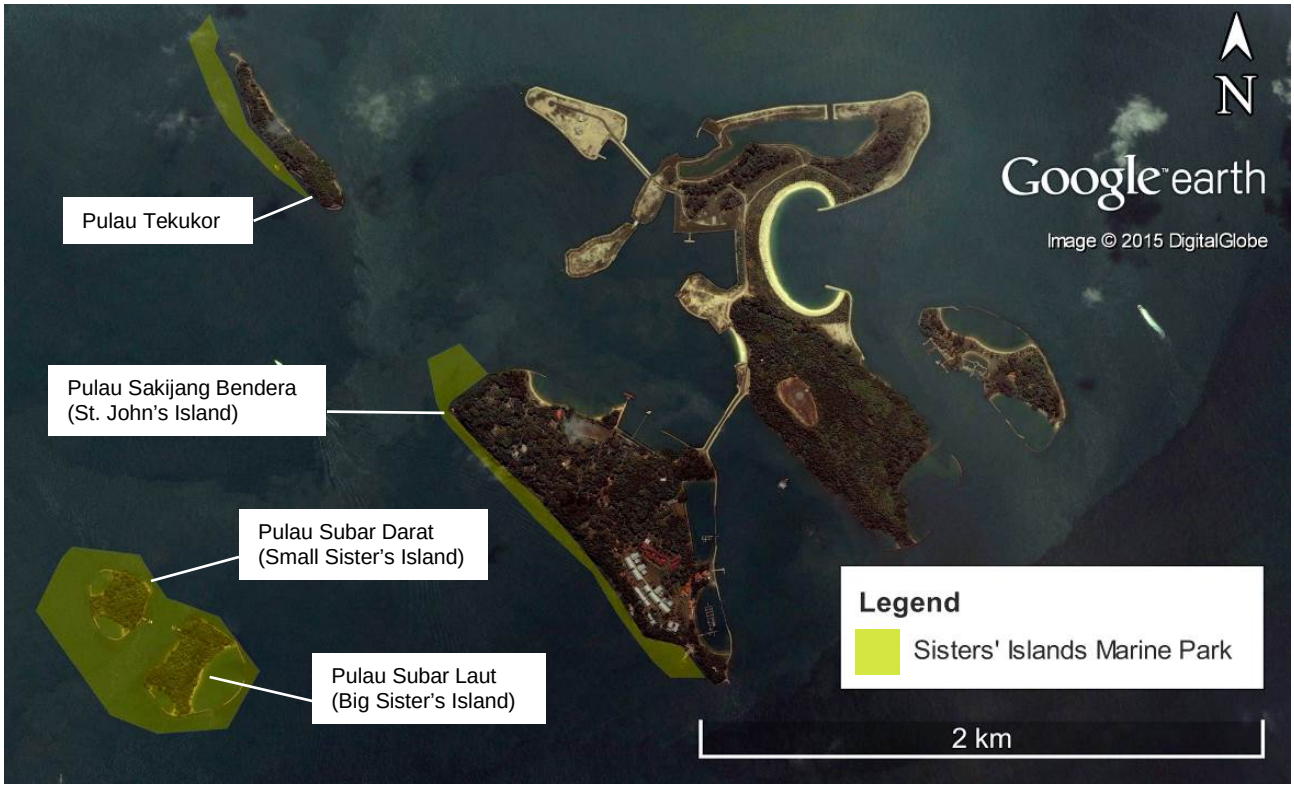


Fig. 2. Map of the Marine Park showing Pulau Subar Darat and Pulau Subar Laut (Sisters' Islands), Pulau Tekukor, and Pulau Sakijang Bendera (St. John's Island).

The national status of each species was retrieved from the checklist of Singapore's vascular plant flora by Tan et al. (2008) and Chong et al. (2009).

The vegetation map was first drawn based on visual interpretation of two satellite images of 27 April 2010 and 22 April 2013 from Google Earth 7.1.2.2041 (Google Inc., 2013), which provided a relatively accurate portrayal of the distribution of the vegetation. The shoreline of the islands and boundaries of each area were traced at a map scale of 1: 2,000. Thereafter, the area of each vegetation type was 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.

In the interpretation of the satellite images, preliminary classification was based on visual features of the vegetation type. For example, natural forests appear as areas with a dense canopy cover formed by large tree crowns. On the other hand, managed vegetation areas appear to be lighter coloured because of the sparser tree cover. Each vegetated area measured at least 10 × 10 m. Adjustments were subsequently made to the preliminary vegetation maps based on actual field observations during ground truthing.

Floristic surveys and ground truthing were conducted for all the accessible areas on the two islands between December 2014 and February 2015 with the aid of a Global Positioning System (GPS) receiver, the Garmin GPSMap® 62S, which records locations with ± 4 m 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 the emphasis on native species. Additionally, the geographic coordinates of non-widespread, threatened plant species were recorded using the GPS receiver, and the localities were indicated on the vegetation map of each respective island. Voucher specimens were collected for plants that could not be identified with certainty in the field, or were not previously documented in the herbarium records of SING and SINU. The specimens were then matched with identified specimens in SING and/ or SINU.

OBSERVATIONS AND RESULTS

The vascular plant flora of the Sisters' Islands consists of 18 species of ferns, two species of gymnosperms, and 124 species of angiosperms, so totaling 144 species belonging to 59 families, including the new records from this study's floristic surveys (Appendix 1). Out of these, 90 species (62.5%) are native, of which 32 species (22.2%) are threatened, meaning that they are nationally classified as presumed nationally Extinct, Critically Endangered, Endangered, or Vulnerable (Table 1). Non-native or exotic species make up 23.6% or a total of 34 species (Table 1); however, this might be underestimated as we focused on verifying or adding to the list of native species. Owing to the differences in survey sampling efforts, some species that were found in this study's floristic surveys were not previously recorded, and vice-versa (Appendix 2).

Table 1. National conservation status categories of the vascular flora of the Sisters' Islands.

	Status category	Number of species	Percentage of species
Native species		**90**	**62.5%**
	Presumed Nationally Extinct	0	0%
	Nationally Critically Endangered	10	6.9%
	Nationally Endangered	8	5.6%
	Nationally Vulnerable	14	9.7%
	Not nationally Threatened	58	40.3%
Non-native species		**34**	**23.6%**
	Casual	4	2.8%
	Naturalised	25	17.4%
	Cultivated only	5	3.5%
Cryptogenic weed species		20	13.9%
Total		**144**	**100.0%**

Table 2 below lists the spatial extent of each vegetation type in the Sisters' Islands. Altogether, natural vegetation covers 2.61 ha (35.8%) and managed vegetation 4.64 ha (63.6%) of the total land area of both islands (Table 2; Fig. 3). The natural vegetation is predominantly coastal forest.

Table 2. Area and percentage of each vegetation type.

Island(s)	Natural Vegetation		Managed Vegetation		Built-up Structures		Total	
Big Sister's Island	1.67 ha	36.9%	2.84 ha	62.7%	0.02 ha	0.4%	4.53 ha	100.0%
Small Sister's Island	0.94 ha	34.1%	1.80 ha	65.2%	0.02 ha	0.7%	2.76 ha	100.0%
Both islands	2.61 ha	35.8%	4.64 ha	63.6%	0.04 ha	0.5%	7.29 ha	100.0%

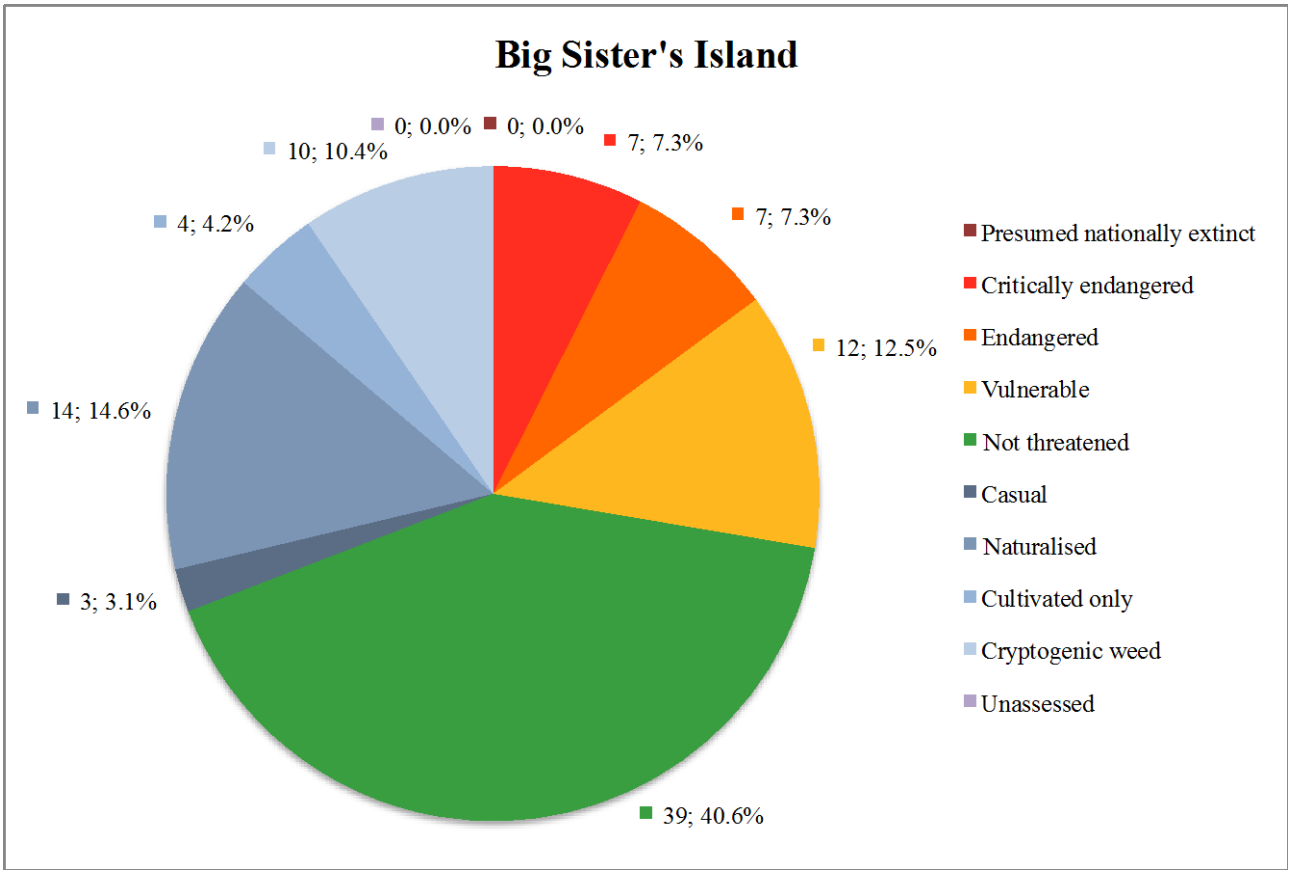
Fig. 3. Vegetation map of the Sisters' Islands. The numbers indicate the positions of individuals of non-widespread, nationally threatened species: 2 = *Calophyllum inophyllum*; 5 = *Eurycoma longifolia*; 8 = *Ficus superba*; 12 = *Memecylon edule*; 14 = *Peltophorum pterocarpum*; 15 = *Pittosporum ferrugineum*; 17 = *Podocarpus polystachyus*; 18 = *Pongamia pinnata*; 19 = *Rapanea porteriana*; 21 = *Symplocos adenophylla*; 22 = *Syzygium claviflorum*; 24 = *Tarenna fragrans*; 26 = *Tristaniopsis whiteana*.

The vascular flora on Big Sister's Island consists of 96 species belonging to 46 families, of which 65 (67.7%) are native species and 26 (27.1%) are threatened in Singapore (Fig. 4, top; Appendix 1). Small Sister's Island has slightly fewer species, with 93 unique vascular plant species from 45 families, of which 59 (63.4%) are native and 19 (20.4%) are threatened (Fig. 4, bottom; Appendix 1).

Numerous mature individuals and saplings of the nationally Critically Endangered *Podocarpus polystachyus* (Podocarpaceae) are thriving on Big Sister's Island, with more than 20 mature trees and many saplings found on its hilltop, denoted by the '17s' on the vegetation map (Figs. 3 & 5D). Two individuals of this species were observed on Small Sister's Island. Large clumps of the nationally Endangered *Memecylon edule* (Melastomataceae), with many producing flowering buds, were also seen on both islands during surveys (Fig. 5A & 5B). However, it was also observed that the non-native tree, *Alstonia macrophylla* (Apocynaceae) is flourishing on Small Sister's Island, along areas that fringe the natural forests. This observation was also made by Teo (2012) during his field survey in 2011, when there were likely more than 100 individuals on the island at the time of survey. Although few individuals of this naturalised species were found in the core of the coastal forests, which are relatively undisturbed, several mature individuals were found widely distributed along the areas surrounding the interior coastal hill forests.

DISCUSSION

Twenty-six nationally threatened species were found in abundance on the Sisters' Islands. Although some have fairly large wild populations, attention should be paid to ensure the persistence of their native genetic stock. For example, *Podocarpus polystachyus* is a Nationally Critically Endangered species found thriving in the natural coastal forest of Big Sister's Island. Many saplings were found growing close together in the understorey under large, mature trees.



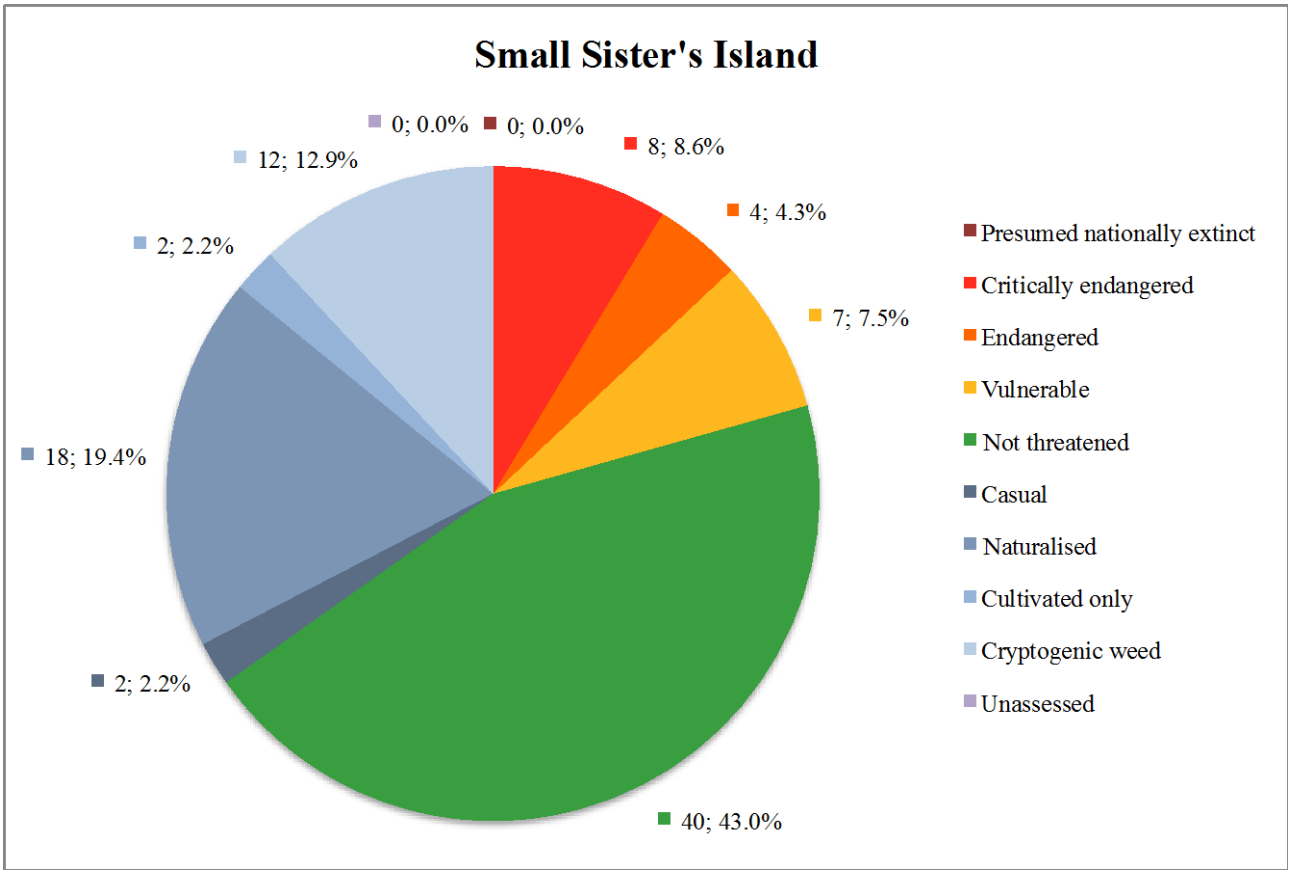


Fig. 4. Pie charts illustrating the number and proportion of species that belong to each national status group for the Sisters' Islands.

Fig. 5. A, Fruiting and flowering branches of the nationally Endangered *Memecylon edule* on Big Sister's Island; B, Inflorescences with flowers and buds of *Memecylon edule* on Small Sister's Island; C, Flowers and flowering buds of *Symplocos adenophylla*, also nationally Endangered, on Big Sister's Island; D, Saplings of the nationally Critically Endangered *Podocarpus polystachyus* at the foot of two adult trees on Big Sister's Island . (Photographs A–C by: Chong Kwek Yan; photograph D by: Sherry Hung Ming Xuan). Scale bars for A = 5 cm, B = 2 cm, C = 2 cm, and D = 5 cm.

As such, in the understorey environment where saplings of *Podocarpus polystachyus* were found in high density, overcrowding may limit the regeneration and growth of this species in the coastal forest of Big Sister's Island. It is believed that there are less than 50 trees of this species left in the wild in Singapore (Tan, 2008). Hence, the removal of exotic trees would reduce direct competition over space and nutrients for the saplings to regenerate. Alternatively, the saplings found in the understorey can be thinned out and transplanted to other areas to ensure a higher survival rate. Other ex-situ propagation methods could also be employed in the conservation of such threatened species on the islands and this species is very amenable to rooting by stem cuttings (Zhong et al., 2001).

The naturalised tree, *Alstonia macrophylla* was found to be thriving on the Small Sister's Island. Several mature individuals have established themselves widely in disturbed areas that fringe the natural coastal forests. In 2012, the ecological study by Teo (2012) on *Alstonia macrophylla* recorded a high abundance of this naturalised species occurring on Small Sister's Island, with 45 fruiting individuals and several more juveniles, and five individuals standing at 6 m, 7 m, 8 m, 1.2 m and 14 m tall on Big Sister's Island during the time of survey. Two of the tallest trees on Big Sister's Island were fruiting then.

Invasion by non-native species is a potential problem for the Sisters' Islands. It may necessitate the deployment of strategic intervention in controlling, containing or eradicating the range of invasive species. Keeping the level of human disturbance low within the hill coastal forest could minimise the spread of *Alstonia macrophylla* into those areas since

past and present empirical observations on Small Sister's Island showed that saplings of this species tend to proliferate in areas adjacent to man-made structures. By preventing the introduction of habitat edge conditions into the forest interior, it would reduce further human-facilitated spread of such light-demanding pioneer species on the islands. Eradication methods should be employed to remove the species from all the southern islands and the south coast of the main island to further reduce its spread locally.

Future studies can further explore the potential problem of invasion on the islands, such as whether non-native species have become naturalised or invasive, the distribution of non-native species on the islands, and the rate of survival and growth in disturbed and natural sites. While the vegetation maps display explicit information of the distribution of vegetation, the state of vegetation cannot be rigorously assessed without detailed studies such as vegetation plots. Finally, effective management of the entire coastal landscape also requires an integrated approach involving both the terrestrial and marine habitats. Complementary studies of the marine habitats, such as water quality monitoring and coral cover, can be explored to better facilitate management of the coastal areas, especially with the long-term aim of protecting biodiversity and maintaining coastal stability of Singapore's first Marine Park.

CONCLUSIONS

This study focused on obtaining baseline information of the vascular plant flora and vegetation in the form of compiled vascular plant species checklists and vegetation maps of the Sisters' Islands. The compilation from past records and recent field surveys of both islands recorded 144 vascular plant species from 59 families, of which 90 are native and 32 are nationally threatened, i.e., Critically Endangered (10 spp.), Endangered (8 spp.), and Vulnerable (14 spp.). The islands host populations of several nationally threatened species, such as the Critically Endangered *Podocarpus polystachyus*, and the Endangered *Memecylon edule* and *Symplocos adenophylla*. The terrestrial areas are covered by nationally rare natural habitats such as coastal forest, sandy beach, and rocky shores.

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APPENDIX 1

This is a checklist of all the vascular plants present (+) and absent (–) on the two Sisters' Islands, divided into sections for ferns, gymnosperms, and angiosperms.

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

Islands: BSI = Big Sister's Island; SSI = Small Sister's Island

S/No.	Fern Species	Family	Status	BSI	SSI
1.	*Adiantum latifolium* Lam.	Pteridaceae	NA	–	+
2.	*Asplenium nidus* L.	Aspleniaceae	NT	+	+
3.	*Davallia denticulata* (Burm.f.) Mett. ex Kuhn	Davalliaceae	NT	–	+
4.	*Dicranopteris linearis* (Burm.f.) Underw.	Gleicheniaceae	NT	+	+
5.	*Lindsaea ensifolia* Sw.	Lindsaeaceae	NT	–	+
6.	*Lygodium flexuosum* (L.) Sw.	Lygodiaceae	NT	–	+
7.	*Lygodium longifolium* (Willd.) Sw.	Lygodiaceae	VU	–	+
8.	*Lygodium microphyllum* (Cav.) R.Br.	Lygodiaceae	NT	–	+
9.	*Microlepia speluncae* (L.) T.Moore	Dennstaedtiaceae	NT	–	+
10.	*Nephrolepis biserrata* (Sw.) Schott	Nephrolepidaceae	CW	–	+
11.	*Phymatosorus scolopendria* (Burm.f.) Pic.Serm.	Polypodiaceae	NT	–	+
12.	*Pityrogramma calomelanos* (L.) Link	Pteridaceae	NA	–	+
13.	*Pteris ensiformis* Burm.f.	Pteridaceae	CW	–	+
14.	*Pteris semipinnata* L.	Pteridaceae	VU	+	+
15.	*Pyrrosia longifolia* (Burm.f.) C.V.Morton	Polypodiaceae	NT	–	+
16.	*Pyrrosia piloselloides* (L.) M.G.Price	Polypodiaceae	NT	–	+
17.	*Stenochlaena palustris* (Burm. f.) Bedd.	Blechnaceae	NT	–	+
18.	*Taenitis blechnoides* (Willd.) Sw.	Pteridaceae	NT	–	+

S/No.	Gymnosperm Species	Family	Status	BSI	SSI
1.	*Dacrycarpus imbricatus* (Blume) de Laub.	Podocarpaceae	CO	+	–
2.	*Podocarpus polystachyus* R.Br. ex Endl.	Podocarpaceae	CR	+	+

S/No.	Angiosperm Species	Family	Status	BSI	SSI
1.	*Adenanthera pavonina* L.	Leguminosae	NA	+	–
2.	*Adinandra dumosa* Jack	Pentaphylacaceae	NT	+	–
3.	*Alstonia macrophylla* Wall. ex G.Don	Apocynaceae	NA	+	+
4.	*Alysicarpus vaginalis* (L.) DC.	Leguminosae	CW	+	–
5.	*Alyxia reinwardtii* Blume	Apocynaceae	NT	+	+
6.	*Ardisia elliptica* Thunb.	Primulaceae	EN	+	–
7.	*Asystasia gangetica* (L.) T.Anderson subsp. *gangetica*	Acanthaceae	NA	+	+
8.	*Asystasia gangetica* (L.) T.Anderson subsp. *micrantha* (Nees) Ensermu	Acanthaceae	NA	–	+
9.	*Axonopus compressus* (Sw.) P.Beauv.	Poaceae	NA	+	+
10.	*Azadirachta indica* A.Juss.	Meliaceae	CA	+	+
11.	*Barringtonia asiatica* (L.) Kurz	Lecythidaceae	CR	+	–
12.	*Calophyllum inophyllum* L.	Clusiaceae	CR	+	+
13.	*Cassytha filiformis* L.	Lauraceae	NT	+	–
14.	*Casuarina equisetifolia* L.	Casuarinaceae	NT	+	+

S/No.	Angiosperm Species	Family	Status	BSI	SSI
15.	*Cereus repandus* (L.) Mill.	Cactaceae	CA	+	−
16.	*Chrysopogon aciculatus* (Retz.) Trin.	Poaceae	NT	−	+
17.	*Cissus hastata* Miq.	Vitaceae	NT	−	+
18.	*Claoxylon indicum* (Reinw. ex Blume) Hassk.	Euphorbiaceae	NT	+	−
19.	*Clidemia hirta* (L.) D.Don	Melastomataceae	NA	−	+
20.	*Cocos nucifera* L.	Arecaceae	NA	+	−
21.	*Commelina diffusa* Burm.f.	Commelinaceae	CW	−	+
22.	*Commersonia bartramia* (L.) Merr.	Malvaceae	NT	+	−
23.	*Cyanthillium cinereum* (L.) H.Rob.	Compositae	CW	−	+
24.	*Dactyloctenium aegyptium* (L.) Willd.	Poaceae	NT	+	+
25.	*Dalbergia candenatensis* (Dennst.) Prain	Leguminosae	NT	+	−
26.	*Delonix regia* (Hook.) Raf.	Leguminosae	CO	+	+
27.	*Dendrolobium umbellatum* (L.) Benth.	Leguminosae	NT	+	−
28.	*Derris trifoliata* Lour.	Leguminosae	NT	+	+
29.	*Dianella ensifolia* (L.) DC.	Xanthorrhoeaceae	NT	+	+
30.	*Digitaria mollicoma* (Kunth) Henrard	Poaceae	NT	+	−
31.	*Digitaria setigera* Roth	Poaceae	CW	+	−
32.	*Dischidia major* (Vahl) Merr.	Apocynaceae	NT	+	+
33.	*Dischidia nummularia* R.Br.	Apocynaceae	NT	−	+
34.	*Elaeis guineensis* Jacq.	Arecaceae	CA	+	−
35.	*Emilia sonchifolia* (L.) DC. ex DC.	Compositae	CW	−	+
36.	*Eragrostis amabilis* (L.) Wight & Arn.	Poaceae	CW	−	+
37.	*Euphorbia hirta* L.	Euphorbiaceae	NA	−	+
38.	*Eurycoma longifolia* Jack	Simaroubaceae	CR	+	+
39.	*Fagraea auriculata* Jack	Gentianaceae	CR	−	+
40.	*Fagraea fragrans* Roxb.	Gentianaceae	NT	+	+
41.	*Falcataria moluccana* (Miq.) Barneby & J.W.Grimes	Leguminosae	NA	+	−
42.	*Ficus benjamina* L.	Moraceae	CW	+	−
43.	*Ficus grossularioides* Burm.f.	Moraceae	NT	+	−
44.	*Ficus microcarpa* L.f.	Moraceae	NT	+	+
45.	*Ficus punctata* Thunb.	Moraceae	NT	+	−
46.	*Ficus superba* Miq.	Moraceae	EN	+	+
47.	*Ficus virens* Aiton	Moraceae	CR	−	+
48.	*Garcinia cymosa* (K.Schum.) I.M.Turner & P.F.Stevens	Clusiaceae	CO	+	−
49.	*Guettarda speciosa* L.	Rubiaceae	EN	+	−
50.	*Guioa pleuropteris* (Blume) Radlk.	Sapindaceae	VU	+	+
51.	*Guioa pubescens* (Zoll. & Moritzi) Radlk.	Sapindaceae	VU	+	−
52.	*Gynochthodes sublanceolata* Miq.	Rubiaceae	NT	+	+
53.	*Hoya verticillata* (Vahl) G.Don	Apocynaceae	NT	−	+
54.	*Ipomoea pes−caprae* (L.) R.Br.	Convolvulaceae	NT	−	+
55.	*Jatropha curcas* L.	Euphorbiaceae	CO	−	+
56.	*Kyllinga nemoralis* (J.R.Forst. & G.Forst.) Dandy ex Hutch. & Dalziel	Cyperaceae	CW	+	+
57.	*Lepturus repens* (J.R.Forst.) R.Br.	Poaceae	NT	+	+
58.	*Licuala spinosa* Wurmb	Arecaceae	VU	+	−
59.	*Lindernia ruellioides* (Colsm.) Pennell	Linderniaceae	CW	+	−
60.	*Macaranga heynei* I.M.Johnst.	Euphorbiaceae	NT	+	−

S/No.	Angiosperm Species	Family	Status	BSI	SSI
61.	*Macrosolen retusus* Blume	Loranthaceae	NT	+	−
62.	*Melastoma malabathricum* L.	Melastomataceae	NT	+	−
63.	*Memecylon edule* Roxb.	Melastomataceae	EN	+	+
64.	*Mikania micrantha* Kunth	Compositae	NA	−	+
65.	*Mimosa pudica* L.	Leguminosae	NA	+	+
66.	*Morinda citrifolia* L.	Rubiaceae	CW	+	−
67.	*Morinda umbellata* L.	Rubiaceae	NT	+	+
68.	*Muntingia calabura* L.	Muntingiaceae	NA	+	−
69.	*Myrica esculenta* Buch.−Ham. ex D.Don	Myricaceae	NT	+	+
70.	*Nepenthes gracilis* Korth.	Nepenthaceae	NT	+	−
71.	*Nepenthes rafflesiana* Jack	Nepenthaceae	VU	+	−
72.	*Oldenlandia biflora* L.	Rubiaceae	CW	+	+
73.	*Oldenlandia corymbosa* L.	Rubiaceae	CW	+	−
74.	*Oxalis barrelieri* L.	Oxalidaceae	NA	+	−
75.	*Oxalis corniculata* L.	Oxalidaceae	NA	+	+
76.	*Palaquium obovatum* (Griff.) Engl.	Sapotaceae	VU	+	−
77.	*Pandanus odorifer* (Forssk.) Kuntze	Pandanaceae	NT	+	−
78.	*Passiflora laurifolia* L.	Passifloraceae	NA	+	−
79.	*Passiflora suberosa* L.	Passifloraceae	NA	+	+
80.	*Peltophorum pterocarpum* (DC.) K.Heyne	Leguminosae	CR	+	+
81.	*Peperomia pellucida* (L.) Kunth	Piperaceae	NA	+	−
82.	*Phyllanthus debilis* Klein ex Willd.	Phyllanthaceae	NA	−	+
83.	*Pittosporum ferrugineum* W.T.Aiton	Pittosporaceae	VU	+	−
84.	*Planchonella obovata* (R.Br.) Pierre	Sapotaceae	VU	+	+
85.	*Polyscias diversifolia* (Blume) Lowry & G.M.Plunkett	Araliaceae	NT	+	+
86.	*Pongamia pinnata* (L.) Pierre	Leguminosae	EN	+	−
87.	*Premna serratifolia* L.	Lamiaceae	VU	−	+
88.	*Rapanea porteriana* (Wall. & A.DC.) Mez	Primulaceae	VU	+	+
89.	*Rhizophora stylosa* Griff.	Rhizophoraceae	VU	+	−
90.	*Rhodamnia cinerea* Jack	Myrtaceae	NT	+	−
91.	*Rhodomyrtus tomentosa* (Aiton) Hassk.	Myrtaceae	NT	+	−
92.	*Rhynchospora colorata* (L.) H.Pfeiff.	Cyperaceae	CW	−	+
93.	*Sauropus bacciformis* (L.) Airy Shaw	Phyllanthaceae	CR	−	+
94.	*Scaevola taccada* (Gaertn.) Roxb.	Goodeniaceae	NT	+	+
95.	*Scleria levis* Retz.	Cyperaceae	CW	−	+
96.	*Scyphiphora hydrophylacea* C.F.Gaertn.	Rubiaceae	NT	−	+
97.	*Senna sulfurea* (Collad.) H.S.Irwin & Barneby	Leguminosae	CO	+	−
98.	*Sesuvium portulacastrum* (L.) L.	Aizoaceae	NT	−	+
99.	*Sida acuta* Burm.f.	Malvaceae	CW	−	+
100.	*Sida cordifolia* L.	Malvaceae	NT	+	–
101.	*Sida rhombifolia* L.	Malvaceae	CW	+	−
102.	*Spermacoce exilis* (L.O.Williams) C.D.Adams ex W.C.Burger & C.M.Taylor	Rubiaceae	CW	−	+
103.	*Spermacoce ocymoides* Burm.f.	Rubiaceae	NA	+	+
104.	*Spermacoce setidens* (Miq.) Boerl.	Rubiaceae	CW	+	−
105.	*Sphagneticola trilobata* (L.) Pruski	Compositae	NA	−	+
106.	*Symplocos adenophylla* Wall. ex G.Don	Symplocaceae	EN	+	−
107.	*Synedrella nodiflora* (L.) Gaertn.	Compositae	NA	−	+

S/No.	Angiosperm Species	Family	Status	BSI	SSI
108.	*Syzygium claviflorum* (Roxb.) Wall. ex A.M.Cowan & Cowan	Myrtaceae	CR	+	−
109.	*Syzygium palembanicum* Miq.	Myrtaceae	VU	+	−
110.	*Syzygium polyanthum* (Wight) Walp.	Myrtaceae	VU	+	+
111.	*Syzygium zeylanicum* (L.) DC.	Myrtaceae	NT	+	+
112.	*Talipariti tiliaceum* (L.) Fryxell	Malvaceae	NT	+	+
113.	*Tamarindus indica* L.	Leguminosae	CA	−	+
114.	*Tarenna fragrans* (Blume) Koord. & Valeton	Rubiaceae	EN	+	+
115.	*Terminalia catappa* L.	Combretaceae	NT	+	+
116.	*Tetracera indica* (Christm. & Panz.) Merr.	Dilleniaceae	NT	+	+
117.	*Thespesia populnea* (L.) Sol. ex Corrêa	Malvaceae	NT	+	−
118.	*Thuarea involuta* (G.Forst.) R.Br. ex Sm.	Poaceae	NT	−	+
119.	*Tridax procumbens* (L.) L.	Compositae	NA	−	+
120.	*Tristaniopsis obovata* (Benn.) Peter G.Wilson & J.T.Waterh.	Myrtaceae	CR	+	+
121.	*Tristaniopsis whiteana* (Griff.) Peter G.Wilson & J.T.Waterh.	Myrtaceae	EN	−	+
122.	*Vitex pinnata* L.	Lamiaceae	NT	+	+
123.	*Youngia japonica* (L.) DC.	Compositae	NA	−	+
124.	*Zoysia matrella* (L.) Merr.	Poaceae	NT	−	+

APPENDIX 2

Individual checklists of all the vascular plants present on Small Sister's Island and Big Sister's Island 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), Koh et al. (2002), 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

Small Sister's Island

S/No.	Fern species	Family	Status	Previous records				2014/ 2015
				SING	SINU	HTTW	Koh	
1.	*Adiantum latifolium* Lam.	Pteridaceae	NA	–	–	–	–	+
2.	*Asplenium nidus* L.	Aspleniaceae	NT	–	–	–	–	+
3.	*Davallia denticulata* (Burm. f.) Mett. ex Kuhn	Davalliaceae	NT	–	–	–	–	+
4.	*Dicranopteris linearis* (Burm. f.) Underw.	Gleicheniaceae	NT	–	–	–	+	+
5.	*Lindsaea ensifolia* Sw.	Lindsaeaceae	NT	–	–	–	+	–
6.	*Lygodium flexuosum* (L.) Sw.	Lygodiaceae	NT	–	–	–	+	–
7.	*Lygodium longifolium* (Willd.) Sw.	Lygodiaceae	VU	–	–	–	–	+
8.	*Lygodium microphyllum* (Cav.) R. Br.	Lygodiaceae	NT	–	–	–	–	+
9.	*Microlepia speluncae* (L.) T. Moore	Dennstaedtiaceae	NT	–	–	–	–	+
10.	*Nephrolepis biserrata* (Sw.) Schott	Nephrolepidaceae	CW	–	–	–	–	+
11.	*Phymatosorus scolopendria* (Burm. f.) Pic. Serm.	Polypodiaceae	NT	+	–	–	–	–
12.	*Pityrogramma calomelanos* (L.) Link	Pteridaceae	NA	–	–	–	+	–
13.	*Pteris ensiformis* Burm. f.	Pteridaceae	CW	–	–	–	–	+
14.	*Pteris semipinnata* L.	Pteridaceae	VU	–	–	–	–	+
15.	*Pyrrosia longifolia* (Burm. f.) C.V. Morton	Polypodiaceae	NT	–	–	–	–	+
16.	*Pyrrosia piloselloides* (L.) M.G. Price	Polypodiaceae	NT	–	–	–	–	+
17.	*Stenochlaena palustris* (Burm. f.) Bedd.	Blechnaceae	NT	–	–	–	–	+
18.	*Taenitis blechnoides* (Willd.) Sw.	Pteridaceae	NT	–	–	–	+	–

S/No.	Gymnosperm species	Family	Status	Previous records				2014/ 2015
				SING	SINU	HTTW	Koh	
1.	*Podocarpus polystachyus* R.Br. ex Endl.	Podocarpaceae	CR	–	–	–	–	+

S/No.	Angiosperm species	Family	Status	Previous records				2014/ 2015
				SING	SINU	HTTW	Koh	
1.	*Alstonia macrophylla* Wall. ex G.Don	Apocynaceae	NA	–	+	+	+	+
2.	*Alyxia reinwardtii* Blume	Apocynaceae	NT	–	+	+	–	+
3.	*Asystasia gangetica* (L.) T.Anderson	Acanthaceae	NA	–	–	–	+	+
4.	*Asystasia nemorum* Nees	Acanthaceae	UA	–	+	+	–	–
5.	*Axonopus compressus* (Sw.) P.Beauv.	Poaceae	NA	–	–	–	+	–
6.	*Azadirachta indica* A.Juss.	Meliaceae	CA	–	–	–	–	+
7.	*Calophyllum inophyllum* L.	Clusiaceae	CR	–	+	+	–	–
8.	*Casuarina equisetifolia* L.	Casuarinaceae	NT	–	+	+	+	+
9.	*Chrysopogon aciculatus* (Retz.) Trin.	Poaceae	NT	–	+	–	–	–
10.	*Cissus hastata* Miq.	Vitaceae	NT	–	–	–	–	+
11.	*Clidemia hirta* (L.) D. Don	Melastomataceae	NA	–	–	–	–	+
12.	*Commelina diffusa* Burm.f.	Commelinaceae	CW	–	+	–	–	–
13.	*Cyanthillium cinereum* (L.) H.Rob.	Compositae	CW	–	+	+	–	–
14.	*Dactyloctenium aegyptium* (L.) Willd.	Poaceae	NT	–	+	–	+	–
15.	*Delonix regia* (Hook.) Raf.	Leguminosae	CO	–	+	+	–	+
16.	*Derris trifoliata* Lour.	Leguminosae	NT	–	–	–	–	+
17.	*Dianella ensifolia* (L.) DC.	Xanthorrhoeaceae	NT	–	–	–	+	+
18.	*Dischidia major* (Vahl) Merr.	Apocynaceae	NT	–	+	+	+	–

S/No.	Angiosperm species	Family	Status	Previous records				2014/ 2015
				SING	SINU	HTTW	Koh	
19.	*Dischidia nummularia* R.Br.	Apocynaceae	NT	–	+	–	–	–
20.	*Emilia sonchifolia* (L.) DC. ex DC.	Compositae	CW	–	+	+	–	–
21.	*Eragrostis amabilis* (L.) Wight & Arn.	Poaceae	CW	–	+	–	–	–
22.	*Euphorbia hirta* L.	Euphorbiaceae	NA	–	+	+	–	–
23.	*Eurycoma longifolia* Jack	Simaroubaceae	CR	+	+	–	+	+
24.	*Fagraea auriculata* Jack	Gentianaceae	CR	–	–	–	+	–
25.	*Fagraea fragrans* Roxb.	Gentianaceae	NT	–	+	–	–	–
26.	*Ficus microcarpa* L.f.	Moraceae	NT	–	–	–	–	+
27.	*Ficus superba* Miq.	Moraceae	EN	–	–	–	–	+
28.	*Ficus virens* Aiton	Moraceae	CR	–	–	–	–	+
29.	*Guioa pleuropteris* (Blume) Radlk.	Sapindaceae	VU	+	–	–	+	+
30.	*Gynochthodes sublanceolata* Miq.	Rubiaceae	NT	–	+	–	–	–
31.	*Hoya parasitica* Wall. ex Traill	Apocynaceae	NT	–	+	–	–	–
32.	*Hoya verticillata* (Vahl) G. Don	Apocynaceae	NT	–	–	+	–	+
33.	*Ipomoea pes–caprae* (L.) R. Br.	Convolvulaceae	NT	–	+	+	–	+
34.	*Jatropha curcas* L.	Euphorbiaceae	CO	–	–	+	–	–
35.	*Kyllinga nemoralis* (J.R.Forst. & G.Forst.) Dandy ex Hutch. & Dalziel	Cyperaceae	CW	–	+	–	+	–
36.	*Lepturus repens* (J.R.Forst.) R.Br.	Poaceae	NT	+	–	–	–	–
37.	*Memecylon edule* Roxb.	Melastomataceae	EN	–	–	–	+	+
38.	*Mikania micrantha* Kunth	Compositae	NA	–	–	–	–	+
39.	*Mimosa pudica* L.	Leguminosae	NA	–	+	+	+	–
40.	*Morinda umbellata* L.	Rubiaceae	NT	–	–	–	+	+
41.	*Myrica esculenta* Buch.–Ham. ex D. Don	Myricaceae	NT	–	+	–	–	–
42.	*Oldenlandia biflora* L.	Rubiaceae	CW	–	+	–	–	–
43.	*Oxalis corniculata* L.	Oxalidaceae	NA	–	+	–	+	–
44.	*Passiflora suberosa* L.	Passifloraceae	NA	–	–	–	–	+
45.	*Peltophorum pterocarpum* (DC.) K.Heyne	Leguminosae	CR	–	+	+	–	+
46.	*Phyllanthus debilis* Klein ex Willd.	Phyllanthaceae	NA	–	+	+	–	–
47.	*Planchonella obovata* (R.Br.) Pierre	Sapotaceae	VU	–	–	–	–	+
48.	*Polyscias diversifolia* (Blume) Lowry & G.M.Plunkett	Araliaceae	NT	–	+	+	–	–
49.	*Premna serratifolia* L.	Lamiaceae	VU	+	–	–	–	+
50.	*Rapanea porteriana* (Wall. & A. DC.) Mez	Primulaceae	VU	–	–	–	–	+
51.	*Rhynchospora colorata* (L.) H.Pfeiff.	Cyperaceae	UA	–	+	–	–	–
52.	*Sauropus bacciformis* (L.) Airy Shaw	Phyllanthaceae	CR	–	+	–	–	–
53.	*Scaevola taccada* (Gaertn.) Roxb.	Goodeniaceae	NT	–	+	+	–	–
54.	*Scleria levis* Retz.	Cyperaceae	CW	–	+	–	–	–
55.	*Scyphiphora hydrophylacea* C.F.Gaertn.	Rubiaceae	NT	–	+	–	–	–
56.	*Sesuvium portulacastrum* (L.) L.	Aizoaceae	NT	–	+	+	–	–
57.	*Sida acuta* Burm.f.	Malvaceae	CW	–	+	–	+	–
58.	*Spermacoce exilis* (L.O.Williams) C.D.Adams ex W.C.Burger & C.M.Taylor	Rubiaceae	CW	–	+	–	+	–
59.	*Spermacoce ocymoides* Burm.f.	Rubiaceae	NA	–	+	–	–	–
60.	*Sphagneticola trilobata* (L.) Pruski	Compositae	NA	–	+	+	–	–
61.	*Synedrella nodiflora* (L.) Gaertn.	Compositae	NA	–	+	+	–	–
62.	*Syzygium polyanthum* (Wight) Walp.	Myrtaceae	VU	–	+	–	–	+
63.	*Syzygium zeylanicum* (L.) DC.	Myrtaceae	NT	–	+	–	+	+
64.	*Taliparitiliaceum* (L.) Fryxell	Malvaceae	NT	–	+	–	–	–
65.	*Tamarindus indica* L.	Leguminosae	CA	–	+	+	–	+
66.	*Tarenna fragrans* (Blume) Koord. & Valeton	Rubiaceae	EN	–	–	–	–	+
67.	*Terminalia catappa* L.	Combretaceae	NT	–	+	+	–	+
68.	*Tetracera indica* (Christm. & Panz.) Merr.	Dilleniaceae	NT	–	+	+	+	–

S/No.	Angiosperm species	Family	Status	Previous records				2014/ 2015
				SING	SINU	HTTW	Koh	
69.	*Thuarea involuta* (G.Forst.) R.Br. ex Sm.	Poaceae	NT	+	–	–	–	–
70.	*Tridax procumbens* (L.) L.	Compositae	NA	–	+	+	–	–
71.	*Tristaniopsis obovata* (Benn.) Peter G.Wilson & J.T.Waterh.	Myrtaceae	CR	–	–	–	+	–
72.	*Tristaniopsis whiteana* (Griff.) Peter G.Wilson & J.T.Waterh.	Myrtaceae	EN	+	+	–	–	+
73.	*Vitex pinnata* L.	Lamiaceae	NT	–	–	–	–	+
74.	*Youngia japonica* (L.) DC.	Compositae	NA	–	+	+	–	–
75.	*Zoysia matrella* (L.) Merr.	Poaceae	NT	–	+	–	–	–

Big Sister's Island

S/No.	Fern species	Family	Status	Previous records				2014/ 2015
				SING	SINU	HTTW	Koh	
1.	*Asplenium nidus* L.	Aspleniaceae	NT	–	–	–	–	+
2.	*Dicranopteris linearis* (Burm. f.) Underw.	Gleicheniaceae	NT	–	–	–	–	+
3.	*Pteris semipinnata* L.	Pteridaceae	VU	–	–	–	–	+

S/No.	Gymnosperm species	Family	Status	Previous records				2014/ 2015
				SING	SINU	HTTW	Koh	
1.	*Dacrycarpus imbricatus* (Blume) de Laub.	Podocarpaceae	CO	+	–	–	–	–
2.	*Podocarpus polystachyus* R.Br. ex Endl.	Podocarpaceae	CR	–	–	–	–	+

S/No.	Angiosperm species	Family	Status	Previous records				2014/ 2015
				SING	SINU	HTTW	Koh	
1.	*Adenanthera pavonina* L.	Leguminosae	NA	–	+	–	–	+
2.	*Adinandra dumosa* Jack	Pentaphylacaceae	NT	–	+	–	–	–
3.	*Alstonia macrophylla* Wall. ex G.Don	Apocynaceae	NA	–	–	–	–	+
4.	*Alysicarpus vaginalis* (L.) DC.	Leguminosae	CW	–	+	–	–	–
5.	*Alyxia reinwardtii* Blume	Apocynaceae	NT	–	–	–	–	+
6.	*Ardisia elliptica* Thunb.	Primulaceae	EN	–	+	–	–	–
7.	*Asystasia gangetica* (L.) T.Anderson	Acanthaceae	NA	–	+	–	–	+
8.	*Axonopus compressus* (Sw.) P.Beauv.	Poaceae	NA	–	+	–	–	–
9.	*Azadirachta indica* A.Juss.	Meliaceae	CA	–	+	–	–	+
10.	*Barringtonia asiatica* (L.) Kurz	Lecythidaceae	CR	–	–	–	–	+
11.	*Calophyllum inophyllum* L.	Clusiaceae	CR	–	–	–	–	+
12.	*Cassytha filiformis* L.	Lauraceae	NT	–	–	–	–	+
13.	*Casuarina equisetifolia* L.	Casuarinaceae	NT	–	–	–	–	+
14.	*Cereus repandus* (L.) Mill.	Cactaceae	UA	+	–	–	–	–
15.	*Claoxylon indicum* (Reinw. ex Blume) Hassk.	Euphorbiaceae	NT	–	–	–	–	+
16.	*Cocos nucifera* L.	Arecaceae	NA	–	+	–	–	+
17.	*Commersonia bartramia* (L.) Merr.	Malvaceae	NT	–	+	–	–	–
18.	*Dactyloctenium aegyptium* (L.) Willd.	Poaceae	NT	–	+	–	–	–
19.	*Dalbergia candenatensis* (Dennst.) Prain	Leguminosae	NT	–	+	–	–	+
20.	*Delonix regia* (Hook.) Raf.	Leguminosae	CO	–	+	–	–	–
21.	*Dendrolobium umbellatum* (L.) Benth.	Leguminosae	NT	–	+	–	–	+
22.	*Derris trifoliata* Lour.	Leguminosae	NT	–	+	–	–	+
23.	*Dianella ensifolia* (L.) DC.	Xanthorrhoeaceae	NT	–	+	–	–	+
24.	*Digitaria mollicoma* (Kunth) Henrard	Poaceae	NT	+	–	–	–	–
25.	*Digitaria setigera* Roth	Poaceae	CW	+	–	–	–	–
26.	*Dischidia major* (Vahl) Merr.	Apocynaceae	NT	–	+	–	–	–
27.	*Elaeis guineensis* Jacq.	Arecaceae	CA	–	+	–	–	–
28.	*Eurycoma longifolia* Jack	Simaroubaceae	CR	–	+	–	–	+
29.	*Fagraea fragrans* Roxb.	Gentianaceae	NT	–	+	–	–	+
30.	*Falcataria moluccana* (Miq.) Barneby & J.W.Grimes	Leguminosae	NA	–	+	–	–	–
31.	*Ficus benjamina* L.	Moraceae	CW	–	+	–	–	+
32.	*Ficus grossularioides* Burm.f.	Moraceae	NT	–	+	–	–	–
33.	*Ficus microcarpa* L.f.	Moraceae	NT	–	–	–	–	+
34.	*Ficus punctata* Thunb.	Moraceae	NT	–	+	–	–	+
35.	*Ficus superba* Miq.	Moraceae	EN	–	+	–	–	+
36.	*Garcinia cymosa* (K.Schum.) I.M.Turner & P.F.Stevens	Clusiaceae	CO	+	–	–	–	–
37.	*Guettarda speciosa* L.	Rubiaceae	EN	–	–	–	–	+
38.	*Guioa pleuropteris* (Blume) Radlk.	Sapindaceae	VU	–	–	–	–	+
39.	*Guioa pubescens* (Zoll. & Moritzi) Radlk.	Sapindaceae	VU	–	+	–	–	–

S/No.	Angiosperm species	Family	Status	Previous records				2014/ 2015
				SING	SINU	HTTW	Koh	
40.	*Gynochthodes sublanceolata* Miq.	Rubiaceae	NT	+	+	–	–	+
41.	*Kyllinga nemoralis* (J.R.Forst. & G.Forst.) Dandy ex Hutch. & Dalziel	Cyperaceae	CW	–	+	–	–	–
42.	*Lepturus repens* (J.R.Forst.) R.Br.	Poaceae	NT	+	–	–	–	–
43.	*Licuala spinosa* Wurmb	Arecaceae	VU	–	+	–	–	–
44.	*Lindernia ruellioides* (Colsm.) Pennell	Linderniaceae	CW	–	+	–	–	–
45.	*Macaranga heynei* I.M.Johnst.	Euphorbiaceae	NT	–	–	–	–	+
46.	*Macrosolen retusus* Blume	Loranthaceae	NT	+	–	–	–	–
47.	*Melastoma malabathricum* L.	Melastomataceae	NT	–	+	–	–	–
48.	*Memecylon edule* Roxb.	Melastomataceae	EN	+	+	–	–	+
49.	*Mimosa pudica* L.	Leguminosae	NA	–	+	–	–	+
50.	*Morinda citrifolia* L.	Rubiaceae	CW	–	+	–	–	+
51.	*Morinda umbellata* L.	Rubiaceae	NT	–	+	–	–	+
52.	*Muntingia calabura* L.	Muntingiaceae	NA	–	–	–	–	+
53.	*Myrica esculenta* Buch.–Ham. ex D. Don	Myricaceae	NT	–	+	–	–	–
54.	*Nepenthes gracilis* Korth.	Nepenthaceae	NT	–	+	–	–	–
55.	*Nepenthes rafflesiana* Jack	Nepenthaceae	VU	–	+	–	–	–
56.	*Oldenlandia biflora* L.	Rubiaceae	CW	–	+	–	–	–
57.	*Oldenlandia corymbosa* L.	Rubiaceae	CW	–	+	–	–	–
58.	*Oxalis barrelieri* L.	Oxalidaceae	NA	–	+	–	–	–
59.	*Oxalis corniculata* L.	Oxalidaceae	NA	–	+	–	–	–
60.	*Palaquium obovatum* (Griff.) Engl.	Sapotaceae	VU	–	+	–	–	–
61.	*Pandanus odorifer* (Forssk.) Kuntze	Pandanaceae	NT	–	+	–	–	+
62.	*Passiflora laurifolia* L.	Passifloraceae	NA	–	–	–	–	+
63.	*Passiflora suberosa* L.	Passifloraceae	NA	–	+	–	–	+
64.	*Peltophorum pterocarpum* (DC.) K.Heyne	Leguminosae	CR	–	–	–	–	+
65.	*Peperomia pellucida* (L.) Kunth	Piperaceae	NA	–	+	–	–	–
66.	*Pittosporum ferrugineum* W.T.Aiton	Pittosporaceae	VU	–	+	–	–	+
67.	*Planchonella obovata* (R.Br.) Pierre	Sapotaceae	VU	–	+	–	–	+
68.	*Polyscias diversifolia* (Blume) Lowry & G.M.Plunkett	Araliaceae	NT	–	–	–	–	+
69.	*Pongamia pinnata* (L.) Pierre	Leguminosae	EN	–	+	–	–	+
70.	*Rapanea porteriana* (Wall. & A. DC.) Mez	Primulaceae	VU	+	+	–	–	+
71.	*Rhizophora stylosa* Griff.	Rhizophoraceae	VU	+	–	–	–	–
72.	*Rhodamnia cinerea* Jack	Myrtaceae	NT	–	–	–	–	+
73.	*Rhodomyrtus tomentosa* (Aiton) Hassk.	Myrtaceae	NT	–	+	–	–	–
74.	*Scaevola taccada* (Gaertn.) Roxb.	Goodeniaceae	NT	–	–	–	–	+
75.	*Senna sulfurea* (Collad.) H.S.Irwin & Barneby	Leguminosae	CO	–	+	–	–	–
76.	*Sida mysorensis* Wight & Arn.	Malvaceae	UA	–	+	–	–	–
77.	*Sida rhombifolia* L.	Malvaceae	CW	–	+	–	–	–
78.	*Spermacoce ocymoides* Burm.f.	Rubiaceae	NA	–	+	–	–	–
79.	*Spermacoce setidens* (Miq.) Boerl.	Rubiaceae	CW	–	+	–	–	–
80.	*Symplocos adenophylla* Wall. ex G. Don	Symplocaceae	EN	–	+	–	–	+
81.	*Syzygium claviflorum* (Roxb.) Wall. ex A.M.Cowan & Cowan	Myrtaceae	CR	–	+	–	–	+
82.	*Syzygium palembanicum* Miq.	Myrtaceae	VU	+	–	–	–	+
83.	*Syzygium polyanthum* (Wight) Walp.	Myrtaceae	VU	–	–	–	–	+
84.	*Syzygium zeylanicum* (L.) DC.	Myrtaceae	NT	–	+	–	–	+
85.	*Taliparitiliaceum* (L.) Fryxell	Malvaceae	NT	–	+	–	–	+
86.	*Tarenna fragrans* (Blume) Koord. & Valeton	Rubiaceae	EN	+	+	–	–	+
87.	*Terminalia catappa* L.	Combretaceae	NT	–	–	–	–	+
88.	*Tetracera indica* (Christm. & Panz.) Merr.	Dilleniaceae	NT	–	+	–	–	+

S/No.	Angiosperm species	Family	Status	Previous records				2014/ 2015
				SING	SINU	HTTW	Koh	
89.	*Thespesia populnea* (L.) Sol. ex Corrêa	Malvaceae	NT	–	+	–	–	–
90.	*Tristaniopsis obovata* (Benn.) Peter G.Wilson & J.T.Waterh.	Myrtaceae	CR	–	+	–	–	–
91.	*Vitex pinnata* L.	Lamiaceae	NT	–	+	–	–	+