

THE VASCULAR PLANT FLORA OF BUKIT BATOK, SINGAPORE

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ABSTRACT. — A checklist of vascular plant species was compiled for four patches of secondary regrowth forest in the Bukit Batok urban planning area of Singapore Island. In 2012, we sampled five 20 × 20 m vegetation plots within each forest patch, and recorded all vascular plant species, as well as the diameter at breast height (DBH) of all woody stems with a DBH ≥ 5 cm. The resultant species list was supplemented with information from other surveys conducted in 2013. We recorded 254 species from 91 families. The highest percentage of native species (79.6%) was found in Bukit Batok Hillside Park, while the highest percentage of exotic species (35.3%) was found in Bukit Batok Nature Park. The highest percentage of nationally threatened species was found in Bukit Batok Town Park, where they made up an average of 22.0% of the species in each forest patch. Among the measured stems, Pará rubber (*Hevea brasiliensis*) was most frequent on average, but the rest of the tree community was predominantly native. The patches of secondary forest in Bukit Batok may act as refuges for native species and have conservation value as a consequence.

KEY WORDS. — checklist, conservation, flora, Bukit Batok, secondary forest

INTRODUCTION

Bukit Batok is an urban planning area in the west of Singapore Island (Fig. 1). It is bounded by Bukit Batok Road, Choa Chu Kang Road, Upper Bukit Timah Road, Old Jurong Road, and the Pan Island Expressway (URA, 2008). We



Fig. 1. Outlined in red are four patches of secondary regrowth forest in Bukit Batok, Singapore. The extent and size of each forest patch were based on a satellite image acquired on 14 Jun.2012 (Google, 2012). The yellow dots represent the locations of the surveyed vegetation plots, and the rectangle in Bukit Batok Nature Park (South) demarcates a survey transect of managed vegetation.

surveyed four patches of secondary regrowth forest within this area. In a clockwise direction from Bukit Batok Road, they were: Bukit Batok Hillside Park (BBHP), Bukit Batok Town Park (BBTP), Bukit Batok Nature Park (BBNP), and Bukit Batok East Forest (BBEF).

Until the early 1950s, Bukit Batok was covered mainly by rubber plantations. Thereafter, some of these plantations were cleared, while others were abandoned and subsequently used for sundry cultivation. The land-use histories in greater resolution of each of the four forest patches are presented in Table 1. The BBNP (Fig. 2E, 2F) has been a public park since the 1950s, and the southern part is currently still being used and maintained as such. The BBTP (Fig. 2C, 2D) was partially used as a public park in the early 1990s, while the BBHP (Fig. 2A, 2B) was a public park after 2000; however, both are currently disused. According to the Master Plan 2008 of the Urban Redevelopment Authority, Singapore (URA, 2008), the BBTP is to be retained as a park, the BBHP and BBNP will be partially retained as parks, while the BBEF (Fig. 2G, 2H) is wholly a “reserve” site (i.e., land held in reserve for future planning and not to be confused with a nature reserve).

Secondary forests can act as refuges and resource pools for local biodiversity, despite being disturbed and sometimes degraded (Turner & Corlett, 1996; McShea et al., 2009; Edwards et al., 2011). Forests that have regenerated on abandoned agricultural land may be dominated by exotic species, but they have been shown to support the recolonisation of native species (Lugo & Helmer, 2004). In urban Singapore, secondary forests have been found to support populations of birds, butterflies, and frogs (Koh & Sodhi, 2004; Castelletta et al., 2005; Bickford et al., 2010; K. Y. Chong, S. Teo, and H. T. W. Tan, unpublished data). This paper aims to provide an accessible working checklist of the vascular plant species of the four secondary regrowth forests in Bukit Batok, which may be useful for assessing their conservation value.

Table 1. Land-use histories of the four forest patches in Bukit Batok. Forms of land use and terminologies are based on topographic maps of Singapore from the indicated years (Surveyor-General, Federated Malay States and Straits Settlements, 1924; Survey Production Centre, South East Asia, 1945; Surveyor-General, Malaya, 1953; Chief Surveyor, Singapore, 1969; Singapore Mapping Unit, 1982, 1987, 1992, 2000, 2008). ‘Belukar’ is young secondary forest.

Year	BBHP (01°21'25"N, 103°44'39"E)	BBTP (01°21'30"N, 103°45'19"E)	BBNP (North) (01°21'5"N, 103°45'45"E)	BBNP (South) (01°20'55"N, 103°45'53"E)	BBEF (01°20'32"N, 103°45'48"E)
1924	Rubber plantations	Rubber plantations	Rubber plantations	Rubber plantations	Rubber plantations
1945	Rubber plantations	Minor cultivation (west), rubber plantations (east)	Rubber plantations (west), jungle (east)	Rubber plantations (west), jungle (east)	Rubber plantations (west), jungle (east)
1953	Rubber plantations, belukar	Belukar (west), quarry (west), rubber plantations (south, east)	Sundry tree cultivation (west), quarry (east)	Public park	Rubber plantations (west), belukar (east)
1969	Sundry tree cultivation (west)	Sundry tree cultivation (north), quarry (west), rubber plantations (south)	Scrubland (west), quarry (east)	Public park	Sundry tree cultivation (west), cleared land (east)
1982	Sundry tree cultivation (west), rubber-dominated vegetation (east)	Sundry tree cultivation (west), quarry (west), rubber-dominated vegetation (east)	Sundry tree cultivation (west), quarry (east)	Public park	Sundry tree cultivation (west), scrubland (east)
1987	Sundry tree cultivation (west), rubber-dominated vegetation (east)	Sundry tree cultivation (west), quarry (west), rubber-dominated vegetation (east)	Sundry tree cultivation (west), quarry (east)	Public park	Sundry tree cultivation
1992	Sundry tree cultivation (west), rubber-dominated vegetation (east)	Public park, quarry (west), sundry tree cultivation (south)	Public park	Public park	Sundry tree cultivation
2000	Sundry tree cultivation	Public park, quarry (west), sundry tree cultivation (south)	Public park	Public park	Sundry tree cultivation
2008	Public park (northeast), sundry tree cultivation	Public park	Public park	Public park	Sundry tree cultivation



Fig. 2. The four secondary forest patches in the Bukit Batok urban planning area. A, BBHP seen from Bukit Batok West Ave 2; B, Disused trail in BBHP; C, BBTP seen from Bukit Gombak Stadium; D, Disused trail in BBTP; E, BBNP (North) seen from Bukit Batok East Ave 2; F, BBNP (South) with Bukit Batok East Ave 2 on the right; G, BBEF seen from Bukit Batok East Ave 2; H, BBEF with Bukit Batok Street 25 on the right. (Photographs by: Louise Neo).

MATERIAL AND METHODS

In 2012, we surveyed five vegetation plots of 20 × 20 m within each of the four forest patches. The fTools v. 0.6.1 plugin for the Quantum GIS software v. 1.6.0 (Quantum GIS Development Team, 2010) was used to derive a random location for each plot, but we ensured that the five plots were also spaced at least 60 m apart from one another and located at least 40 m from the forest edge. In the BBHP, BBTP, and BBNP (North) sites, the plots were located strictly within the abandoned rubber plantation region of the forest—the extent of which was determined by comparing topographic maps of Singapore against the latest Google Earth satellite image of the forest (Google, 2012). We divided BBNP into two (northern and southern parts) for separate surveys. The southern part is a public park with planted and managed vegetation, so our vegetation plots were all within the northern part.

Within each plot, all species of vascular plants were recorded. Where species could not be identified in the field, specimens were collected for the identities to be further determined in the laboratory or in the Singapore Botanic Gardens Herbarium (SING). To estimate species dominance of each plot, stem diameter at breast height (DBH; measured at 1.3 m above the ground) was recorded for all woody stems with DBH ≥ 5 cm (with the exception of palms [Arecaceae], which were not measured because of the difficulty in measuring the true stems for some species). The list of species planted in BBNP (South) was obtained from a separate study in which a 100 × 500 m transect of the public park was surveyed for cultivated trees, herbs, shrubs, climbers, and epiphytes. In addition to the vegetation plots, some opportunistic exploration of each forest patch was also carried out in 2013, and we included species which were found then. We compiled a checklist of the species recorded from each forest patch. The nomenclature and national status category of each species mostly follow or update those of Chong et al. (2009).

For each forest patch, a species accumulation curve was constructed based on the species recorded in the five sampled plots, to determine how the number of recorded species increased with sampling effort. The ‘specaccum’ function implemented in the vegan v. 2.0-2 package of the statistical software R v. 2.14.1 (R Development Core Team, 2011) was used. The approximate total number of species in the species pool of each forest patch, i.e., including unseen or undetected species, was calculated using the ‘specpool’ function in the vegan v. 2.0-2 package, which uses four commonly used species richness estimators (R Development Core Team, 2011).

RESULTS AND DISCUSSION

The checklist of recorded species including their national conservation status categories is provided in Appendix 1. In total, 254 species from 91 families were recorded from the four forest patches in Bukit Batok. A breakdown of the number and percentage of species in each national status category is presented in Table 2. The highest proportion of native species was recorded in BBHP, while the highest proportion of exotic species was recorded in BBNP (North). BBTP had the highest proportion of nationally threatened species, including those which are persisting from cultivated rather than local provenance (25.0%). In BBHP, the five critically endangered species (not including those likely to be from cultivated stock) are: *Athyrium accedens* (for which BBHP is a new locality record [Yeo et al., 2013]; Fig. 3A, 3B), *Centotheca lappacea*, *Dioscorea polyclados*, *Macaranga hullettii*, and *Melicope lunu-ankenda*. In BBTP, the four critically endangered species (not including those likely to be from cultivated stock) are: *Capparis micracantha*, *Centotheca lappacea*, *Radermachera pinnata*, and *Strophanthus caudatus*. In BBNP (North), the four critically endangered species (not including those likely to be from cultivated stock) are: *Agelaea macrophylla*, *Caesalpinia sumatrana* (Fig. 3C), *Centotheca lappacea*, and *Horsfieldia irya*. In BBEF, the six critically endangered species (not including those likely to be from cultivated stock) are: *Centotheca lappacea*, *Ficus sagittata*, *Glochidion borneense*, *Glochidion lutescens*, *Macaranga hullettii*, and *Podocarpus polystachyus*. A species which was found in three out of the four forest patches (BBTP, BBNP [North], and BBEF), *Morinda rigida* (Fig. 3D), was erroneously reported to be nationally extinct in the Singapore Red Data Book (see Chong et al., 2012). We were unable to assess the status of one species, *Syzygium* cf. *fastigiatum*, which was also found in three out of the four forest patches (BBHP, BBTP, and BBNP [North]). Its identity could not be confirmed from the voucher specimens that we collected, as they were sterile. This species has not been listed in previous checklists, and if its identity were to be confirmed, it would be a new record for Singapore. In addition, the national statuses of one native species, *Paraderris elliptica*, and one exotic species, *Tectaria incisa* (both found in BBNP [North]), have not been assessed.

The species for which we measured basal area are presented in Appendix 2, and are ordered by the total number of stems measured for each species in all four sites, except for species for which only a single individual was measured, which are ordered by basal area instead. Pará rubber, *Hevea brasiliensis* occurred at the highest frequency in all four forest patches (BBHP: 13.80 stems; BBTP: 21.60 stems; BBNP [North]: 21.80 stems; BBEF: 15.20 stems). The greatest basal area measured for each forest patch was for a single individual of different species in each patch (BBHP: *Macaranga conifera*, 11.28%; BBTP: *Litsea elliptica*, 19.06%; BBNP [North]: *Pterocarpus indicus*, 75.59%; BBEF: *Camptosperma auriculatum*, 30.64%). For all four forest patches, most of the measured species were native species typical of early successional secondary forests in Singapore (Corlett 1991; Boo, 1996; Shono et al., 2006) (BBHP: 19/21 native; BBTP: 16/18 native; BBNP [North]: 12/23 native; BBEF: 18/22 native).

Table 2. Number and percentage of species in each national status category for each forest patch.

Origin	National Status	BBHP	BBTP	BBNP (North	BBNP (South)	BBEF
Native	Erroneously extinct	0	1 (1.0%)	1 (0.9%)	0	1 (1.0%)
	Nationally extinct (persistent from cultivation)	1 (1.1%)	1 (1.0%)	1 (0.9%)	3 (5.0%)	2 (2.0%)
	Critically endangered	5 (5.7%)	4 (3.9%)	4 (3.5%)	2 (3.3%)	6 (6.1%)
	Critically endangered (persistent from cultivation)	1 (1.1%)	3 (2.9%)	2 (1.7%)	11 (18.3%)	2 (2.0%)
	Endangered	2 (2.3%)	3 (2.9%)	4 (3.5%)	4 (6.7%)	3 (3.1%)
	Vulnerable	10 (11.4%)	14 (13.5%)	10 (8.6%)	4 (6.7%)	10 (10.2%)
	Common	51 (58.0%)	53 (51.0%)	49 (42.2%)	14 (23.3%)	46 (46.9%)
	Not Assessed	0	0	1 (0.9%)	0	0
	Subtotal	70 (79.6%)	79 (76.0%)	72 (62.1%)	38 (63.3%)	70 (71.4%)
Exotic	Naturalised	9 (10.2%)	7 (6.7%)	13 (11.2%)	3 (5.0%)	13 (13.3%)
	Casual	5 (5.7%)	6 (5.8%)	19 (16.4%)	5 (8.3%)	7 (7.1%)
	Cultivated only	2 (2.3%)	7 (6.7%)	8 (6.9%)	13 (21.7%)	2 (2.0%)
	Not Assessed	0	0	1 (0.9%)	0	0
	Subtotal	16 (18.2%)	20 (19.2%)	41 (35.3%)	21 (35.0%)	22 (22.5%)
Cryptogenic		1 (1.1%)	4 (3.9%)	2 (1.7%)	1 (1.7%)	6 (6.1%)
Not Assessed		1 (1.1%)	1 (1.0%)	1 (0.9%)	0	0
	Total number of species	88	104	116	60	98
	Total number of families	54	55	57	30	49

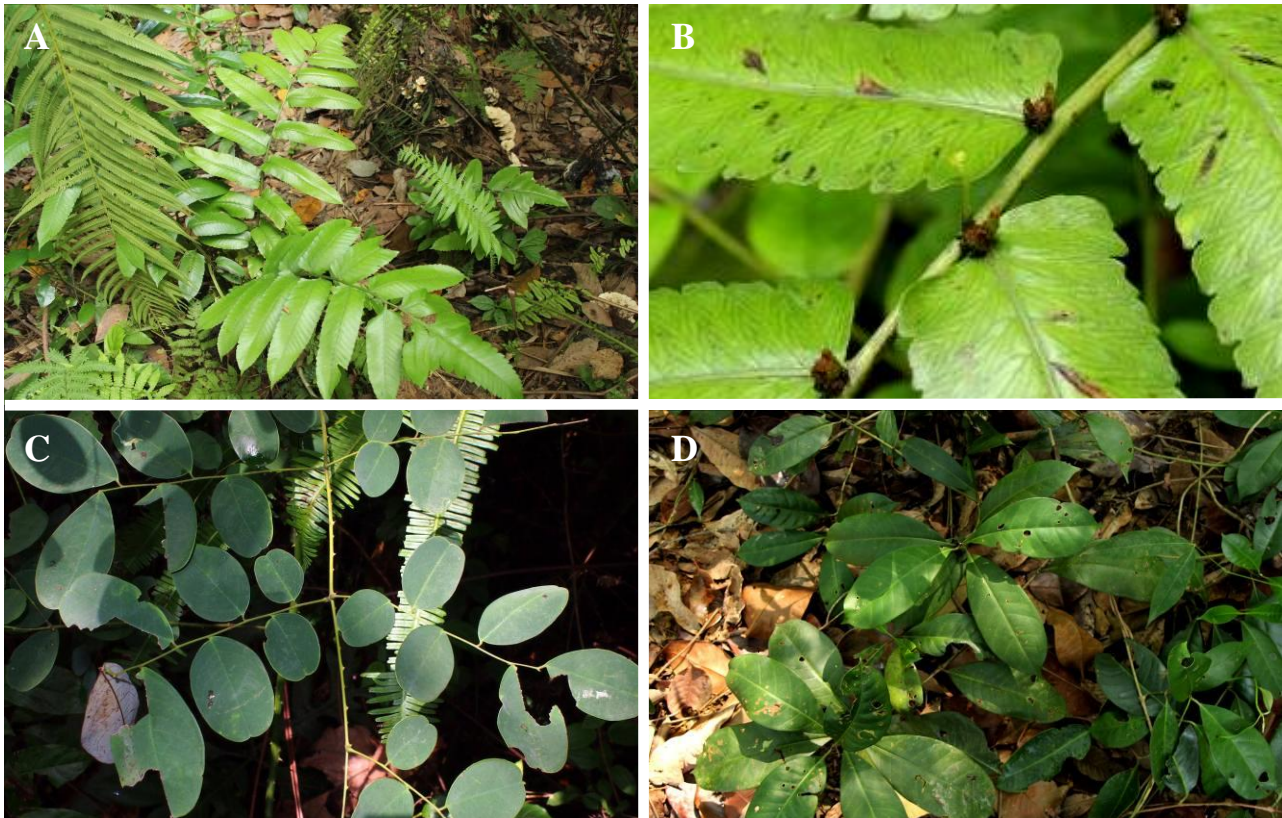


Fig. 3. Some nationally threatened plant species found in Bukit Batok. A, *Athyrium accedens* (habit); B, *Athyrium accedens* (close up of a plantlet growing out from an adventitious bud at the base of a pinna); C, *Caesalpinia sumatrana*; D, *Morinda rigida* (Photographs by: Louise Neo).

Except for BBNP (North), the species accumulation curves derived for the forest patches did not approach an asymptote, suggesting that more species can be expected with more survey effort (Fig. 4). That the total number of species we recorded in BBNP (North) is relatively high despite the species accumulation curve approaching an asymptote can be attributed the fact that our vegetation plots were clustered within the small area of abandoned rubber plantations, while our opportunistic surveying was carried out within the much larger area to the north of this. The estimates of the total number of species in each forest patch, and the percentage of these that the vegetation plots sampled, are presented in Table 3.

Despite the fact that the four forest patches are relatively close to Bukit Timah Nature Reserve, where some of the last remaining patches of primary forest in Singapore can be found, we did not observe species from the families characteristic of old growth forests, such as Dipterocarpaceae, Myristicaceae, Sapotaceae, etc. (Corlett, 1991).

Table 3. Approximate true number of species calculated based on data from the five sampled plots of each forest patch, using four commonly used species richness estimators.

Estimator	Predicted Number of Species				Proportion of the Observed Number of Species out of the Total Predicted Number of Species			
	BBHP	BBTP	BBNP (North)	BBEF	BBHP	BBTP	BBNP (North)	BBEF
Chao	215.4	200.6	108.0	174.0	0.38	0.41	0.77	0.54
Jackknife 1	121.2	119.8	107.0	133.2	0.68	0.69	0.78	0.71
Jackknife 2	146.6	143.4	116.9	155.9	0.56	0.58	0.71	0.60
Bootstrap	98.9	98.9	94.3	111.4	0.83	0.84	0.88	0.84

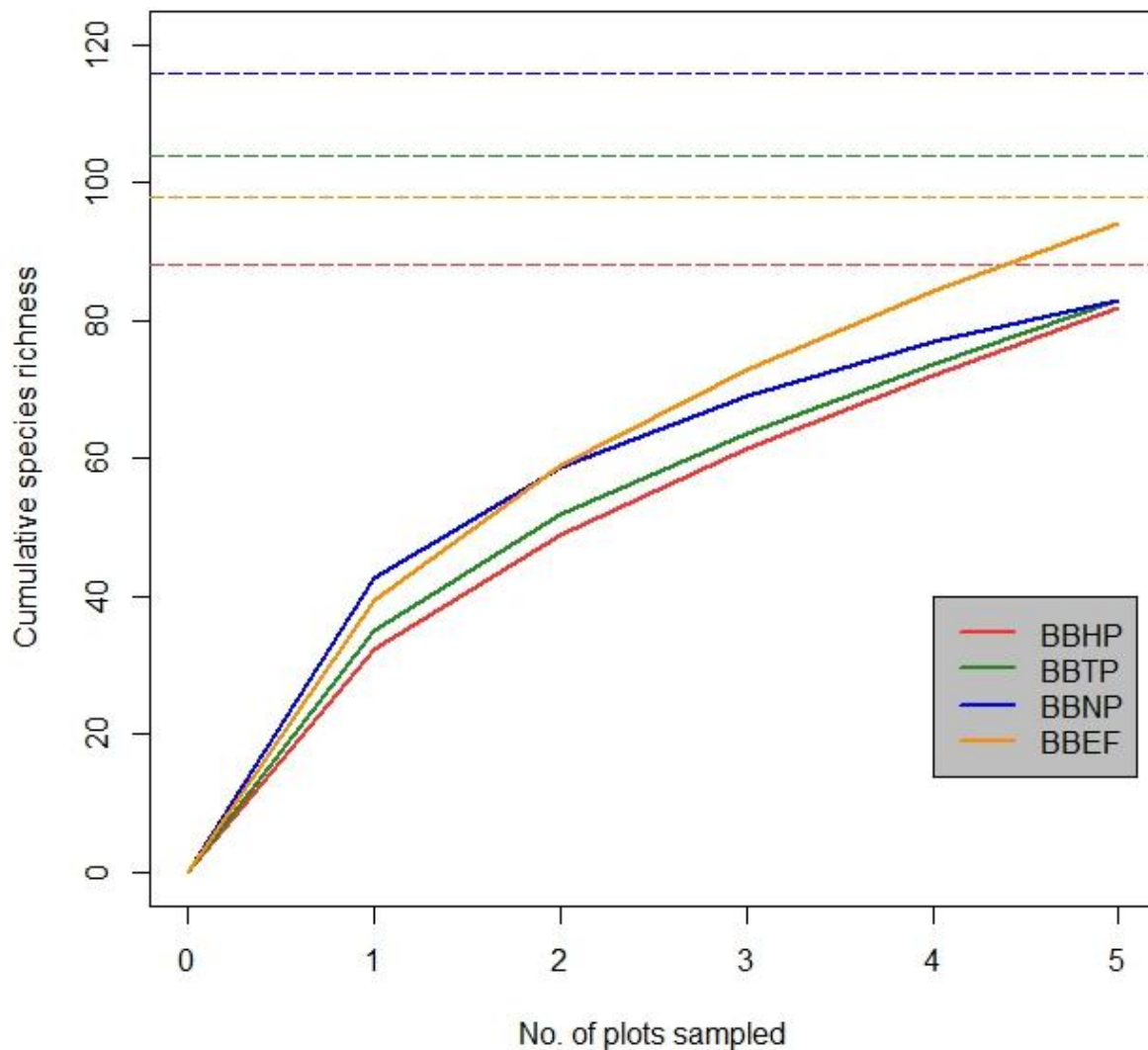


Fig. 4. Species accumulation curves showing the cumulative increase in the number of species recorded from only the five sampled plots in each forest patch. The horizontal dashed lines represent the total number of species that we recorded from each forest patch.

CONCLUSIONS

The vascular plant species composition of Bukit Batok is a product of the cultivation legacy of the area and the recent establishment or persistence of native secondary forest species despite the drastic land use change. Decades after plantation abandonment, *Hevea brasiliensis* still makes up a large proportion of the tree layer in all four forest patches, but otherwise, the tree and understorey communities are now dominated by native species. We recommend the conservation of these secondary regrowth forest patches as they are, as refuges for nationally threatened native species, which make up about 20% of the species we recorded in each forest patch.

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APPENDIX 1

Checklist of the vascular plant flora of Bukit Batok. Nomenclature and conservation status categories follow those of Chong et al. (2009) with some modifications based on our observations. "Weed of Uncertain Origin" of Chong et al. (2009) is categorised "Cryptogenic" in this list. Species are grouped by family and arranged in alphabetical order.

S/No.	Species	Nativeness	National Status	Bukit Batok Hillside Park	Bukit Batok Town Park	Bukit Batok Nature Park (North)	Bukit Batok Nature Park (South)	Bukit Batok East Forest
ACANTHACEAE								
1.	<i>Asystasia gangetica</i> (L.) T.Anderson subsp. <i>micrantha</i> (Nees) Ensermu	Exotic	Naturalised	√		√		√
2.	<i>Hemigraphis alternata</i> (Burm.f.) T.Anderson	Exotic	Cultivated only	√				
ADIANTACEAE								
3.	<i>Adiantum latifolium</i> Lam.	Exotic	Naturalised	√	√	√		√
ALLIACEAE								
4.	<i>Allium sativum</i> L.	Exotic	Cultivated only			√		
ANACARDIACEAE								
5.	<i>Camposperma auriculatum</i> Hook.f.	Native	Common					√
6.	<i>Camposperma squamatum</i> Ridl.	Native	Common		√			
7.	<i>Mangifera caesia</i> Jack	Native	Critically endangered (persistent from cultivation)				√	
8.	<i>Mangifera indica</i> L.	Exotic	Casual		√			
APOCYNACEAE								
9.	<i>Alstonia angustiloba</i> Miq.	Native	Common		√			
10.	<i>Alstonia scholaris</i> (L.) R.Br.	Exotic	Cultivated only				√	
11.	<i>Dyera costulata</i> (Miq.) Hook.f.	Native	Common				√	
12.	<i>Hoya latifolia</i> G.Don	Native	Endangered		√			
13.	<i>Strophanthus caudatus</i> (L.) Kurz	Native	Critically endangered		√			
AQUIFOLIACEAE								
14.	<i>Ilex cymosa</i> Blume	Native	Common		√			√
ARACEAE								
15.	<i>Aglaonema commutatum</i> Schott	Exotic	Casual			√		√
16.	<i>Alocasia longiloba</i> Miq.	Native	Common			√		
17.	<i>Alocasia macrorrhizos</i> (L.) G.Don	Exotic	Naturalised					√
18.	<i>Archontophoenix alexandrae</i> (F.Muell.) H.Wendl. & Drude	Exotic	Cultivated only				√	
19.	<i>Cocos nucifera</i> L.	Exotic	Naturalised				√	

S/No.	Species	Nativeness	National Status	Bukit Batok Hillside Park	Bukit Batok Town Park	Bukit Batok Nature Park (North)	Bukit Batok Nature Park (South)	Bukit Batok East Forest
20.	<i>Colocasia esculenta</i> (L.) Schott	Exotic	Casual			√		
21.	<i>Dieffenbachia seguine</i> (Jacq.) Schott var. <i>seguine</i>	Exotic	Casual	√		√		
22.	<i>Epipremnum aureum</i> (Linden ex André) Bunting	Exotic	Casual	√		√		
23.	<i>Epipremnum pinnatum</i> (L.) Engl.	Native	Critically endangered (persistent from cultivation)		√			
24.	<i>Licuala grandis</i> (hort.ex W.Bull) H.Wendl.	Exotic	Cultivated only				√	
25.	<i>Livistona chinensis</i> (Jacq.) R.Br. ex Mart.	Exotic	Cultivated only				√	
26.	<i>Syngonium podophyllum</i> Schott	Exotic	Naturalised		√	√	√	√
ARALIACEAE								
27.	<i>Arthropodium diversifolium</i> Blume	Native	Common	√	√	√		√
ARECACEAE								
28.	<i>Caryota mitis</i> Lour.	Native	Common	√	√	√	√	√
29.	<i>Cyrtostachys renda</i> Blume	Native	Nationally extinct (persistent from cultivation)					√
30.	<i>Elaeis guineensis</i> Jacq.	Exotic	Cultivated only		√	√		√
31.	<i>Livistona chinensis</i> (Jacq.) R.Br. ex Mart.	Exotic	Cultivated only			√		
32.	<i>Oncosperma horridum</i> (Griff.) Scheff.	Native	Vulnerable		√			
33.	<i>Ptychosperma macarthurii</i> (H.Wendl. ex anon.) H.Wendl. ex Hook.f.	Exotic	Naturalised	√	√	√	√	√
ASPARAGACEAE								
34.	<i>Cordyline fruticosa</i> (L.) A.Chev.	Exotic	Casual			√		
35.	<i>Dracaena braunii</i> Engl.	Exotic	Cultivated only		√			
36.	<i>Dracaena fragrans</i> (L.) Ker Gawl.	Exotic	Casual			√		
37.	<i>Dracaena surculosa</i> Lindl.	Exotic	Cultivated only		√			
38.	<i>Dracaena umbratica</i> Ridl.	Native	Vulnerable			√		
ASPLENIACEAE								
39.	<i>Asplenium longissimum</i> Blume	Native	Common			√		
40.	<i>Asplenium nidus</i> L.	Native	Common	√	√	√	√	√

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S/No.	Species	Nativeness	National Status	Bukit Batok Hillside Park	Bukit Batok Town Park	Bukit Batok Nature Park (North)	Bukit Batok Nature Park (South)	Bukit Batok East Forest
ASTERACEAE								
41.	<i>Mikania micrantha</i> Kunth	Exotic	Naturalised	√		√		√
BIGNONIACEAE								
42.	<i>Radermachera pinnata</i> (Blanco) Seem. subsp. <i>acuminata</i> (Steen.) Steen.	Native	Critically endangered		√			
43.	<i>Spathodea campanulata</i> P.Beauv.	Exotic	Naturalised	√		√		√
44.	<i>Stereospermum fimbriatum</i> (Wall. ex G.Don) DC.	Exotic	Cultivated only			√		
BLECHNACEAE								
45.	<i>Blechnum orientale</i> L.	Native	Common	√				√
46.	<i>Stenochlaena palustris</i> (Burm.f.) Bedd.	Native	Common	√	√	√	√	√
BURSERACEAE								
47.	<i>Santiria apiculata</i> Benn.	Native	Common			√		
CANNABACEAE								
48.	<i>Girardinia parvifolia</i> Planch.	Native	Endangered			√		
CAPPARACEAE								
49.	<i>Capparis micracantha</i> DC.	Native	Critically endangered		√			
CENTROPLACACEAE								
50.	<i>Bhesa paniculata</i> Arn.	Native	Common	√	√			
CLUSIACEAE								
51.	<i>Garcinia mangostana</i> L.	Exotic	Casual		√	√		
COMBRETACEAE								
52.	<i>Terminalia catappa</i> L.	Native	Common			√		√
COMMELINACEAE								
53.	<i>Commelina diffusa</i> Burm.f.	Cryptogenic	Cryptogenic					√
CONNARACEAE								
54.	<i>Agelaea macrophylla</i> (Zoll.) Leenh.	Native	Critically endangered			√		

S/No.	Species	Nativeness	National Status	Bukit Batok Hillside Park	Bukit Batok Town Park	Bukit Batok Nature Park (North)	Bukit Batok Nature Park (South)	Bukit Batok East Forest
CONVOLVULACEAE								
55.	<i>Erycibe tomentosa</i> Blume	Native	Common	√	√	√		√
COSTACEAE								
56.	<i>Cheilocostus speciosus</i> (J.König) C.Specht	Native	Common		√	√		
CYATHEACEAE								
57.	<i>Cyathea latebrosa</i> (Wall.) Copel.	Native	Vulnerable	√	√	√		√
58.	<i>Cyathea squamulata</i> (Blume) Copel.	Native	Endangered	√				
CYPERACEAE								
59.	<i>Hypolytrum nemorum</i> (Vahl) Spreng.	Native	Common	√				
60.	<i>Scleria ciliaris</i> Nees	Native	Common	√	√			
61.	<i>Scleria oblata</i> S.T.Blake ex J.Kern	Cryptogenic	Cryptogenic		√			
DAVALLIACEAE								
62.	<i>Davallia denticulata</i> (Burm.) Mett.	Native	Common				√	
DENNSTAEDTIACEAE								
63.	<i>Lindsaea ensifolia</i> Sw.	Native	Common	√				
64.	<i>Microlepia speluncae</i> (L.) T.Moore	Native	Common	√				√
DILLENIAEAE								
65.	<i>Dillenia grandifolia</i> Wall.ex Hook.f. & Thoms.	Native	Endangered				√	
66.	<i>Dillenia suffruticosa</i> (Griff. ex Hook.f. & Thomson) Martelli	Native	Common	√	√	√		√
67.	<i>Tetracera fagifolia</i> Blume	Native	Vulnerable		√			
68.	<i>Tetracera indica</i> (Christm. & Panz.) Merr.	Native	Common	√	√	√		
69.	<i>Tetracera macrophylla</i> Wall.ex Hook.f. & Thoms.	Native	Vulnerable					√
DIOSCOREACEAE								
70.	<i>Dioscorea bulbifera</i> L.	Cryptogenic	Cryptogenic		√			√
71.	<i>Dioscorea polyclados</i> Hook.f.	Native	Critically endangered	√				
72.	<i>Dioscorea sansibarensis</i> Pax	Exotic	Naturalised			√		

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S/No.	Species	Nativeness	National Status	Bukit Batok Hillside Park	Bukit Batok Town Park	Bukit Batok Nature Park (North)	Bukit Batok Nature Park (South)	Bukit Batok East Forest
DIPTEROCARPACEAE								
73.	<i>Dipterocarpus cornutus</i> Dyer	Native	Critically endangered (persistent from cultivation)				√	
74.	<i>Hopea ferruginea</i> Parijs	Exotic	Cultivated only				√	
75.	<i>Hopea latifolia</i> Symington	Exotic	Cultivated only				√	
76.	<i>Shorea ovalis</i> Blume subsp. <i>ovalis</i>	Native	Critically endangered (persistent from cultivation)				√	
DRYOPTERIDACEAE								
77.	<i>Tectaria incisa</i> Cav.	Exotic	Not Assessed			√		
78.	<i>Tectaria singaporeana</i> (Hook. & Grev.) Copel.	Native	Common	√				
ELAEOCARPACEAE								
79.	<i>Elaeocarpus ferrugineus</i> (Jack) Steud.	Native	Common		√			
80.	<i>Elaeocarpus mastersii</i> King	Native	Common			√		
81.	<i>Elaeocarpus pedunculatus</i> Wall. ex Mast.	Native	Common					√
82.	<i>Elaeocarpus petiolatus</i> (Jack) Wall	Native	Common	√		√		
EUPHORBIACEAE								
83.	<i>Claoxylon indicum</i> (Reinw. ex Blume) Hassk.	Native	Common		√	√		√
84.	<i>Hevea brasiliensis</i> (Willd. ex A.Juss.) Müll.Arg.	Exotic	Naturalised	√	√	√		√
85.	<i>Macaranga bancana</i> (Miq.) Müll.Arg.	Native	Common	√	√	√	√	√
86.	<i>Macaranga conifera</i> (Zoll.) Müll.Arg.	Native	Common		√			
87.	<i>Macaranga gigantea</i> (Rchb.f. & Zoll.) Müll.Arg.	Native	Common		√	√		
88.	<i>Macaranga griffithiana</i> Müll.Arg.	Native	Vulnerable		√	√		
89.	<i>Macaranga heynei</i> I.M.Johnst.	Native	Common		√	√		√
90.	<i>Macaranga hullettii</i> King ex Hook.f.	Native	Critically endangered	√				√
91.	<i>Macaranga hypoleuca</i> (Rchb.f. & Zoll.) Müll.Arg.	Native	Common	√	√			√
92.	<i>Mallotus paniculatus</i> (Lam.) Müll.Arg.	Native	Common			√		√
93.	<i>Manihot carthaginensis</i> (Jack) Müll.Arg. subsp. <i>glaziovii</i> (Müll.Arg.) Allem	Exotic	Naturalised			√		
94.	<i>Manihot esculenta</i> Crantz	Exotic	Naturalised			√		

S/No.	Species	Nativeness	National Status	Bukit Batok Hillside Park	Bukit Batok Town Park	Bukit Batok Nature Park (North)	Bukit Batok Nature Park (South)	Bukit Batok East Forest
FABACEAE								
95.	<i>Archidendron clypearia</i> (Jack) I.C.Nielsen	Native	Common	√				√
96.	<i>Andira inermis</i> (W.Wright) Kunth ex DC.	Exotic	Casual			√		√
97.	<i>Bambusa vulgaris</i> Schrad. ex J.C.Wendl.	Exotic	Casual					√
98.	<i>Bauhinia semibifida</i> Roxb. var. <i>semibifida</i>	Native	Vulnerable					√
99.	<i>Caesalpinia sumatrana</i> Roxb.	Native	Critically endangered			√		
100.	<i>Derris amoena</i> Benth. var. <i>maingayana</i> (Baker) Prain	Native	Vulnerable		√			
101.	<i>Falcataria moluccana</i> (Miq.) Barneby & J.W.Grimes	Exotic	Naturalised	√	√	√		√
102.	<i>Koompassia malaccensis</i> Maingay ex Benth.	Native	Endangered				√	
103.	<i>Paraderris elliptica</i> (Wall.) Adema	Native	Not assessed			√		
104.	<i>Pterocarpus indicus</i> Willd.	Exotic	Casual			√		
105.	<i>Pueraria phaseoloides</i> (Roxb.) Benth.	Exotic	Naturalised					√
106.	<i>Sindora echinocalyx</i> Prain	Exotic	Cultivated only				√	
107.	<i>Tamarindus indica</i> L.	Exotic	Casual				√	
FLAGELLARIACEAE								
108.	<i>Flagellaria indica</i> L.	Native	Common	√	√	√		
GENTIANACEAE								
109.	<i>Cyrtophyllum fragrans</i> (Roxb.) DC.	Native	Common	√				√
GLEICHENIACEAE								
110.	<i>Dicranopteris linearis</i> (Burm.f.) Underw.	Native	Common			√		
GNETACEAE								
111.	<i>Gnetum gnemon</i> L. var. <i>gnemon</i>	Native	Critically endangered (persistent from cultivation)				√	
HELICONIACEAE								
112.	<i>Heliconia psittacorum</i> L.f.	Exotic	Casual			√		√
HYPERICACEAE								
113.	<i>Cratoxylum formosum</i> (Jack) Dyer	Native	Endangered		√			

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HYPOXIDACEAE								
114.	<i>Molineria latifolia</i> (Dryand. ex W.T.Aiton) Herb. ex Kurz var. <i>latifolia</i>	Native	Vulnerable	√	√			
IXONANTHACEAE								
115.	<i>Ixonanthes reticulata</i> Jack	Native	Common					√
LAMIACEAE								
116.	<i>Clerodendrum laevifolium</i> Blume	Native	Common	√	√	√		√
117.	<i>Clerodendrum paniculatum</i> L.	Exotic	Casual			√		
118.	<i>Clerodendrum villosum</i> Blume	Native	Vulnerable		√	√		
119.	<i>Peronema canescens</i> Jack	Native	Nationally extinct (persistent from cultivation)				√	
120.	<i>Vitex pinnata</i> L.	Native	Common	√			√	
LAURACEAE								
121.	<i>Cinnamomum iners</i> Reinw.	Native	Common	√	√	√	√	√
122.	<i>Lindera lucida</i> (Blume) Boerl.	Native	Vulnerable			√		
123.	<i>Litsea elliptica</i> Blume	Native	Common	√	√	√		√
124.	<i>Litsea firma</i> Hook.f.	Native	Vulnerable					√
LINACEAE								
125.	<i>Indorouchera griffithiana</i> (Planch.) Hallier f.	Native	Common		√			
LINDERNIACEAE								
126.	<i>Torenia polygonoides</i> Benth.	Cryptogenic	Cryptogenic		√			
PRIMULACEAE								
127.	<i>Maesa ramentacea</i> (Roxb.) A.DC.	Native	Common	√				
MALVACEAE								
128.	<i>Durio zibethinus</i> L.	Exotic	Casual	√	√	√	√	√
129.	<i>Sterculia foetida</i> L.	Exotic	Cultivated only				√	
130.	<i>Sterculia monosperma</i> Vent.	Exotic	Cultivated only				√	
131.	<i>Sterculia parvifolia</i> Roxb.	Native	Critically endangered (persistent from cultivation)				√	
MARANTACEAE								
132.	<i>Calathea</i> cultivar	Exotic	Cultivated only			√		

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MARATTIACEAE								
133.	<i>Angiopteris evecta</i> (Forst.) Hoffm.	Native	Vulnerable	√		√		√
MELASTOMATACEAE								
134.	<i>Clidemia hirta</i> (L.) D.Don	Exotic	Naturalised	√	√	√		√
135.	<i>Melastoma malabathricum</i> L.	Native	Common	√	√	√		√
136.	<i>Pternandra caerulescens</i> Jack	Native	Vulnerable		√			
MELIACEAE								
137.	<i>Aphanamixis polystachya</i> (Wall.) Parker	Native	Endangered			√		
138.	<i>Lansium domesticum</i> Corrêa	Exotic	Cultivated only	√	√	√		
MENISPERMACEAE								
139.	<i>Fibraurea tinctoria</i> Lour.	Native	Common	√	√	√		
MORACEAE								
140.	<i>Artocarpus altilis</i> (Parkinson) Fosberg	Exotic	Casual			√		
141.	<i>Artocarpus elasticus</i> Reinw.ex Blume	Native	Common		√	√		
142.	<i>Artocarpus heterophyllus</i> Lam.	Exotic	Casual	√	√	√		√
143.	<i>Artocarpus integer</i> (Thunb.) Merr.	Exotic	Casual		√	√		√
144.	<i>Ficus aurata</i> Miq.	Native	Vulnerable	√	√			
145.	<i>Ficus benjamina</i> L.	Cryptogenic	Cryptogenic				√	√
146.	<i>Ficus chartacea</i> Wall.ex King	Native	Vulnerable					√
147.	<i>Ficus fistulosa</i> Reinw.ex Blume	Native	Common	√	√	√		√
148.	<i>Ficus grossularioides</i> Burm.f.	Native	Common	√	√	√		√
149.	<i>Ficus heteropleura</i> Blume	Native	Common			√		
150.	<i>Ficus microcarpa</i> L.f.	Native	Common	√				
151.	<i>Ficus pumila</i> L.	Exotic	Casual				√	
152.	<i>Ficus punctata</i> Lam.	Exotic	Cultivated only				√	
153.	<i>Ficus sagittata</i> Vahl	Native	Critically endangered					√
154.	<i>Ficus variegata</i> Blume	Native	Common		√		√	√
MUSACEAE								
155.	<i>Musa</i> species	Exotic	Cultivated only		√		√	

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S/No.	Species	Nativeness	National Status	Bukit Batok Hillside Park	Bukit Batok Town Park	Bukit Batok Nature Park (North)	Bukit Batok Nature Park (South)	Bukit Batok East Forest
MYRICACEAE								
156.	<i>Myrica esculenta</i> Buch.-Ham.	Native	Common	√	√			
MYRISTICACEAE								
157.	<i>Horsfieldia crassifolia</i> (Hook.f. & Thoms.) Warb.	Native	Critically endangered (persistent from cultivation)				√	
158.	<i>Horsfieldia irya</i> (Gaertn.) Warb.	Native	Critically endangered			√	√	
MYRSINACEAE								
159.	<i>Ardisia elliptica</i> Thunb.	Native	Endangered			√		√
160.	<i>Embelia ribes</i> Burm.f.	Native	Common	√	√	√		√
MYRTACEAE								
161.	<i>Leptospermum brachyandrum</i> (F.Muell.) Druce	Exotic	Cultivated only				√	
162.	<i>Rhodamnia cinerea</i> Jack	Native	Common	√	√	√		√
163.	<i>Syzygium aqueum</i> (Burm.f.) Alston	Exotic	Cultivated only			√		
164.	<i>Syzygium aromaticum</i> (L.) Merr. & L.M.Perry	Exotic	Cultivated only		√			
165.	<i>Syzygium borneense</i> (Miq.) Miq.	Native	Common	√	√	√		
166.	<i>Syzygium chloranthum</i> (Duthie) Merr. & L.M.Perry	Native	Critically endangered (persistent from cultivation)					√
167.	<i>Syzygium cf. fastigiatum</i> (Blume) Merr. & L.M.Perry	Not Assessed	Not Assessed	√	√			
168.	<i>Syzygium grande</i> (Wight) Walp.	Native	Common	√	√	√	√	√
169.	<i>Syzygium lineatum</i> (DC.) Merr. & L.M.Perry	Native	Common	√	√	√		√
170.	<i>Syzygium malaccense</i> (L.) Merr. & L.M.Perry	Exotic	Casual			√		
171.	<i>Syzygium myrtifolium</i> Walp.	Native	Nationally extinct (persistent from cultivation)	√				√
172.	<i>Syzygium polyanthum</i> (Wight) Walp.	Native	Vulnerable	√		√	√	√
173.	<i>Syzygium pycnanthum</i> Merr. & L.M.Perry	Native	Critically endangered (persistent from cultivation)			√		
174.	<i>Syzygium zeylanicum</i> (L.) DC.	Native	Common	√	√		√	
NEPENTHACEAE								
175.	<i>Nepenthes ampullaria</i> Jack	Native	Vulnerable					√
176.	<i>Nepenthes gracilis</i> Korth.	Native	Common					√

S/No.	Species	Nativeness	National Status	Bukit Batok Hillside Park	Bukit Batok Town Park	Bukit Batok Nature Park (North)	Bukit Batok Nature Park (South)	Bukit Batok East Forest
OLEANDRACEAE								
177.	<i>Nephrolepis auriculata</i> (L.) Trimen	Cryptogenic	Cryptogenic	√		√		√
OPILIACEAE								
178.	<i>Champereia manillana</i> (Blume) Merr.	Native	Common	√				
ORCHIDACEAE								
179.	<i>Bromheadia finlaysoniana</i> (Lindl.) Miq.	Native	Common		√			√
180.	<i>Bulbophyllum medusae</i> (Lindl.) Rchb.f.	Native	Nationally extinct (persistent from cultivation)				√	
181.	<i>Bulbophyllum membranaceum</i> Teijsm & Binnend.	Native	Critically endangered (persistent from cultivation)				√	
182.	<i>Bulbophyllum vaginatum</i> (Lindl.) Rchb.f.	Native	Endangered				√	
183.	<i>Cymbidium bicolor</i> Lindl. subsp. <i>pubescens</i> (Lindl.) Du Pay & Cribb	Native	Critically endangered (persistent from cultivation)				√	
184.	<i>Cymbidium finlaysonianum</i> Lindl.	Native	Critically endangered (persistent from cultivation)				√	
185.	<i>Dendrobium leonis</i> (Lindl.) Rchb.f.	Native	Nationally extinct (persistent from cultivation)				√	
OXALIDACEAE								
186.	<i>Averrhoa carambola</i> L.	Exotic	Casual				√	
PANDANACEAE								
187.	<i>Pandanus amaryllifolius</i> Roxb.	Exotic	Casual			√		
PASSIFLORACEAE								
188.	<i>Passiflora laurifolia</i> L.	Exotic	Naturalised	√	√	√		√
PENTAPHYLACACEAE								
189.	<i>Adinandra dumosa</i> Jack	Native	Common	√	√			√
PHYLLANTHACEAE								
190.	<i>Aporosa benthamiana</i> Hook.f.	Native	Vulnerable	√		√		
191.	<i>Aporosa frutescens</i> Blume	Native	Common		√			
192.	<i>Baccaurea motleyana</i> (Müll.Arg.) Müll.Arg.	Native	Critically endangered (persistent from cultivation)		√			
193.	<i>Baccaurea sumatrana</i> (Miq.) Müll.Arg.	Native	Vulnerable		√			

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194.	<i>Breynia coronata</i> Hook.f.	Native	Endangered		√			
195.	<i>Breynia vitis-idaea</i> (Burm.f.) C.E.C.Fisch.	Native	Common					√
196.	<i>Bridelia stipularis</i> (L.) Blume	Native	Vulnerable		√	√		
197.	<i>Bridelia tomentosa</i> Blume	Native	Common					√
198.	<i>Glochidion borneense</i> (Müll.Arg.) Boerl.	Native	Critically endangered					√
199.	<i>Glochidion lutescens</i> Blume	Native	Critically endangered					√
200.	<i>Sauropus androgynus</i> (L.) Merr.	Native	Common	√	√	√		√
PIPERACEAE								
201.	<i>Piper betle</i> L.	Exotic	Casual	√	√	√	√	
202.	<i>Piper porphyrophyllum</i> (Lindl.) N.E.Br.	Native	Endangered	√				
203.	<i>Piper sarmentosum</i> Roxb.	Native	Common		√	√		
POACEAE								
204.	<i>Cenotheca lappacea</i> (L.) Desv.	Native	Critically endangered	√	√	√		√
205.	<i>Ottochloa nodosa</i> (Kunth) Dandy	Native	Common					√
206.	<i>Paspalum conjugatum</i> P.J.Bergius	Exotic	Naturalised					√
PODOCARPACEAE								
207.	<i>Podocarpus polystachyus</i> R.Br.ex Endl.	Native	Critically endangered					√
POLYGALACEAE								
208.	<i>Xanthophyllum ellipticum</i> Korth.	Native	Critically endangered (persistent from cultivation)				√	
POLYPODIACEAE								
209.	<i>Goniophlebium percussum</i> (Cav.) Wagner & Grether	Native	Vulnerable				√	√
210.	<i>Pyrrosia lanceolata</i> (L.) Farwell	Native	Common		√			
211.	<i>Pyrrosia piloselloides</i> (L.) M.G.Price	Native	Common				√	
PTERIDACEAE								
212.	<i>Pteris ensiformis</i> Burm.f.	Cryptogenic	Cryptogenic					√
213.	<i>Taenitis blechnoides</i> (Willd.) Sw.	Native	Common	√	√	√		√
214.	<i>Taenitis interrupta</i> Hook. & Grev.	Native	Common	√	√			

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RHIZOPHORACEAE								
215.	<i>Carallia suffruticosa</i> Ridl.	Exotic	Cultivated only				√	
216.	<i>Gynotroches axillaris</i> Blume	Native	Common	√				√
ROSACEAE								
217.	<i>Prunus polystachya</i> (Hook.f.) Kalkm.	Native	Common			√		
RUBIACEAE								
218.	<i>Gardenia tubifera</i> Wall. var. <i>subcarinata</i> Corner	Native	Critically endangered				√	
219.	<i>Gynochthodes sublancoolata</i> Miq.	Native	Common	√	√	√		√
220.	<i>Ixora congesta</i> Roxb.	Native	Common					√
221.	<i>Morinda rigida</i> Miq.	Native	Erroneously extinct		√	√		√
222.	<i>Oxyceros longiflorus</i> (Lam.) T.Yamazaki	Native	Vulnerable	√				
223.	<i>Paederia foetida</i> L.	Native	Common			√	√	
224.	<i>Psychotria ovoidea</i> Wall.	Native	Vulnerable					√
225.	<i>Timonius wallichianus</i> (Korth.) Valeton	Native	Common		√	√		
226.	<i>Uncaria</i> sp.	Not Assessed	Not Assessed			√		
RUTACEAE								
227.	<i>Clausena excavata</i> Burm.f.	Native	Common	√	√	√		√
228.	<i>Melicope lunu-ankenda</i> (Gaertn.) T.G.Hartley	Native	Critically endangered	√				
SAPINDACEAE								
229.	<i>Dimocarpus longan</i> Lour.	Exotic	Cultivated only		√	√		√
230.	<i>Guiua pubescens</i> (Z. & M.) Radlk.	Native	Vulnerable	√	√			
231.	<i>Nephelium lappaceum</i> L.	Native	Critically endangered (persistent from cultivation)	√	√	√	√	√
232.	<i>Nephelium ramboutan-ake</i> (Labill.) Leenh.	Native	Nationally extinct (persistent from cultivation)		√	√		
233.	<i>Pometia pinnata</i> J.R.Forst & G.Forst.	Native	Endangered				√	
SAPOTACEAE								
234.	<i>Palaquium obovatum</i> (Griff.) Engl.	Native	Vulnerable				√	
235.	<i>Planchonella obovata</i> (R.Br.) Pierre	Native	Vulnerable				√	
SCHIZAEACEAE								
236.	<i>Lygodium flexuosum</i> (L.) Sw.	Native	Common			√		

NATURE IN SINGAPORE 2013

S/No.	Species	Nativeness	National Status	Bukit Batok Hillside Park	Bukit Batok Town Park	Bukit Batok Nature Park (North)	Bukit Batok Nature Park (South)	Bukit Batok East Forest
237.	<i>Lygodium longifolium</i> (Willd.) Sw.	Native	Vulnerable		√	√		
238.	<i>Lygodium microphyllum</i> (Cav.) R.Br.	Native	Common		√			
SELAGINELLACEAE								
239.	<i>Selaginella intermedia</i> (Bl.) Spring	Native	Vulnerable	√				
SMILACACEAE								
240.	<i>Smilax setosa</i> Miq.	Native	Common	√	√	√	√	√
SYMPLOCACEAE								
241.	<i>Symplocos fasciculata</i> Zoll.	Native	Vulnerable		√			
THELYPTERIDACEAE								
242.	<i>Christella subpubescens</i> (Blume) Holtum	Native	Common	√		√		√
243.	<i>Pronephrium triphyllum</i> (Sw.) Holtum	Native	Common	√	√	√		
244.	<i>Sphaerostephanos polycarpa</i> (Blume) Copel.	Native	Vulnerable	√				
VITACEAE								
245.	<i>Ampelocissus elegans</i> (Kurz) Gagnep.	Native	Endangered					√
246.	<i>Ampelocissus gracilis</i> (Wall.) Planch.	Native	Endangered					√
247.	<i>Cayratia japonica</i> (Thunb.) Gagnep.	Native	Endangered			√		
248.	<i>Cissus hastata</i> Miq.	Cryptogenic	Cryptogenic		√	√		√
249.	<i>Leea indica</i> (Burm.f.) Merr.	Native	Common	√	√	√		√
VITTARIACEAE								
250.	<i>Vittaria elongata</i> Sw.	Native	Common			√		
251.	<i>Vittaria ensiformis</i> Sw.	Native	Common	√				
WOODSIACEAE								
252.	<i>Athyrium accedens</i> (Blume) Milde	Native	Critically endangered	√				
XANTHORRHOEACEAE								
253.	<i>Dianella ensifolia</i> (L.) DC.	Native	Common	√				
ZINGIBERACEAE								
254.	<i>Zingiber ottensii</i> Valetton	Exotic	Casual			√		

APPENDIX 2

Mean percentage basal area per plot of woody stems measured in Bukit Batok. Species are arranged in descending order of the mean number of stems per plot, except for species with only one individual recorded out of all the plots, and which are arranged in descending order of stem size.

S/No.	Species	Mean Percentage Basal Area per Plot \pm Standard Error				Mean No. of Stems per Plot \pm Standard Error			
		BBEF	BBHP	BBNP (North)	BBTP	BBEF	BBHP	BBNP (North)	BBTP
1.	<i>Hevea brasiliensis</i>	2.73 \pm 0.38	4.07 \pm 0.75	1.67 \pm 0.30	3.89 \pm 0.41	15.20 \pm 6.76	14.80 \pm 5.62	21.80 \pm 7.23	21.60 \pm 5.28
2.	<i>Dillenia suffruticosa</i>	1.03 \pm 0.12	1.19 \pm 0.15	0.38 \pm 0.08	0.56 \pm 0.18	3.60 \pm 1.86	7.80 \pm 4.58	1.20 \pm 0.97	1.80 \pm 0.58
3.	<i>Arthrophyllum diversifolium</i>	1.46 \pm 0.14	1.47			8.40 \pm 8.15	0.20 \pm 0.20		
4.	<i>Cinnamomum iners</i>	1.66 \pm 0.57	0.96 \pm 0.37	0.75 \pm 0.20	0.37 \pm 0.10	1.00 \pm 0.55	0.40 \pm 0.24	2.40 \pm 1.21	0.40 \pm 0.25
5.	<i>Nephelium lappaceum</i>			3.75 \pm 1.11	8.24 \pm 3.04			3.20 \pm 1.02	0.40 \pm 0.40
6.	<i>Syzygium lineatum</i>		1.77		0.78 \pm 0.40		0.20 \pm 0.20		3.00 \pm 1.10
7.	<i>Ficus fistulosa</i>	1.19 \pm 0.25	3.34 \pm 2.53	0.35 \pm 0.06	0.70	1.40 \pm 0.51	0.40 \pm 0.40	1.00 \pm 0.32	0.20 \pm 0.20
8.	<i>Macaranga bancana</i>	0.89 \pm 0.36	1.40 \pm 0.27	0.30		2.00 \pm 0.55	2.00 \pm 0.71	0.20 \pm 0.20	
9.	<i>Claoxylon indicum</i>	4.90 \pm 1.53		0.68 \pm 0.26		1.20 \pm 0.97		1.20 \pm 0.97	
10.	<i>Ficus variegata</i>	7.38 \pm 2.27		17.81 \pm 7.33		1.60 \pm 0.68		0.60 \pm 0.40	
11.	<i>Ficus microcarpa</i>		3.63 \pm 0.93				2.20 \pm 2.20		
12.	<i>Rhodamnia cinerea</i>	2.49 \pm 0.22	2.20 \pm 0.41		0.31 \pm 0.04	0.60 \pm 0.40	0.80 \pm 0.58		0.60 \pm 0.25
13.	<i>Melicope lunu-ankenda</i>		3.33 \pm 0.91				0.60 \pm 0.24		
14.	<i>Averrhoa carambola</i>			0.54 \pm 0.13				1.60 \pm 1.03	
15.	<i>Spathodea campanulata</i>	14.52 \pm 3.24	6.71 \pm 2.45	0.77		0.60 \pm 0.40	0.60 \pm 0.60	0.20 \pm 0.20	
16.	<i>Adinandra dumosa</i>	3.04	5.30 \pm 1.40		0.35 \pm 0.07	0.20 \pm 0.20	0.40 \pm 0.40		0.80 \pm 0.58
17.	<i>Macaranga griffithiana</i>				0.35				0.20 \pm 0.20
18.	<i>Cyrtophyllum fragrans</i>	1.32	4.97 \pm 3.28		8.32	0.20 \pm 0.20	0.60 \pm 0.40		0.20 \pm 0.20
19.	<i>Artocarpus heterophyllus</i>	0.47		1.03 \pm 0.81		0.20 \pm 0.20		0.80 \pm 0.37	
20.	<i>Durio zibethinus</i>			22.99 \pm 10.19				0.80 \pm 0.37	
21.	<i>Mallotus paniculatus</i>	2.34		0.67 \pm 0.11		0.20 \pm 0.20		0.60 \pm 0.40	
22.	<i>Syzygium grande</i>	0.89 \pm 0.19			0.33	0.60 \pm 0.24			0.20 \pm 0.20
23.	<i>Artocarpus integer</i>	0.43 \pm 0.13		0.18		0.40 \pm 0.40		0.40 \pm 0.24	
24.	<i>Litsea elliptica</i>	0.55 \pm 0.36			19.06	0.40 \pm 0.24			0.20 \pm 0.20
25.	<i>Maesa ramentacea</i>		1.39 \pm 0.36				0.60 \pm 0.60		
26.	<i>Clerodendrum laevifolium</i>		0.76	0.34	0.40		0.20 \pm 0.20	0.20 \pm 0.20	0.20 \pm 0.20
27.	<i>Nephelium ramboutan-ake</i>			0.19	11.70			0.20 \pm 0.20	0.20 \pm 0.20
28.	<i>Syzygium aqueum</i>			2.85 \pm 0.99				0.40 \pm 0.40	

NATURE IN SINGAPORE 2013

S/No.	Species	Mean Percentage Basal Area per Plot ± Standard Error				Mean No. of Stems per Plot ± Standard Error			
		BBEF	BBHP	BBNP (North)	BBTP	BBEF	BBHP	BBNP (North)	BBTP
29.	<i>Syzygium fastigiatum</i>				0.64 ± 0.18				0.40 ± 0.40
30.	<i>Ficus grossularioides</i>		1.77 ± 0.05				0.40 ± 0.40		
31.	<i>Mangifera indica</i>			0.34 ± 0.11				0.40 ± 0.40	
32.	<i>Dracaena fragrans</i>			0.24 ± 0.04				0.40 ± 0.40	
33.	<i>Pterocarpus indicus</i>			75.59				0.20 ± 0.20	
34.	<i>Camptosperma auriculata</i>	30.64				0.20 ± 0.20			
35.	<i>Macaranga conifera</i>		11.28				0.20 ± 0.20		
36.	<i>Terminalia catappa</i>	2.36				0.20 ± 0.20			
37.	<i>Ixonanthes reticulata</i>	1.50				0.20 ± 0.20			
38.	<i>Symplocos fasciculata</i>		1.36				0.20 ± 0.20		
39.	<i>Glochidion borneense</i>	1.04				0.20 ± 0.20			
40.	<i>Timonius wallichianus</i>				1.01				0.20 ± 0.20
41.	<i>Vitex pinnata</i>		0.82				0.20 ± 0.20		
42.	<i>Morella esculenta</i>		0.76				0.20 ± 0.20		
43.	<i>Baccaurea sumatrana</i>				0.64				0.20 ± 0.20
44.	<i>Syzygium pycnanthum</i>			0.60				0.20 ± 0.20	
45.	<i>Cratoxylum formosum</i>				0.27				0.20 ± 0.20
46.	<i>Macaranga heynei</i>	0.24				0.20 ± 0.20			
47.	<i>Dimocarpus longan</i>			0.16				0.20 ± 0.20	
48.	<i>Clausena excavata</i>			0.13				0.20 ± 0.20	