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A Botanical Survey of Chek Jawa, Pulau Ubin, Singapore

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Abstract

A botanical survey in 2002/2003 collected 245 species in 171 genera and 80 families of vascular plants excluding alien species. Among the seven habitats on Chek Jawa, the intertidal zone with seven species of seagrasses, the rocky shore and the mangrove communities are relatively diverse and undisturbed. The coastal forest, although heavily disturbed, is not secondary forest. Based on the Singapore Red Data Book, 11 species were recorded as 'extinct', 11 as endangered and 16 as vulnerable. The re-finding of these extinct species makes Chek Jawa an important conservation site in the Singapore context. *Elephantopus mollis* (Compositae) is a new record for the Singapore flora.

Introduction

Pulau Ubin, an island situated northeast of Singapore, covers an area of 10.2 km^2 measuring 1.5 km north to south and 8 km east to west. About a hundred residents still live on the island (The Straits Times, 24 Aug 2002) and its rustic charm makes it a popular outdoor attraction for city dwellers (Chua, 2000, 2003). Tanjung Chek Jawa is a headland on the northeast tip of the island (Fig. 1) that includes the intertidal area of about 100 ha and the hinterland of 10.5 ha (N 1° 0' 30" E 103° 59' 30" coordinates at the site of beacon on top of the hill).

Chek Jawa became the focus of attention when its intertidal area was surveyed and found to be extremely rich in marine life (Tan and Yeo, 2003). It was already earmarked for land reclamation under the Development Guide Plan in 1997 and the Master Plan in 1998 (URA, 2003). Public support for conserving Chek Jawa was strong as it was one of the few areas of natural marine heritage left. Petitions to the government to preserve the area were heeded and Chek Jawa was saved just nine days prior to start of reclamation work (The Straits Times, 2 Jan 2002). The island has been largely zoned as 'open space and reserve land' in the 2001 Concept Plan and will now be left intact for at least 10 years (The Straits Times, 15 Jan 2002).

While attention by both scientists and the public has focused on the intertidal ecosystem of Chek Jawa, the vegetation on the headland has never been subject to a systematic survey. It was with this end in view that the survey was under taken to provide a comprehensive checklist of vascular plants and to evaluate their conservation status. Another reason for carrying out the survey was that there is very little coastal forest left in Singapore and so it is important to document this habitat.

History of Botanical Collecting on Pulau Ubin

The earlist collections were made by Ridley, Hullet and Goodenough in the 1880s. A few specimens were later collected by Furtado in the 1920s and Allen in the 1940s. Those appear to be random samplings of the flora of Pulau Ubin. Neither the precise locality of the collections nor their habitat was given. In the 1990s, Ali and Lai collected 15 and 20 specimens from Pulau Ubin, respectively. In 1990, Turner *et al.* (1992) carried out a botanical survey of Pulau Ubin, of which two specimens were collected from Chek Jawa. The online Checklist of Chek Jawa (Lai, undated; http://habitatnews.nus.edu.sg/news/chekjawa/checklists.htm#1) was not supported by herbarium specimens.

Methodology

Specimens were collected from October 2002 to October 2003 until no more new records were found. However, about half of the area in the coastal forest habitat is inaccessible and so was not surveyed due to the dense thickets of climbers, debris of dead tree stumps and branches on the steep slope. Wherever possible, fertile material was collected. In its absence, sterile material was also included. All specimens are deposited and databased in the Herbarium, Singapore Botanic Gardens (SING). Common weeds and alien species were collected but not included in the survey statistics.

Conservation status was assessed using the categories from The *Singapore Red Data Book* (Ng & Wee, 1994) in which [Ex] denotes Extinct in Singapore; [En] denotes Endangered; [V] denotes Vulnerable and [R] denotes Rare. In addition, [exotic] denotes plants that do not originate in the region and [C] denotes Common. Long-term viability of these plant populations is dependent on their ability to regenerate and the security of their habitat.

A compilation of all previous collections in SING from Pulau Ubin was compared with the current checklist.

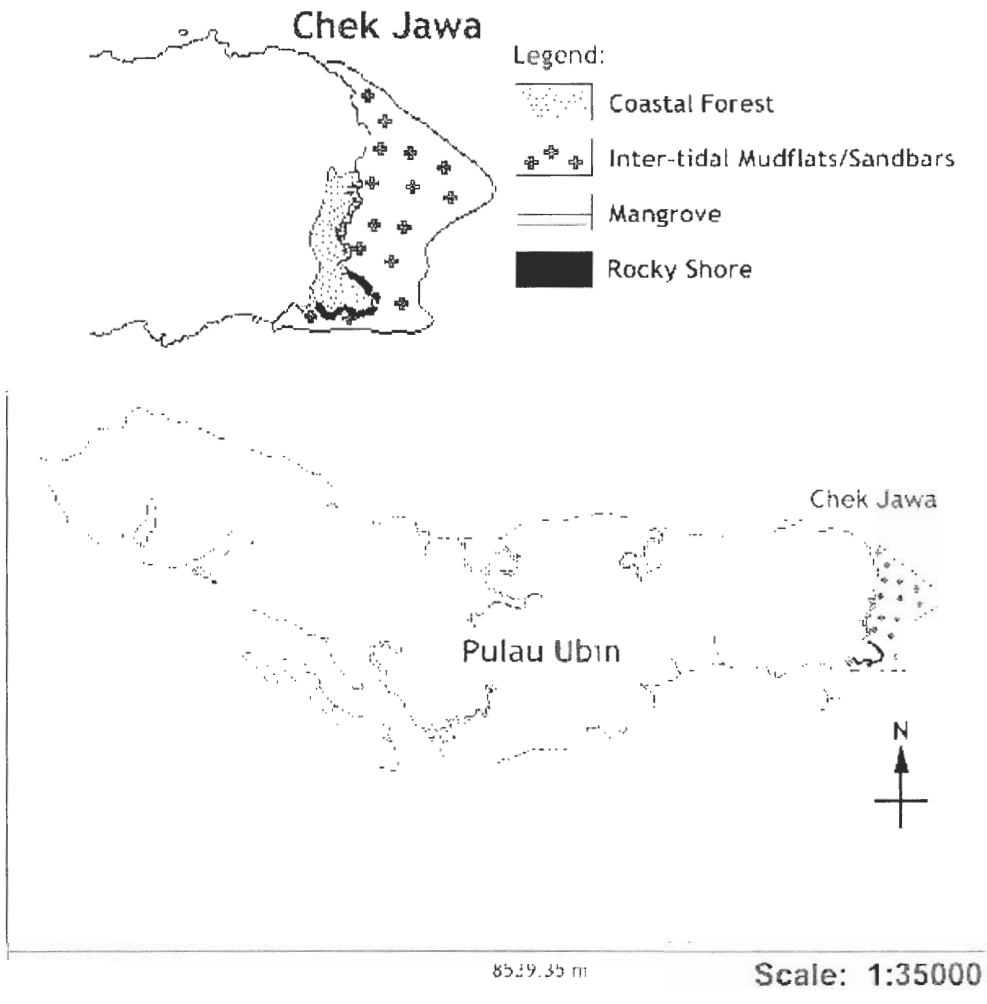

Figure 1. Location of Chek Jawa (N 1° 0' 30" E 103 ° 59' 30")

Results and Discussion

Species Composition

This survey collected a total of 245 species in 171 genera and 80 families of which 7 species were seagrasses, 20 were ferns, 3 were gymnosperms and 215 were terrestrial flowering plants (Appendix). This compares with the survey carried out by Turner *et al.* (1992) for the whole of Pulau Ubin, which listed 261 species with a further 71

species of aliens. This shows that Chek Jawa is an important site and a significant component of the entire island of Ubin.

In Chek Jawa, the Leguminosae and Rubiaceae are the best represented families (Table 1). The Leguminosae are represented by climbers and trees and includes most of the smothering climbers, such as *Aganope thyrsiflora*, *Derris amoena* and *Entada spiralis*. On the slope of the coastal forest, small trees and shrubs of the Rubiaceae such as *Aidia* spp., *Canthium* spp. and *Timonius* spp. are common. The common climber of this family, *Morinda umbellata*, is ubiquitous in the coastal forest: on slopes, ridges as well as near the beach fringe. Moraceae are represented by species of *Artocarpus* and *Ficus*, many of which are big trees. Many of the secondary forest trees are represented by the Euphorbiaceae, such as species of *Glochidion* and *Macaranga*. Annonaceae are represented by shrubs, such as *Desmos chinensis*, and lianas, such as *Artabotrys suaveolens* and *Uvaria* spp. These are mainly found in the coastal forest habitat.

Table 1. Comparison of the five most common plant families (excluding aliens) collected in Chek Jawa and Pulau Ubin (Turner *et al.*, 1992).

Chek Jawa	**No. of species**	**Pulau Ubin**	**No. of species**
Leguminosae	18	Gramineae	18
Rubiaceae	17	Cyperaceae	18
Moraceae	12	Euphorbiaceae	16
Euphorbiaceae	11	Leguminosae	15
Annonaceae	9	Compositae	15

The most speciose families (Table 1) collected in the Pulau Ubin survey (Turner *et al.*, 1992) were grasses (Gramineae) and sedges (Cyperaceae). The high representation of these families indicates that many of the collections were from the grassland/wasteland habitats as does the inclusion of the Compositae. Secondary forest species, such as species of *Macaranga* (Euphorbiaceae) and *Mimosa* (Leguminosae) are also well represented. Leguminous climbers, such as *Derris* spp. *Desmodium* spp. and *Entada spiralis* are plants that were commonly found both in the Pulau Ubin and Chek Jawa surveys.

Elephantopus mollis (Compositae) is a new record for the Singapore flora.

Habitats

The sites covered in this survey included seven distinct habitats: the intertidal zone, the rocky/sandy shores, mangrove, coastal forest, abandoned rubber plantation and *dusun* (mixed fruit orchard) and patches of wasteland.

Intertidal zone

Seagrass beds are becoming rare in Singapore. Tan and Yeo (2003) illustrated the seagrasses found at Chek Jawa. We collected seven species of seagrass, excluding

Enhalus acoroides that is known to occur on the seaward side of the sandbar in water too deep for collection at the time of survey. Three species belong to the Cymodoceaceae and four to the Hydrocharitaceae. Out of these, three species, *Halodule pinifolia*, *Halodule uninervis* (Cymodoceaceae) and *Thalassia hemprichii* (Hydrocharitaceae), were listed as 'extinct': and two, *Halophila beccarii* and *Halophila spinulosa* (Hydrocharitaceae), as endangered. The two most commonly found seagrasses were *Halophila ovalis* and *Halophila spinulosa* (Hydrocharitaceae), both of which thrive on sandbars with coral rubble. Also found on sandy areas were *Halophila beccarii* and *Halophila pinifolia*, while *Cymodocea rotundata*, *Halodule uninervis* and *Thalassia hemprichii* occurred on mud flats.

Rocky shore

Singapore has very few undisturbed rocky shore habitats. Plants around the rocky shore face conditions similar to plants on the fringe of the coastal forest. Trees here do not grow very tall; they are slow growing because of the adverse conditions and the nutrient-poor soils. However, the height of some individual trees, such as *Memecylon edule* (7 m), *Garcinia hombroniana* (8 m), *Intsia bijuga* (9 m), *Pouteria linggensis* (10 m) can be considered exceptional by any standard. *Garcinia hombroniana* is listed as an endangered species.

Mangroves

The mangrove pockets on Chek Jawa are rich in biodiversity, supporting 20 species of mangrove plants, many of them mature, good-sized trees as well as 14 species of transitional mangrove plants. Of the true mangrove plants, *Bruguiera parvifolia* (the only one found in Chek Jawa) is endangered; *Rhizophora stylosa* and *Xylocarpus moluccensis* are vulnerable. A *Ceriops* species was recently discovered, which is substantially different from the adjacent *C. tagal* trees and has been re-identified as *C. decandra*. *Nypa fruticans*, is found in brackish water. Transitional mangrove plants were represented by trees such as *Terminalia catappa*, *Cerbera manghas* and *Diospyros ferrea*; shrubs such as *Allophylus cobbe*, *Clerodendrum inerme* and *Ximenia americana;* climbers such as *Flagellaria indica*, *Salacia chinensis* and *Dalbergia candenatensis*; as well as the pandan, *Pandanus odoratissimus* and the palm, *Oncosperma tigillarium*. Epiphytes such as *Dischidia major*, *D. nummularia* and *Hoya verticillata* were common on transitional mangrove trees.

Coastal forest

The coastal forest is a unique habitat in that plants that inhabit the area are adapted to

the harsh conditions often associated with the coast. Strong, drying winds, salt spray, intense light reflection from the sea and other factors can affect their growth and survival. Trees along the edge of the hill cling precariously to the steep slope. They were observed to grow outwards from the forest towards the sea. This could be the result of simple phototropism or in some cases, soil erosion at the fringe of steep slope, where a tree fell but was halted in its fall by surrounding vegetation and then continued to grow with the main trunk at a sharp incline. *Scaphium macropodum* and *Aidia densiflora* were examples of this.

Unlike the lowland dipterocarp forest, the coastal forest does not exhibit the typical five-layer stratification. Coastal forest on Chek Jawa more resembles that described by Corner (1985) for the flora of coastal islets on the east coast of Peninsular Malaysia both in species composition and tree height (maximum 21 m).

On Chek Jawa, other than a few large trees, there is a lack of the emergent layer. Below the low main canopy of trees (about 5 m tall) and climbers were sparse populations of shrubs and treelets. On steep slopes, sparsely populated with trees, their canopies struggle with the climbers for light. The largest trees observed (Table 2) were a *Pouteria malaccensis* tree about 7–8 m tall and a *Chrysophyllum roxburghii* tree 8–10 m tall, the latter with three trunks, the largest, 0.5 m in diameter. These taller trees were found on the more level part of the slope. Other trees observed growing on the slope included *Adenanthera malayana*, *Archidendron contortum* and *A. ellipticum*, *Diospyros* spp., *Elaeocarpus pedunculatus*, *Eurycoma longifolia*, *Ficus vasculosa*, *Garcinia atroviridis*, *G. hombroniana*, *Glochidion superbum*, *Campylospermum serratum*, *Ixonanthes reticulata*, *Knema globularia*, *Neolitsea zeylanica*, *Pouteria linggensis*, *P. obovata*, *Triadica cochinchinensis*, *Suregada multiflora* and *Vitex pinnata*. A clump of the monocot tree, *Dracaena maingayi*; the palm *Licuala spinosa* and the clumping palm, *Oncosperma tigillarium* as well as the 'extinct' pandan *Pandanus tetrodon* were also observed. The 'extinct' climber, *Gnetum latifolium* was also found here. The understorey layer was interspersed with shrubs such as *Clerodendrum laevifolium* and saplings of *Olea brachiata*, *Archidendron contortum* and other treelets. The flora, hence typifies the characteristics of a coastal forest habitat. In alarming proportions are the climbers, some of which reached substantial height and formed a dense mass that smothered the surrounding plants as well as blocking sunlight from reaching the forest floor. Examples of these climbers are *Aganope thyrsiflora*, *Derris amoena*, *Entada spiralis*, *Linostoma pauciflorum* and *Fibraurea tinctoria*.

At the fringe of the coastal hill towards the landward side, on more level terrain, where the forest merges with the abandoned rubber estate, plants of the more typical secondary forest species were seen. Examples are climbers such as *Embelia ribes*, *Morinda umbellata* and *Tetracera indica*; shrubs such as *Ixora congesta*, *Clerodendrum laevifolium* and *Memecylon amplexicaule* (the last listed as vulnerable); trees such as *Fagraea racemosa*, *Syzygium lineatum*, *S. zeylanicum* and *Rhodamnia*

Table 2. The Tallest Trees at Chek Jawa

Height (m)	Family	Species	Habitat
25	Burseraceae	*Dacryodes rostrata*	Coastal Forest
20	Anacardiaceae	*Mangifera indica*	Coastal Forest
20	Bombacaceae	*Durio zibethinus*	Coastal Forest
18	Myristicaceae	*Knema globularia*	Coastal Forest
15	Dracaenaceae	*Dracaena maingayii*	Coastal Forest
10	Meliaceae	*Xylocarpus granatum*	Mangrove
10	Moraceae	*Artocarpus dadah*	Coastal Forest
10	Moraceae	*Ficus kerkhovenii*	Coastal Forest
10	Moraceae	*Ficus superba*	Coastal Forest
10	Sapotaceae	*Chrysophyllum roxburghii*	Coastal Forest
10	Sapotaceae	*Pouteria linggensis*	Rocky Shore
9	Leguminosae	*Intsia bijuga*	Rocky Shore
8	Apocynaceae	*Cerbera manghas*	Rocky Shore
8	Chrysobalanaceae	*Maranthes corymbosa*	Coastal Forest
8	Guttiferae	*Garcinia hombroniana*	Rocky Shore
8	Sonneratiaceae	*Sonneratia alba*	Mangrove
7–8	Sapotaceae	*Pouteria malaccensis*	Coastal Forest

cinerea were found. Of interest is the common occurrence of the 'extinct' tree *Knema globularia*, albeit at the coastal fringes. The liana, *Cnestis palala* was found along the fringe of a gravel pathway, some reaching 10 m high. Larger trees were mostly found in this part of the forest where the forest floor is flatter and thus more stable (Table 2).

Abandoned rubber estate, dusun and wasteland

The area surrounding the coastal forest includes the long abandoned Ong Ting Lye Rubber Estate and *dusun* (mixed fruit orchards) of the villages. Fruit trees that still persist include *Artocarpus altilis* (breadfruit), *A. heterophyllus* (jackfruit), *A. integer* (chempedak), *Averrhoea carambola* (starfruit), *Durio zibethinus* (durian), *Garcinia mangostana* (mangosteen), *Manilkara zapota* (chiku), *Nephelium lappaceum* (rambutan), *Psidium guajava* (guava), *Spondias pinnata* (kedondong) and *Syzygium aqueum* (jambu ayer). These relics of cultivation are now all that remains of the people who were re-located to the mainland.

Escapes from cultivation, which include *Tinospora crispa* (a medicinal plant used locally for malaria fever, jaundice and intestinal worms), *Passiflora laurifolia* (passion fruit) and garden escapes, such as *Gloriosa superba*, still persist in these areas.

Villagers and the plantation owner probably cleared tracks that are now wasteland. Thickets of ferns, for example, *Nephrolepis auriculata*, *Pityrogramma calomelanos*, *Acrostichum aureum*, and a number of sedges and grasses have invaded these wasteland patches.

Plants of Interest

Enhalus acoroides
This seagrass species was found on the seaward side of a sandbar that is for most of the time inundated by water. Its long leaves about 1.5 m are reported to be the food of the dugong.

Fagraea racemosa
The big leathery leaves and inflorescences with peachy cream flowers are attractive and could be used more frequently in horticultural planting.

Gnetum latifolum
This climber is listed as 'extinct', but was seen in various patches in the coastal forest. Of particular interest, other than its status, is that it and *G. microcarpum* are the only gymnosperms found growing wild here. (*G. gnemon*, meninjau, an escape from cultivation, is also found on Chek Jawa). *Cycas rumphii s.l.* commonly found on seashores is not found here.

Intsia bijuga
This valuable timber species can grow to an impressive height in more conducive environments. Its pinkish white fragrant flowers and thick, round leaves are attractive.

Knema globularia.
The fruits of the sea nutmeg exhibit bright red pulp when ripe thus attracting larger birds that eat and disperse the seeds. These trees are found on the seaward side of the coastal forest and rocky shoreline and, because of its rarity elsewhere in Singapore, has become an integral attraction of Chek Jawa.

Lasianthus hirsutus
This species, listed as 'extinct', is found along the edge of the gravel pathway at the landward fringe of the coastal forest. Its large velvety leaves and stunning metallic blue fruits lend it horticultural potential.

Memecylon edule
With its gregarious flowering and captivating blue-purple flowers, the plant has become an icon of the rocky shoreline of Chek Jawa. When in flower, it adds a splash

of blue-purple - a rare colour in the tropics, to the already picturesque scenery.

Large trees
The largest of all was *Dacryodes rostrata* with an impressive height of 25 m (Table 2) and trunk 1 m in diameter. Along the rocky shore, a *Knema globularia* about 7 m tall grew in a reclining position. In the mangroves, *Xylocarpus granatum* with its snake-like roots anchored well into the substratum, provided support for its 10 m tall crown.

Orchids
Surprisingly, orchids were poorly represented. Only two common orchids were found. The epiphytic *Dendrobium crumenatum* and the terrestial *Eulophia graminea*, the latter growing on the sandy beach in the mangrove patch.

Hemiparasitic plants
Dendrophthoe pentandra was the only hemiparasite encountered in the survey. It was seen perched on rubber trees about 10 m above the ground. It was too high to collect.

Disturbance

Turner *et al.* (1992) analysed the early collections from Pulau Ubin and concluded that even in the 1880s, the vegetation was largely secondary with no primary forest species. They went so far as to conclude that at one time the terrestrial vegetation might have been cleared. The survey of Turner *et al* (1992) found that plant diversity on Pulau Ubin was low and that the frequency of aliens was relatively high indicating a high degree of human interference. Their species list comprised largely of common weeds, secondary forest and mangrove species. Primary forest species were almost completely lacking.

The coastal forest on Chek Jawa does not exhibit the species composition typical of secondary forest. Corlett (1994) in discussing a definition of secondary forest, mentioned that 'virtually all tropical forests have suffered some form of human impact' and that 'the question is: how much disturbance is needed to make a forest secondary?' In his opinion,'the key difference is the break in the continuity of forest occurrence on the site and the consequent dependence for recovery on dispersal from outside.' He mentioned that it would be preferable to use "primary"– qualified where necessary by terms such as "logged", "depleted" or "degraded" – to indicate continuity of forest presence at a site and to use "unmodified" or "virgin" to describe forests that have not obviously been changed by significant human impact.

In Chek Jawa's coastal forest, secondary forest species such as *Adinanandra dumosa*, *Ficus grossularioides*, *Macaranga* spp. and *Dillenia suffruticosa* although present, are not in abundance; whereas species such as *Adenanthera malayana*,

Archidendron contortum, *A. ellipticum*, *Diospyros ferrea*, *Eurycoma longifolia*, *Garcinia atroviridis*, *G. hombroniana* and *Knema globularia*, which are not typical representatives of secondary forest, occur there. The forest does show signs of heavy disturbance but it is obvious that the area was not cleared in the past. Therefore, by Corlett's definition, the coastal forest of Chek Jawa is degraded primary coastal forest not secondary forest. Further, 65 species listed by Corner (1985) on the uninhabited and undisturbed coastal islets are also found in Chek Jawa.

The canopy, though, is not continuous or lofty. Most trees on the steep hill are not very tall ranging between 4–6 m in height. This low canopy is indicative of a history of disturbance. Part of the disturbance is undoubtably man-made as there are remains of building foundations at the top of the hill. The bamboo (*Bambusa vulgaris*) that occurs in clumps throughout Chek Jawa is one such indication of disturbance. However, the frequency of trees near the slope in coastal forest with a decayed main trunk and abundant coppicing, such as *Chrysophyllum roxburghii* that has side shoots up to 0.5 m in diameter, suggests that in the past natural phenomena such as high winds might have brought down the larger trees.

In contrast, the rocky shore vegetation does not show signs of disturbance and many species are represented by large and presumably old specimens such as *Cerbera manghas*, *Garcinia hombroniana*, *Knema globularia*, *Intsia bijuga*, *Memecylon edule* and *Pouteria linggensis* typifying the flora of such a habitat.

Conservation status

Eleven species collected during this survey (inclusive of seagrasses) are listed in *The Red Book* as 'extinct', 11 as endangered and 16 as vulnerable species (Table 3).

Blechnum orientale is relatively common on Chek Jawa, while the other extinct, endangeredand vulnerable ferns are niche specific. The 'extinct' fern *Adiantum flabellulatum* was found at one shady spot on a slope.

Of the mangrove species in the endangered and vulnerable categories, *Bruguiera parviflora* is represented by a single tree, *Sonneratia ovata* by several individuals, while *Rhizophora stylosa* is thriving and several saplings were seen around the mother trees.

Litsea elliptica is relatively common. *Archidendron ellipticum* was found growing in a sunny patch in the hill forest but saplings were not noted.

On the rocky shore, only one individual of *Memecylon amplexicaule* was located. In contrast, *Olea brachiata* is common along forest margins on the seaward side.

Aidia densiflora, a small tree, is common. A single specimen of *Scaphium macropodum* was found. *Garcinia hombroniana* is represented by saplings along the secondary forest pathways. *Strobilanthes palawanensis*, thought 'extinct', is ubiquitous

Table 3. 'Extinct', endangered and vulnerable species collected during the Chek Jawa survey

'Extinct'	
Acanthaceae	*Strobilanthes palawanensis*
Adiantaceae	*Adiantum flabellulatum*
Cymodoceaceae	*Halodule pinifolia*
Cymodoceaceae	*Halodule uninervis*
Cymodoceaceae	*Thalassia hemprichii*
Gnetaceae	*Gnetum latifolium*
Lauraceae	*Litsea myristicifolia*
Myristicaceae	*Knema globularia*
Palmae	*Calamus erinaceus*
Pandanaceae	*Pandanus tetrodon*
Rubiaceae	*Lasianthus hirsutus* (as *L. cyanocarpus*)
Endangered	
Guttiferae	*Garcinia hombroniana*
Hydrocharitaceae	*Halophila beccarii*
Hydrocharitaceae	*Halophila spinulosa*
Leguminosae	*Archidendron ellipticum*
Moraceae	*Artocarpus nitidus*
Moraceae	*Ficus superba*
Pteridaceae	*Pteris tripartita*
Rhizophoraceae	*Bruguiera parviflora*
Rubiaceae	*Diplospora malaccensis*
Sonneratiaceae	*Sonneratia ovata*
Schizaeaceae	*Schizaea dichotoma*
Vulnerable	
Blechnaceae	*Blechnum orientale*
Celastraceae	*Salacia chinensis*
Dracaenaceae	*Dracaena maingayi*
Lauraceae	*Litsea elliptica*
Lauraceae	*Litsea umbellata*
Leguminosae	*Dalbergia pseudosissoo*
Leguminosae	*Millettia pinnata*
Loganiaceae	*Strychnos maingayi*
Melastomataceae	*Memecylon amplexicaule*
Meliaceae	*Xylocarpus moluccensis*
Moraceae	*Ficus dubia*
Oleaceae	*Olea brachiata*
Rhizophoraceae	*Rhizophora stylosa*
Rubiaceae	*Aidia densiflora*
Schizaeaceae	*Lygodium circinnatum*
Sterculiaceae	*Scaphium macropodum*

on Chek Jawa. (It is possible that this species, which has pretty pink flowers, is a garden escape). The seashore nutmeg, *Knema globularia*, is common on the seaward side of coastal forest on Chek Jawa with several adult trees.

The first step in conservation would be to invest in a long-term monitoring programme to follow the species flowering and fruiting seasons. Seeds should be gathered and germinated so that saplings can be transplanted back into the surrounding area. For example, *Pandanus tetrodon* was found on the steep slope in the coastal forest is reperesented by a single huge plant with offshoots. Unless the offshoots are transplanted elsewhere, it will remain the only plant on Chek Jawa. Even then the gene pool for most of these rare plants must be rather depleted. Unless something is done to increase the number of lone plants, the species will eventually become extinct.

Table 4. Specimens collected from Pulau Ubin before 1950 that occur on Chek Jawa (Ex 'Extinct'; V Vulnerable; R Rare; C Common)

Family	Genus	Species	Status	Collector	No.	Year collected
Adiantaceae	*Adiantum*	*flabellutatum*	Ex	Ridley, H.N.	5865	1892
Adiantaceae	*Pityrogramma*	*calomelanos*	exotic	Ridley, H.N.	s.n.	1894
Apocynaceae	*Willughbeia*	*edulis*	R	Ridley, H.N.	9501	1901
Asclepiadaceae	*Dischidia*	*nummularia*	C	Allen, B.E.G.M.	s.n.	1949
Celastraceae	*Salacia*	*chinensis*	V	Ridley, H.N.	s.n.	1890
Compositae	*Pluchea*	*indica*	R	Hullett, R.W.	341	1884
Cyperaceae	*Fimbristylis*	*ferruginea*	R	Ridley, H.N.	5806	1892
Davalliaceae	*Davallia*	*denticulata*	C	Hullett, R.W.	50	1880
Dracaenaceae	*Dracaena*	*maingayi*	V	Hullett, R.W.	s.n.	1885
Euphorbiaceae	*Macaranga*	*heynei*	C	Furtado, C.X.	18338	1927
Euphorbiaceae	*Suregada*	*multiflora*	R	Ridley, H.N.	9497	1898
Leguminosae	*Derris*	*trifoliata*	C	Hullett, R.W.	s.n.	1885
Linaceae	*Indorouchera*	*griffithiana*	R	Allen, B.E.G. M.	sn	1949
Loganiaceae	*Fagraea*	*racemosa*	R	Goodenough, J.S.	1146	1890
Menispermaceae	*Fibraurea*	*tinctoria*	R	Ridley, H.N.	sn	1893
Menispermaceae	*Tinospora*	*crispa*	exotic	Ridley, H.N.	1650	1890
Moraceae	*Artocarpus*	*dadah*	R	Ridley, H.N.	4721	1890
Moraceae	*Ficus*	*kerkhovenii*	R	Ridley, H.N.	sn	1901
Moraceae	*Ficus*	*variegata*	C	Ridley, H.N.	s.n.	1894
Ochnaceae	*Campylospermum*	*serratum*	R	Ridley, H.N.	sn	1897
Palmae	*Licuala*	*spinosa*	R	Ridley, H.N.	sn	1894
Rhizophoraceae	*Bruguiera*	*cylindrica*	R	Ridley, H.N.	366	1890
Rubiaceae	*Oxyceros*	*longiflora*	R	Ridley, H.N.	9487	1898
Rutaceae	*Clausena*	*excavata*	R	Ridley, H.N.	389	1890
Sapindaceae	*Lepisanthes*	*rubiginosa*	R	Hullett, R.W.	386	1884
Sapindaceae	*Mischocarpus*	*sundaicus*	R	Ridley, H.N.	9495	1890
Verbenaceae	*Clerodendrum*	*inerme*	R	Ridley, H.N.	373	1890
Verbenaceae	*Premna*	*serratifolia*	R	Ridley, H.N.	sn	1893
Verbenaceae	*Vitex*	*pinnata*	C	Hullett, R.W.	373	1880

Historic Collections

As mentioned above, it is not possible to determine if the specimens collected from 1800 to 1950 were collected from Chek Jawa as the locality was only recorded as Pulau Ubin. Out of the 109 specimens from this period, only 29 species were collected from Chek Jawa during this survey (Table 4) of which, *Adiantum flabellulatum* is listed as 'extinct', and *Salacia chinensis* and *Dracaena maingayi* as vulnerable. However, many other 'extinct', endangered and vulnerable species collected during these early times were not seen on Chek Jawa (Table 5).

Conclusions

For its size, the flora of Chek Jawa is rich in biodiversity with 245 species in 171 genera and 80 families of vascular plants excluding alien species. This compares with the survey for the whole of Pulau Ubin (Turner *et al.*, 1992), which listed 261 native species and 71 aliens. From the conservation point of view, with 11 species listed as 'extinct', 11 as endangered and 16 as vulnerable, Chek Jawa is an important conservation site and a significant component of Pulau Ubin flora. It has a good representative flora of the seagrasses, the rocky shore and mangrove habitats. The coastal hill, although heavily disturbed, is not secondary forest and harbours many of the 'extinct', endangered or vulnerable species so conservation efforts should be afforded to ensure its survival.

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Table 5. Vulnerable, endangered or 'extinct' species from old records that were not found on Chek Jawa

'Extinct'	
Apocynaceae	*Willughbeia flavescens*
Araliaceae	*Schefflera lanceolata*
Commelinaceae	*Pollia secundiflora*
Connaraceae	*Connarus planchonianus*
Fagaceae	*Lithocarpus wallichianus*
Leguminosae	*Aganope heptaphylla*
Leguminosae	*Albizia retusa*
Loganiaceae	*Fagraea auriculata*
Orchidaceae	*Corymborkis veratrifolia*
Orchidaceae	*Thrixspermum calceolus*
Rubiaceae	*Coelospermum truncatum*
Endangered	
Myrsinaceae	*Aegiceras corniculatum*
Myrsinaceae	*Ardisia singaporensis*
Myrtaceae	*Tristaniopsis whiteana*
Vulnerable	
Annonaceae	*Cyathostemma viridiflorum*
Celastraceae	*Salacia viminea*
Dipterocarpaceae	*Dipterocarpus sublamellatus*
Lauraceae	*Actinodaphne macrophylla*
Melastomataceae	*Diplectria viminalis*
Palmae	*Nenga pumila*
Rhamnaceae	*Ventilago malaccensis*
Rubiaceae	*Ophiorrhiza singaporensis*
Selaginellaceae	*Selaginella willdenowii*

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Appendix
Checklist of Vascular Plants Collected from Chek Jawa

[Ex] Extinct; [En] Endangered; [V] Vulnerable and [R] Rare; [exotic] plants not originating in the region and [C] Common status from *The Singapore Red Data Book* (1994).

Ferns
Adiantaceae

Adiantum flabellulatum L.; *habit* : herb; occurrence: rare; *habitat* : coastal forest; *conservation status*: Ex; *specimen*(s): Gwee, A.T. GAT 92.

Adiantum latifolium Lam.; *habit* : herb; 0.75m tall; *occurrence*: frequent; *habitat*: coastal forest; *conservation status*: exotic; *specimen*(s): Gwee, A.T. GAT 145.

Pityrogramma calomelanos (L.) Link; *habit* : herb; 0.5m tall; *habitat*: wasteland; *conservation status*: exotic; *specimen*(s): Gwee, A.T. GAT 148.

Taenitis blechnoides (Willd.) Sw.; *habit* : herb; 0.3m tall; *occurrence*: locally frequent; *habitat*: coastal forest; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 187.

Blechnaceae

Blechnum orientale L.; *habit* : herb; 1.5m tall; *habitat* : coastal forest; *conservation status*: V; specimen(s): Gwee, A.T. GAT 167.

Stenochlaena palustris (Burm.f.) Bedd.; *habit* : *herb*; *occurrence*: frequent; *habitat* : coastal forest; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 210.

Davalliaceae

Davallia denticulata (Burm.f.) Mett. ex Kuhn; *habit* : epiphytic herb; *habitat*: coastal forest; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 57.

Dennstaedtiaceae

Pteridium esculentum (G. Forst.) Cockayne; *habit* : herb; *habitat*: sandy shore; *specimen*(s): Gwee, A.T. GAT 316.

Oleandraceae

Nephrolepis auriculata (L.) Trimen; *habit* : herb; *occurrence*: frequent; *habitat* : wasteland / coastal hill; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 251.

Polypodiaceae

Drynaria quercifolia (L.) J.Sm.; *habit* : epiphytic herb; *habitat* : coastal forest; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 44.

Microsorum scolopendrium (Burm.f.) Copel.; *habit* : epiphytic herb; *habitat*: coastal forest; *specimen*(s): Gwee, A.T. GAT 173.

Pyrrosia nummulariifolia (Sw.) Ching; *habit* : climber; *habitat* : coastal forest; *specimen*(s): Gwee, A.T. GAT 351.

Pyrrosia piloselloides (L.) M.G. Price; *habit* : climber; *habitat*: coastal forest; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 199.

Pteridaceae

Acrostichum aureum L.; 2.5 tall; *habitat*: mangrove; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 152.

Acrostichum speciosum Willd.; *habit* : herb; *habitat*: mangrove; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 283.

Pteris ensiformis Burm.f.; *habit* : herb; *habitat*: coastal forest; *conservation status*: common; *specimen*(s): Leong, P. PL 22.

Pteris tripartita Sw.; *habit*: herb; *habitat*: coastal forest; *conservation status*: En; *specimen*(s): Gwee, A.T. GAT 186.

Schizaeaceae

Lygodium circinnatum (Burm.f.) Sw.; *habit* : herb; *habitat*: wasteland; *conservation status*: V; *specimen*(s): Leong, P. PL 8.

Lygodium salicifolium C. Presl; *habit*: climber; *habitat* : coastal forest; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 335.

Schizaea dichotoma (L.) J. Sm.; *habit* : herb; *habitat* : coastal forest; *conservation status*: En; *specimen*(s): Gwee, A.T. GAT 340.

Schizaea digitata (L.) Sw.; *habit* : herb; *specimen*(s): Gwee, A.T. GAT 292.

Gymnosperms

Gnetaceae

Gnetum gnemon L.; *habit* : tree; *habitat* : wasteland; *conservation status*: R; *specimen*(s): Leong, P. PL 3.

Gnetum latifolium Blume; *habit* : climber; *habitat*: coastal forest; *conservation status*: Ex; *specimen*(s): Gwee, A.T. GAT 222.

Gnetum microcarpum Blume; *habit* : climber; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 64.

Monocotyledons

Colchicaceae

Gloriosa superba L.; *habit*: climber; *habitat*: wasteland; *conservation status*: exotic; *specimen*(s): Gwee, A.T. GAT 252.

Cymodoceaceae

Cymodocea rotundata Ehrenb. & Hempr.; *habit* : seagrass; *habitat*: intertidal zone; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 326.

Halodule pinifolia (Miki) Hartog; *habit*: seagrass; *habitat*: intertidal zone; *conservation status*: Ex; *specimen*(s): Gwee, A.T. GAT 325.

Halodule uninervis (Forssk.) Asch.; *habit* : seagrass; *habitat*: intertidal zone; *conservation status*: Ex; *specimen*(s): Tan, R. et al. GAT 398.

Cyperaceae

Cyperus cyperoides (L.) Kuntze; *habit* : herb; occurrence: frequent; *habitat*: wasteland; *conservation status*: R; *specimen*(s): Leong, P. PL 23.

Cyperus imbricatus Retz.; *habit* : herb; 1m tall; *habitat* : wasteland; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 154.

Cyperus javanicus Houtt.; *habit* : herb; *habitat*: wasteland; *conservation status*: exotic; *specimen*(s): Gwee, A.T. GAT 264.

Cyperus trialatus (Boeck.) Kern; *habit* : herb; 0.3m tall; *habitat* : wasteland; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 190.

Fimbristylis ferruginea (L.) Vahl; *habit* : herb; occurrence: locally frequent; *habitat*: wasteland; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 263.

Kyllinga polyphylla Willd. ex Kunth; *habit* : herb; *habitat* : wasteland; *specimen*(s): Gwee, A.T. GAT 150.

Mapania enodis (Miq.) C.B. Clarke; *habit*: herb; occurrence: locally frequent; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 96.

Scleria ciliaris Nees; *habit*: herb; *habitat*: wasteland; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 297.

Dracaenaceae

Dracaena angustifolia Roxb.; *habit* : shrub; *habitat*: coastal forest; *specimen*(s): Gwee, A.T. GAT 253.

Dracaena maingayi Hook.f.; *habit* : tree; *habitat*: coastal forest; *conservation status*: V; *specimen*(s): Gwee, A.T. GAT 55.

Flagellariaceae

Flagellaria indica L.; *habit*: climber; occurrence: locally frequent; *habitat*: mangrove; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 192.

Gramineae

Bambusa vulgaris Schrad.; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 334.

Centotheca lappacea (L.) Desv.; *habit* : herb; 0.35m tall; *habitat* : wasteland; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 159.

Mnesithea glandulosa (Trin.) de Koning & Sosef; *habit* : herb; 1.5m tall; *habitat* : wasteland; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 147.

Panicum nodosum Kunth; *habit* : herb; *habitat* : wasteland; *specimen*(s): Gwee, A.T. GAT 12.

Thysanolaena latifolia (Roxb. ex Hornem.) Honda; *habit* : herb; *habitat*: wasteland; *specimen*(s): Gwee, A.T. GAT 345.

Hydrocharitaceae

Halophila beccarii Asch.; *habit* : seagrass; *habitat*: intertidal zone; *conservation status*: En; *specimen*(s): Tan, R. et al. GAT 396.

Halophila ovalis (R.Br.) Hook.f.; *habit* : seagrass; occurrence: frequent; *habitat* : intertidal zone; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 324.

Halophila spinulosa (R.Br.) Asch.; *habit* : seagrass; occurrence: frequent; *habitat* : intertidal zone; *conservation status*: En; *specimen*(s): Gwee, A.T. GAT 322.

Thalassia hemprichii (Ehrenb.) Asch.; *habit* : seagrass; *habitat*: intertidal zone; *conservation status*: Ex; *specimen*(s): Tan, R. et al. GAT 393.

Hypoxidaceae

Molineria latifolia (Dryand.) Herb. ex Kurz var. **latifolia**; *habit*: herb; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 68.

Orchidaceae

Dendrobium crumenatum Sw.; *habit* : herb; *habitat*: rocky shore; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 171.

Eulophia graminea Lindl.; *habit* : herb; *habitat* : sandy shore; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 268.

Palmae

Calamus erinaceus (Becc.) J. Dransf.; *habit* : rattan; *habitat*: coastal forest; *conservation status*: Ex; *specimen*(s): Gwee, A.T. GAT 53.

Daemonorops sepal Becc.; *habit* : rattan; *habitat*: coastal forest; *specimen*(s): Gwee, A.T. GAT 343.

Licuala spinosa Wurmb; *habit* : shrub; 3m tall; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 9.

Nypa fruticans Wurmb; *habitat*: mangrove; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 317.

Oncosperma tigillarium (Jack) Ridl.; *habit* : tree; *habitat* : coastal forest; *conservation status*: R; specimen(s): Gwee, A.T. GAT 385.

Pandanaceae

Pandanus odoratissimus L.f.; *habitat* : mangrove; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 266.

Pandanus tetrodon Ridl.; *habitat* : coastal forest; *conservation status*: Ex; *specimen*(s): Gwee, A.T. GAT 392.

Phormiaceae

Dianella ensifolia (L.) DC.; *habit* : herb; occurrence: frequent; *habitat*: coastal forest; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 332.

Smilacaceae

Smilax megacarpa A. DC. & C. DC.; *habit* : climber; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 79.

Smilax setosa Miq.; *habit* : climber; *habitat*: coastal forest; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 75.

Zingiberaceae

Zingiber griffithii Baker; *habit* : herb; 0.3m tall; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 160.

Dicotyledons

Acanthaceae

Strobilanthes palawanensis Elmer; *habit* : herb; 0.75m tall; occurrence: locally frequent; *habitat* : wasteland; *conservation status*: Ex; *specimen*(s): Gwee, A.T. GAT 146.

Aizoaceae

Sesuvium portulacastrum (L.) L.; *habit*: herb; *habitat*: wasteland; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 225.

Alangiaceae

Alangium javanicum (Blume) Wangerin; *habit*: tree; 3m tall; *habitat*: wasteland; *specimen*(s): Gwee, A.T. GAT 110.

Amaranthaceae

Cyathula prostrata (L.) Blume; *habit* : herb; *habitat*: wasteland; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 347.

Anacardiaceae

Buchanania sessifolia Blume; *habit* : tree; 1.5m tall; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 184.

Mangifera indica L.; *habit* : tree; 20m tall; *habitat*: coastal forest; *conservation status*: exotic; *specimen*(s): Gwee, A.T. GAT 76.

Annonaceae

Artabotrys suaveolens (Blume) Blume; *habit* : climber; occurrence: frequent; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 183.

Desmos chinensis Lour.; *habit* : tree; occurrence: frequent; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 63.

Melodorum aberrans (Maingay ex Hook.f. & Thomson) J. Sm.; *habit* : climber; *habitat*: coastal forest; *specimen*(s): Gwee, A.T. GAT 196.

Phaeanthus ophthalmicus (Roxb. ex G. Don) J. Sinclair; *habit*: tree; *habitat* : coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 276.

Popowia fusca King; *habit* : tree; 0.75m tall; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 130.

Uvaria cordata (Dunal) Alston; *habit*: climber; 1m tall; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 124.

Uvaria grandiflora Roxb. ex Hornem. var. ***grandiflora***; *habitat* : coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 386.

Uvaria hirsuta Jack; *habit*: climber; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 337.

Xylopia malayana Hook.f. & Thomson; *habit* : tree; *habitat* : coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 302.

Apocynaceae

Cerbera manghas L.; *habit*: tree; *habitat* : mangrove; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 281.

Willughbeia edulis Roxb.; *habit* : climber; occurrence: locally frequent; *habitat* : coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 106.

Aquifoliaceae

Ilex cymosa *Blume*; *habit* : tree; 5m tall; *habitat* : wasteland; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 206.

Asclepiadaceae

Dischidia major (Vahl) Merr.; *habit* : epiphytic herb; occurrence: frequent; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Leong, P. PL 16.

Dischidia nummularia R.Br.; *habit* : epiphytic herb; occurrence: frequent; *habitat*: coastal forest; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 10.

Hoya verticillata (Vahl) G. Don var. ***verticillata***; *habit*: climber; occurrence: frequent; *habitat* : coastal forest; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 109.

Avicenniaceae

Avicennia alba Blume; *habit* : tree; 6m tall; occurrence: locally frequent; *habitat*: mangrove; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 117.

Avicennia officinalis L.; *habit* : tree; 4m tall; occurrence: frequent; *habitat* : mangrove; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 226.

Avicennia rumphiana Hallier f.; *habit* : tree; 4m tall; *habitat* : mangrove; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 235.

Boraginaceae

Cordia curassavica (Jacq.) Roem. & Schult.; *habit* : shrub; 1m tall; *habitat*: sandy shore; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 174.

Burseraceae

Dacryodes rostrata (Blume) H.J. Lam; *habit* : tree; 25m tall; *habitat* : coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 158.

Celastraceae

Salacia chinensis L.; *habit* : climber; *habitat*: mangrove; *conservation status*: V; *specimen*(s): Gwee, A.T. GAT 86.

Salacia korthalsiana Miq.; *habit* : climber; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 387.

Chrysobalanaceae

Licania splendens (Korth.) Prance; *habit* : tree; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 309.

Maranthes corymbosa Blume; *habit* : tree; occurrence: locally frequent; *habitat* : coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 320.

Combretaceae

Combretum sundaicum Miq.; *habit* : climber; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 376.

Lumnitzera littorea (Jack) Voigt; *habit* : tree; *habitat*: mangrove; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 287.

Terminalia catappa L.; *habit* : tree; *habitat*: sandy shore; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 260.

Compositae

Ageratum conyzoides L.; *habit* : herb; occurrence: frequent; *habitat*: wasteland; *conservation status*: exotic; *specimen*(s): Gwee, A.T. GAT 348.

Elephantopus mollis Kunth; *habit*: herb; 0.75m tall; occurrence: frequent; *habitat* : wasteland; *specimen*(s): Gwee, A.T. GAT 195.

Pluchea indica (L.) Less.; *habit* : shrub; occurrence: frequent; *habitat* : wasteland; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 229.

Synedrella nodiflora (L.) Gaertn.; *habit*: herb; occurrence: frequent; *habitat*: wasteland; *conservation status*: exotic; *specimen*(s): Gwee, A.T. GAT 363.

Wollastonia biflora (L.) DC.; habit : herb; specimen(s): Leong, P. PL 13.

Connaraceae

Cnestis palala (Lour.) Merr.; *habit* : climber; occurrence: locally frequent; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 126.

Rourea fulgens Planch.; *habit* : climber; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 99.

Rourea mimosoides (Vahl) Planch.; *habit*: climber; *habitat* : coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 122.

Rourea minor (Gaertn.) Leenh.; *habit* : climber; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 375.

Convolvulaceae

Erycibe malaccensis C.B. Clarke; *habit* : climber; occurrence: locally frequent; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 277.

Erycibe tomentosa Blume; *habit* : climber; occurrence: locally frequent; *habitat* : coastal forest; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 54.

Cucurbitaceae

Coccinea grandis (L.) Voigt; *habit* : climber; *habitat*: wasteland; *conservation status*: exotic; *specimen*(s): Leong, P. PL 11.

Dilleniaceae

Tetracera akara (Burm.f.) Merr.; *habit* : climber; *habitat* : coastal forest; *specimen*(s): Gwee, A.T. GAT 127.

Tetracera indica (Christm. & Panz.) Merr.; *habit* : climber; *habitat*: coastal forest; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 4.

Tetracera macrophylla Wall. ex Hook.f. & Thomson; *habit* : climber; *habitat* : coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 306.

Ebenaceae

Diospyros ferrea (Willd.) Bakh.; *habit* : tree; 5m tall; occurrence: locally frequent; *habitat*: rocky shore; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 177.

Diospyros lanceifolia Roxb.; *habit* : tree; *habitat* : coastal forest; *conservation status*: R; *specimen*(s): Leong, P. PL 18.

Elaeocarpaceae

Elaeocarpus pedunculatus Wall. ex Mast.; *habit* : tree; 2.5m tall; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 157.

Erythroxylaceae

Erythroxylum cuneatum (Miq.) Kurz; *habit*: tree; *habitat* : coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 344.

Euphorbiaceae

Aporusa frutescens Blume; *habit* : tree; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 298.

Breynia racemosa (Blume) Müll.Arg.; *habit* : shrub; *habitat* : coastal forest; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 205.

Croton hirtus L'Hér.; *habit* : shrub; *habitat* : coastal forest; *conservation status*: exotic; *specimen*(s): Gwee, A.T. GAT 114.

Excoecaria agallocha L.; *habit*: tree; *habitat*: mangrove; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 224.

Glochidion littorale Blume; *habit* : tree; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 296.

Glochidion superbum Baill.; *habit* : tree; 5m tall; occurrence: locally frequent; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 131.

Macaranga heynei I.M. Johnst.; *habit* : tree; 3m tall; *habitat*: coastal forest; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 5.

Macaranga hypoleuca (Rchb.f. & Zoll.) Müll.Arg.; *habit* : tree; 3m tall; *habitat*: coastal forest; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 189.

Macaranga lowii King ex Hook.f.; *habit* : tree; 3m tall; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 77.

Triadica cochinchinensis Lour.; *habit* : tree; 4m tall; *habitat*: coastal forest; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 133.

Sauropus androgynus (L.) Merr.; *habit* : shrub; *habitat* : coastal forest; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 6.

Suregada multiflora (Juss.) Baill.; *habit* : tree; occurrence: locally frequent; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 164.

Flacourtiaceae

Flacourtia inermis Roxb.; *habit* : tree; *habitat* : wasteland; *specimen*(s): Gwee, A.T. GAT 207.

Goodeniaceae

Scaevola taccada (Gaertn.) Roxb.; *habit* : shrub; *habitat*: rocky shore; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 358.

Guttiferae

Garcinia atroviridis Griff. ex T. Anderson; *habit* : tree; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 275.

Garcinia hombroniana Pierre; *habit* : tree; 8m tall; *habitat*: rocky shore; *conservation status*: En; *specimen*(s): Gwee, A.T. GAT 141.

Garcinia parvifolia (Miq.) Miq.; *habit* : tree; *habitat* : coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 274.

Icacinaceae

Gonocaryum gracile Miq.; *habit* : tree; 6m tall; *habitat* : coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 129.

Ixonanthaceae

Ixonanthes icosandra Jack; *habit* : tree; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 291.

Labiatae

Hyptis brevipes Poit.; *habit* : herb; occurrence: frequent; *habitat* : wasteland; *conservation status*: exotic; *specimen*(s): Leong, P. PL 12.

Lauraceae

Cinnamomum iners Reinw.: *habit* : tree; 6m tall; *habitat*: coastal forest; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 70.

Litsea elliptica Blume; *habit* : tree; 5m tall; *habitat* : coastal forest; *conservation status*: V; *specimen*(s): Gwee, A.T. GAT 188.

Litsea myristicifolia (Wall. ex Nees) Hook.f.; *habit* : tree; 1m tall; *habitat*: coastal forest; *conservation status*: Ex; *specimen*(s): Gwee, A.T. GAT 185.

Litsea umbellata (Lour.) Merr.; habit: tree; 2m tall; *habitat*: coastal forest; *conservation status*: V; *specimen*(s): Gwee, A.T. GAT 93.

Neolitsea zeylanica (Nees) Merr.; *habit* : tree; 15m tall; occurrence: frequent; habitat: coastal forest; conservation status: R; specimen(s): Leong, P. PL 2.

Leguminosae

Adenanthera malayana Kosterm.; *habit* : tree; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 381.

Aganope thyrsiflora (Benth.) Polhill; *habit*: climber; *habitat* : rocky shore; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 82.

Archidendron contortum (Martelli) I.C. Nielsen; *habit* : tree; occurrence: locally frequent; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 119.

Archidendron ellipticum (Bl.) Nielsen; *habit* : tree; *habitat*: coastal forest; *conservation status*: V; *specimen*(s): Gwee, A.T. GAT 308.

Archidendron jiringa (Jack) I.C. Nielsen; *habit* : tree; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 198.

Canavalia cathartica Thouars; *habit* : climber; *habitat* : wasteland; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 212.

Canavalia rosea (Sw.) DC.; *habit* : climber; *habitat*: sandy shore; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 250.

Clitoria pubescens; *habit*: climber; *habitat*: sandy shore; *specimen*(s): Leong, P. PL 21.

Dalbergia candenatensis (Dennst.) Prain; *habit* : climber; occurrence: frequent; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 179.

Dalbergia pseudosissoo Miq.; *habit* : climber; *habitat* : coastal forest; *conservation status*: V; *specimen*(s): Gwee, A.T. GAT 120.

Dalbergia velutina Benth.; *habit* : climber; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 216.

Dendrolobium umbellatum (L.) Benth.; *habit* : tree; 1.5m tall; *habitat*: wasteland; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 115.

Derris amoena Benth. var. **amoena**; *habit* : climber; occurrence: frequent; *habitat* : coastal forest; *specimen*(s): Gwee, A.T. GAT 355.

Derris trifoliata Lour.; *habit* : tree; *habit* : climber; *habitat*: coastal forest; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 162.

Desmodium heterocarpon (L.) DC. ssp. ***heterocarpon***; *habit* : shrub; *habitat*: wasteland; conservation status: R; specimen(s): Gwee, A.T. GAT 373.

Entada spiralis Ridl.; habit: climber; occurrence: frequent; habitat : coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 8.

Intsia bijuga (Colebr.) Kuntze; *habit* : tree; 9m tall; occurrence: rare; *habitat* : rocky shore; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 138.

Millettia pinnata (L.) G. Panigrahi; *habit* : tree; *habitat*: sandy shore; *conservation status*: V; *specimen*(s): Gwee, A.T. GAT 241.

Linaceae

Indorouchera griffithiana (Planch.) Hallier f.; *habit* : climber; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 1.

Loganiaceae

Fagraea fragrans Roxb.; *habit*: tree; *habitat* : coastal forest; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 61.

Fagraea racemosa Jack ex Wall.; *habit* : tree; 4m tall; occurrence: frequent; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 217.

Strychnos ignatii Berg.; *habit*: climber; occurrence: frequent; *habitat* : coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 95.

Strychnos maingayi C.B. Clarke; *habit* : climber; *habitat*: coastal forest; *conservation status*: V; *specimen*(s): Gwee, A.T. GAT 285.

Malvaceae

Sida acuta Burm.f.; *habit*: shrub; *habitat*: wasteland; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 153.

Sida rhombifolia L.; *habit*: shrub; 1m tall; *habitat*: wasteland; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 111.

Urena lobata L.; *habit*: shrub; occurrence: frequent; *habitat*: wasteland; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 156.

Melastomataceae

Clidemia hirta (L.) D. Don; *habit* : shrub; occurrence: frequent; *habitat*: wasteland; *conservation status*: exotic; *specimen*(s): Gwee, A.T. GAT 67.

Memecylon amplexicaule Roxb.; *habit* : tree; *habitat*: coastal forest; *conservation status*: V; *specimen*(s): Gwee, A.T. GAT 338.

Memecylon edule Roxb. var. ***edule***; *habit* : tree; 6m tall; *habitat*: rocky shore; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 65.

Memecylon edule Roxb. var. ***ovatum*** (Sm.) C.B. Clarke; *habit* : tree; 7m tall; *habitat:* rocky shore; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 74.

Meliaceae

Xylocarpus granatum J. König; *habit* : tree; 10m tall; *habitat*: mangrove; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 140.

Xylocarpus moluccensis (Lam.) M. Roem.; *habit* : tree; *habitat*: mangrove; *conservation status*: V; *specimen*(s): Gwee, A.T. GAT 254.

Menispermaceae

Fibraurea tinctoria Lour.; *habit* : climber; occurrence: frequent; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 56.

Tinospora crispa (L.) Hook.f. & Thomson; *habit* : climber; *habitat*: wasteland; *conservation status*: exotic; *specimen*(s): Gwee, A.T. GAT 112.

Moraceae

Artocarpus dadah Miq.; *habit* : tree; 9-10m seen tall; *habitat* : coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 219.

Artocarpus nitidus Trécul ssp. ***griffithii*** (King) F.M. Jarrett; *habit* : tree; *habitat*: coastal forest; *conservation status*: En; *specimen*(s): Gwee, A.T. GAT 295.

Ficus aurantiacea Griff.; *habit* : climber; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 204.

Ficus dubia Wall. ex King; *habit* : tree; *habitat*: coastal forest; *conservation status*: V; *specimen*(s): Gwee, A.T. GAT 104.

Ficus grossularioides Burm.f.; *habit*: tree; *habitat* : coastal forest; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 78.

Ficus heteropleura Blume; *habit* : tree; *habitat* : coastal forest; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 203.

Ficus kerkhovenii Valeton; *habit* : tree; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 270.

Ficus microcarpa L.f.; *habit* : tree; 1m tall; *habitat*: sandy shore; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 169.

Ficus superba (Miq.) Miq.; *habit* : tree; *habitat*: sandy shore; *conservation status*: En; *specimen*(s): Gwee, A.T. GAT 259.

Ficus variegata Blume; *habit* : tree; 7m tall; *habitat* : coastal forest; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 113.

Ficus vasculosa Wall. ex Miq.; *habit* : tree; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 52.

Ficus villosa Blume; *habit* : climber; *habitat* : coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 197.

Myristicaceae

Knema globularia (Lam.) Warb.; *habit* : tree; 4-18m tall; *habitat*: rocky shore/ coastal hill; *conservation status*: Ex; *specimen*(s): Gwee, A.T. GAT 102.

Myrsinaceae

Ardisia crenata Sims; *habit* : shrub; *habitat* : coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 202.

Ardisia crispa A.DC.; *habit* : tree; 1m tall; *habitat*: coastal forest; *specimen*(s): Gwee, A.T. GAT 2.

Embelia ribes Burm.; *habit*: climber; occurrence: frequent; *habitat* : coastal forest; *conservation status*: R; *specimen*(s): Leong, P. PL 5.

Myrtaceae

Psidium cattleianum; *habit*: tree; *habitat* : wasteland; *specimen*(s): Gwee, A.T. GAT 372.

Rhodamnia cinerea Jack; *habit* : tree; *habitat* : coastal forest; *conservation status*: common; *specimen*(s): Gwee, A. T. GAT 69.

Syzygium lineatum (DC.) Merr. & L.M. Perry; *habit* : tree; occurrence: frequent; *habitat*: coastal forest; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 89.

Syzygium zeylanicum (L.) DC.; *habit* : tree; 3.5m tall; occurrence: frequent; *habitat*: coastal forest; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 249.

Ochnaceae

Campylospermum serratum (Gaertn.) Bittrich & M.C.E. Amaral; *habit* : tree; occurrence: frequent; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 81.

Olacaceae

Ximenia americana L.; *habit* : shrub; 4m tall; *habitat*: mangrove; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 245.

Oleaceae

Jasminum elongatum (Bergius) Willd.; *habit* : climber; *habitat* : coastal forest; *conservation status*: exotic; *specimen*(s): Leong, P. PL 7.

Olea brachiata (Lour.) Merr.; *habit* : tree; 2m tall; occurrence: frequent; *habitat* : coastal forest; *conservation status*: V; *specimen*(s): Gwee, A.T. GAT 72.

Onagraceae

Ludwigia hyssopifolia (G. Don) Exell; *habit* : herb; 0.5m tall; *habitat*: wasteland; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 194.

Opiliaceae

Champereia manillana (Blume) Merr.; *habit* : tree; 4m tall; occurrence: frequent; *habitat* : coastal forest; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 118.

Pandaceae

Microdesmis caseariifolia Planch.; *habit* : tree; 4m tall; occurrence: frequent; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 128.

Passifloraceae

Adenia macrophylla (Blume) Koord. var. ***macrophylla***; *habit* : climber; *habitat*: wasteland; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 368.

Passiflora foetida L.; *habit* : climber; *habitat* : wasteland; *conservation status*: exotic; *specimen*(s): Gwee, A.T. GAT 193.

Passiflora laurifolia L.; *habit* : climber; occurrence: frequent; *habitat*: wasteland; *conservation status*: exotic; *specimen*(s): Gwee, A.T. GAT 59.

Polygalaceae

Polygala paniculata L.; *habit* : herb; *habitat*: wasteland; *conservation status*: exotic; *specimen*(s): Gwee, A.T. GAT 367.

Polygonaceae

Muelenbeckia platyclados; *habit*: herb; *habitat* : wasteland; *specimen*(s): Gwee, A.T. GAT 228.

Portulacaceae

Portulaca pilosa L.; *habit* : herb; 0.1m tall; *habitat* : rocky shore; *conservation status*: exotic; *specimen*(s): Leong, P. PL 10.

Rhamnaceae

Colubrina asiatica L. ex Brongn.; *habit* : shrub; *habitat*: sandy shore; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 243.

Rhizophoraceae

Bruguiera cylindrica (L.) Blume; *habit* : tree; 2.5m tall; occurrence: frequent; *habitat*: mangrove; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 211.

Bruguiera gymnorrhiza (L.) Lam. ex Savigny; *habit* : tree; 7m tall; *habitat* : mangrove; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 215.

Bruguiera parviflora (Roxb.) Wight & Arn. ex Griff.; *habit* : tree; occurrence: rare; *habitat*: mangrove; *conservation status*: En; *specimen*(s): Gwee, A.T. GAT 329.

Carallia brachiata (Lour.) Merr.; *habit* : tree; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 378.

Ceriops decandra (Griff.) W. Theob.; *habit* : tree; occurrence: frequent; *habitat*: mangrove; *specimen*(s): Gwee, A.T. GAT 256.

Ceriops tagal (Pers.) C.B. Rob.; *habit* : tree; *habitat*: mangrove; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 261.

Rhizophora apiculata Blume; *habit* : tree; 5m tall; occurrence: frequent; *habitat*: mangrove; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 240.

Rhizophora mucronata Lam.; *habit* : tree; 3m tall; occurrence: frequent; *habitat*: mangrove; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 214.

Rhizophora stylosa Griff.; *habit* : tree; occurrence: rare; *habitat* : mangrove; *conservation status*: V; *specimen*(s): Gwee, A.T. GAT 267.

Rubiaceae

Aidia auriculata (Wall.) Ridsdale; *habit* : climber; *habitat* : rocky shore; *specimen*(s): Gwee, A.T. GAT 356.

Aidia densiflora (Wall.) Masam.; *habit* : tree; occurrence: frequent; *habitat*: coastal forest; *conservation status*: V; *specimen*(s): Gwee, A.T. GAT 80.

Canthium confertum Korth.; *habit* : tree; 3m tall; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 149.

Canthium horridum Blume; *habit*: shrub; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 383.

Diplospora malaccensis Hook.f.; *habit* : tree; 3m tall; *habitat*: coastal forest; *conservation status*: En; *specimen*(s): Gwee, A.T. GAT 83.

Guettarda speciosa L.; *habit*: tree; 6m tall; *habitat*: rocky shore; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 163.

Gynochthodes coriacea Blume; *habit* : climber; *habitat*: wasteland; *conservation* status: R; *specimen*(s): Gwee, A.T. GAT 200.

Ixora congesta Roxb.; *habit* : shrub; 2m tall; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Leong, P. PL 1.

Ixora lobbii King & Gamble; *habit* : shrub; *specimen*(s): Gwee, A.T. GAT 293.

Lasianthus hirsutus (Roxb.) Merr.; *habit* : shrub; occurrence: rare; *habitat*: coastal forest; *conservation status*: Ex; *specimen*(s): Leong, P. PL 9. (formally known as *L. cyanocarpus*).

Morinda citrifolia L.; *habit*: tree; *habitat* : wasteland; *conservation status*: exotic; *specimen*(s): Gwee, A.T. GAT 238.

Morinda umbellata L.; *habit* : climber; occurrence: frequent; *habitat* : coastal forest; *conservation status*: common; *specimen*(s): Leong, P. PL 4.

Oxyceros fragrantissima (Ridl.) K.M. Wong; *habit* : climber; *habitat*: rocky shore; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 357.

Oxyceros longiflora (Lam.) T. Yamaz.; *habit* : shrub; 1m tall; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 136.

Psychotria malayana Jack; *habit*: shrub; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 321.

Scyphiphora hydrophyllacea C.F. Gaertn.; *habit* : tree; 2m tall; *habitat* : sandy shore; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 170.

Timonius flavescens (Jack) Baker; *habit* : tree; 1.5m tall; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 125.

Timonius wallichianus (Korth.) Valeton; *habit* : tree; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 389.

Rutaceae

Clausena excavata Burm.f.; *habit* : shrub; occurrence: frequent; *habitat* : coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 97.

Glycosmis chlorosperma (Blume) Spreng. var. ***chlorosperma***; *habit* : shrub; *habitat* : coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 87.

Melicope hookeri T.G. Hartley; *habit* : tree; *habitat* : coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 294.

Sapindaceae

Allophylus cobbe (L.) Raeusch.; *habit* : shrub; *habitat* : Sandy shore, wasteland; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 265.

Guioa pubescens (Zoll. & Moritzi) Radlk.; *habit* : tree; *habitat* : coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 71.

Lepisanthes rubiginosa (Roxb.) Leenh.; *habit*: tree; occurrence: frequent; *habitat*: coastal forest; *specimen*(s): Gwee, A.T. GAT 88.

Mischocarpus sundaicus Blume; *habit* : tree; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 175.

Sapotaceae

Chrysophyllum roxburghii G. Don; *habit* : tree; *habitat* : coastal forest; *specimen*(s): Leong, P. PL 19.

Pouteria linggensis (Burck) Baehni; *habit* : tree; *habitat* : rocky shore; *specimen*(s): Gwee, A.T. GAT 107.

Pouteria malaccensis (C.B. Clarke) Baehni; *habit* : tree; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 379.

Pouteria obovata (R.Br.) Baehni; *habit* : tree; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 73.

Scrophulariaceae

Scoparia dulcis L.; *habit*: herb; 0.75m tall; *habitat*: wasteland; *conservation status*: exotic; *specimen*(s): Gwee, A.T. GAT 191.

Simaroubaceae

Brucea javanica (L.) Merr.; *habit* : tree; *habitat* : wasteland; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 361.

Eurycoma longifolia Jack; *habit*: tree; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 58.

Sonneratiaceae

Sonneratia alba J.J. Sm.; *habit* : tree; 4m tall; *habitat* : mangrove; *specimen*(s): Gwee, A.T. GAT 100.

Sonneratia ovata Back.; *habit*: tree; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 271.

Sterculiaceae

Heritiera littoralis Dryand.; *habit*: tree; *habitat* : mangrove; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 255.

Scaphium macropodum (Miq.) Beumée ex Heyne; *habit* : tree; *habitat* : rocky shore; *conservation status*: V; *specimen*(s): Gwee, A.T. GAT 178.

Symplocaceae

Symplocos fasciculata Zoll.; *habit* : tree; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 221.

Thymelaeaceae

Linostoma pauciflorum Griff.; *habit* : climber; occurrence: frequent; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 98.

Turneraceae

Turnera ulmifolia L.; *habit*: herb; 0.5m tall; *habitat*: wasteland; *conservation status*: exotic; *specimen*(s): Gwee, A.T. GAT 13.

Ulmaceae

Trema tomentosa (Roxb.) Hara; *habit*: shrub; *habitat*: coastal forest; *conservation status*: common; *specimen*(s): Leong, P. PL 6.

Verbenaceae

Clerodendrum inerme (L.) Gaertn.; *habit* : shrub; occurrence: f srequent; *habitat* : sandy shore; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 213.

Clerodendrum laevifolium Blume; *habit* : shrub; 2m tall; occurrence: frequent; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 60.

Premna serratifolia L.; *habit* : shrub; 1.8m tall; *habitat*: sandy shore; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 209.

Vitex pinnata L.; *habit* : tree; *habitat*: coastal forest; *conservation status*: common; *specimen*(s): Gwee, A.T. GAT 101.

Vitaceae

Ampelocissus elegans (Kurz) Gagnep.; *habit* : climber; *habitat*: coastal forest; *conservation status*: R; *specimen*(s): Gwee, A.T. GAT 311.

Cissus repens Lam.; *habit*: climber; *habitat* : wasteland; *conservation status*: R; *specimen*(s): Leong, P. PL 15.