

VASCULAR FLORA OF SI CHANG ISLAND, CHONBURI PROVINCE, THAILAND

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ABSTRACT

Si Chang Island, situated in the Gulf of Thailand near Bangkok, is composed entirely of weathered limestone. It has been ecologically degraded and presently has evergreen + deciduous scrub vegetation, some beach vegetation, and a remnant of mangrove. A total of 274 species, etc. from 72 families of native or naturalized plants were found there.

INTRODUCTION

Si Chang Island is located in the Gulf of Thailand about 12 km west of Sriracha (Sriracha District), Chonburi Province. The c. 8-km² island lies at approximately 13°N latitude, 100°E longitude and is composed entirely of weathered limestone belonging to the Kanchanaburi Formation of the Tanaosi Group from the Silurian to Devonian geological period, i.e. 345–430 million years of age (JAVANAPHET, 1969). The island is oriented in a N-S direction and is c. 6 km long and 1–1.5 km wide; the widest point is slightly below the middle of the island.

The island was visited six times between November 1992 and September 1993 and a total of 22 days were spent collecting extensively throughout the island. It must be emphasized that most cultivated and ornamental plants were not surveyed and, therefore, are not enumerated in this report.

BACKGROUND

Si Chang Island has had a long history of settlement, tourism, and destructive limestone and forest exploitation. The Royal Family of Thailand first started visiting Si Chang Island over a hundred years ago and in 1892 a Royal Palace was built near the middle of the east coast. Since that time two Buddhist Temples, a Buddhist meditation centre, the village complex, and tourist facilities have been developed, all almost entirely in the northern half of the island. In recent years much of the limestone cliffs facing the sea has been destroyed by blasting with the rock being shipped to the mainland for construction of roads and the Laem Chabang Deep Sea Port. Little is left of the southern tip of Si Chang Island since this was the center of quarrying operations.

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The highest point on the island is Khao Yai, 193 m, on the northern part followed by Khao Kwang, 132 m, in the middle. There are no rivers, lakes, or springs on the island, but in recent years rain water has collected in several abandoned quarries near the middle of the island. I did notice a seepage point behind the beach at the base of the northern tip of Khao Yai; however in recent years it has become dry during the dry/hot season. The climate is monsoonal, with a cooler and dry period from about November to March and the hot and sometimes rainy period from about April to October. Table 1 includes some recent temperature data for Si Chang Island. I have measured 40°C on the limestone cliffs before noon and 46°C at 1400 h on several days in May and July. The rainfall data are presented in Table 2.

The soil, due to the destruction of most of the natural vegetation, subsequent erosion, seasonal fires, grazing, and a probable decrease in rainfall, is thin and of poor quality. There are some sandy beaches along the coast; however some of these, especially along the NE coast, have been degraded by village settlements. There is a c. 100 m² remnant of mangrove along the middle of the east coast at the Si Chang Marine Science Research and Training Station of Chulalongkorn University (SMaRT) which must have been much more extensive and diverse before man arrived.

VEGETATION

The natural forest cover on Si Chang Island has mostly been obliterated by decades of cutting, burning, charcoal making, and agriculture. All areas on the island have suffered, thus many places are, due to continuous degradation, barren and rocky or grassland (Fig. 8). These areas could possibly recover somewhat; however grazing and fire effectively kill all shrub and tree seedlings that manage to germinate and survive for a year or two. Other areas, such as Khao Yai and Khao Kwang, have developed a dense evergreen scrub growth with a few scattered deciduous trees up to 20 m tall representing the canopy. There are a few areas such as the region below the cliffs near the Phra Obosot ("Jedi") on the middle of the east coast (Fig. 8) that have provided me with some evidence as to what the original forest cover might have been.

The closest area relevant to Si Chang Island that has been floristically studied is the Satthahip area, Chonburi Province, which is c. 65 km to the south (MAXWELL, 1974). That area, which includes several offshore islands, aside from the beach vegetation, is floristically different from Si Chang Island. The basic difference is that the bedrock and subsequent development of soil is of igneous origin, i.e. granite and gneiss, in the Satthahip area. I also suspect that Si Chang Island is more arid than the Satthahip area. Si Chang Island is isolated floristically since the closest islands with a limestone flora are on the west side of the Gulf of Thailand, about 75 km away, on the upper east coast of peninsular Thailand. None of these areas has been studied floristically, thus a comparison cannot be made.

The vegetation and flora at the Khao Khieo Wildlife Sanctuary, Chonburi Province, although easily seen from Si Chang Island, is completely different from that on the island (MAXWELL, 1980 & 1986). Dr. A.F.G. Kerr, Irish physician-botanist, who collected plants extensively throughout Thailand from 1908 to 1932, visited Si Chang Island on 3 April 1913 where he collected two species (JACOBS, 1962). Kerr must have found

Table 1. Temperature Data for Si Chang Island in 1992 and 1993.
(Meteorological Station, Si Chang Subdistrict, Si Chang Island)

Month	highest temp. (°C)	lowest temp. (°C)	average temp. (°C)
(1992)			
January	29.71	22.99	26.35
February	30.32	24.77	27.55
March	31.75	26.42	29.09
April	33.86	28.13	30.99
May	33.68	27.93	30.81
June	32.52	27.31	29.91
July	31.64	26.31	28.97
August	31.02	25.84	28.43
September	31.42	26.33	28.88
October	29.95	24.27	27.11
November	29.73	23.16	26.45
December	29.91	22.84	26.38
(1993)			
January	29.84	22.88	26.36
February	29.82	23.64	26.73
March	30.91	25.69	28.30
April	32.31	26.72	29.52
May	32.65	27.32	29.99
June	32.44	27.79	30.12
July	32.20	27.69	29.95
August	31.67	26.35	29.01
September	30.62	25.51	28.07
October	30.92	24.56	27.74
November	30.66	23.96	27.31
December	29.29	22.51	25.90

Table 2. Average annual rainfall on Si Chang Island from 1989–1993.
(mm/month) (Meteorological Station, Si Chang Subdistrict, Si Chang Island)

January	15.02	July	85.80
February	18.10	August	108.14
March	43.68	September	285.28
April	33.00	October	250.58
May	95.60	November	10.62
June	53.80	December	7.05

Si Chang Island botanically uninteresting since he apparently never went there again. Mrs. D.J. Collins, who collected extensively in the Sriracha area during Kerr's time, might have collected on Si Chang Island; however I cannot find any records confirming this. As far as I am aware, all other botanists have avoided Si Chang Island since the flora of the mainland and other islands is much more diverse.

Ground Flora of Limestone Areas

Due to the long and severe dry period on Si Chang Island, most of the perennial ground flora is leafless and in many instances only the underground tubers or rhizomes are present during this time. Many of these plants are calciphytes which grow, often seemingly amazingly, in shallow depressions or cracks in the limestone in which some soil has developed, or completely epilithic or epiphytic. During the dry season only the underground parts of *Pseudodracontium harmandii* Engl. (Figs. 5, 6) and *Typhonium* sp. (both Araceae), *Globba villosula* Gagnep. (Zingiberaceae), and *Chirita hamosa* Wall. ex R. Br. var. *hamosa* (Gesneriaceae) can be found. *Eulophia andamensis* Rchb. f. (Orchidaceae) drops its leaves, but is still recognizable by its fleshy, green pseudobulbs, while the fern *Drynaria quercifolia* (L.) J. Sm. (Polypodiaceae) drops its fertile fronds while the sterile, dry "nest" fronds and rhizome remain exposed. Another fern, *Pyrrosia adnascens* (Sw.) Ching (Polypodiaceae) has fronds that wither during the dry season, but rehydrate after the rain comes. Three evergreen, succulent, perennial vines/creepers, viz. *Hoya acuta* Haw. var. *acuta*, *Hoya diversifolia* Bl., and *Hoya kerrii* Craib (Asclepiadaceae) are often found in rugged limestone areas with some residual scrub vegetation. *Tinospora crispa* (L.) Hk. f. & Th. and *Tinospora sinensis* (Lour.) Merr. (Menispermaceae) are perennial vines with thick, flexible stems which drop their leaves after the rainy season and flower and fruit during the dry season before new leaves appear. All six species of *Dioscorea* (Dioscoreaceae) on the island are perennial vines which, after fruiting at the beginning of the dry season, lose all their stems and leaves and develop new ones after the rainy season comes the next year. *Stemona tuberosa* Lour. (Stemonaceae), a perennial vine, differs in that it produces flowers and fruits before or along with its developing stem and leaves in May and June which desiccate before the end of each year. *Typha angustifolia* L. (Typhaceae) is an aquatic perennial herb which remains green throughout the year. It is found in a few of the deeper, muddy, rain-fed depressions in the limestone. *Rotala indica* (Willd.) Koeh. (Lythraceae) and *Lindernia pierreanoides* Yama. (Scrophulariaceae) are annual herbs which are only found in shallow limestone cavities which fill with water during the rainy season.

Open Limestone Areas

In the absence of shade and woody vegetation, open areas on Si Chang Island are covered with many species of herbaceous, annual and perennial plants, many of which are noxious weeds. Ubiquitous annual weeds such as *Eupatorium odoratum* L. and *Tridax procumbens* L. (both Compositae), *Achyranthes aspera* L. (Amaranthaceae) as well as many grasses (Gramineae), e.g. *Chloris barbata* Sw., *Dactyloctenium aegyptium* (L.) P. Beauv., *Eragrostis tenella* (L.) P. Beauv. ex Roem. & Schult. var. *tenella*, and *Leptochloa chinensis*

(L.) Nees are common. Larger perennial grasses up to 2 m tall, such as *Chrysopogon orientalis* (Desv.) A. Camus, the most common species; *Heteropogon contortus* (L.) P. Beauv. ex Roem. & Schult., *Pennisetum pedicellatum* Trin., and *Sehima nervosum* (Rottl.) Stapf form dense thickets which become dry early each year and are a major fire hazard from March to June (Fig. 7).

Understorey and Cliff Flora

Eupatorium antiquorum L. (Euphorbiaceae), a spiny, succulent, generally leafless tree up to 7 m tall and *Dracaena loureiri* Gagnep. (Agavaceae), a weak-stemmed, evergreen monocot tree 5–7 m tall (Fig. 2), are common and instantly recognizable species found on forested limestone areas on Si Chang Island. The understorey in the most developed scrub-forested areas is typically dense, mostly evergreen, and 2–3 m tall. *Blachia siamensis* Craib (Euphorbiaceae) is the most common component in these areas, in which *Bridelia ovata* Dcne. var. *ovata* and *Drypetes hoaensis* Gagnep. (both Euphorbiaceae), *Streblus asper* Lour. (Moraceae), *Celtis philippensis* Blanco var. *philippensis* (Ulmaceae), *Diospyros bejardii* Lec. and *Diospyros pubicalyx* Bakh. (Ebenaceae) (Fig. 11), and the spiny *Atalantia monophylla* (L.) DC. (Rutaceae) are common. Three perennial evergreen climbers, viz. *Bauhinia bracteata* (Grah. ex Bth.) Bak. (Leguminosae, Caesalpinioideae), *Jasminum funale* Dcne. (Oleaceae), and *Cansjera rheedii* J.F. Gmel. (Opiliaceae) (Fig. 12) are frequently found among the shrubs and treelets of Si Chang's scrub vegetation. *Gardenia collinsae* Craib (Rubiaceae), a deciduous treelet, is also found in this habitat (Fig. 9). *Premna corymbosa* (Burm. f.) Rottl. & Willd. var. *corymbosa* and *Glossocarya mollis* Wall. ex Griff. (both Verbenaceae), have similar habits and frequencies as the evergreen climbers, but are deciduous (Fig. 4).

Tree Flora

All of the trees above the scrub level are deciduous and in most instances do not form a recognizable canopy. *Bombax kerrii* Craib (Bombacaceae); *Firmiana colorata* (Roxb.) R. Br. (cover), *Pterocymbium tinctorium* (Blanco) Merr. var. *javanicum* (R. Br.) Kosterm., and *Sterculia angustifolia* Roxb. (all Sterculiaceae), *Spondias pinnata* (L.f.) Kurz (Anacardiaceae), *Erythrina stricta* Roxb. (Leguminosae, Papilionoideae), *Terminalia calamansanai* (Blanco) Rolfe (Combretaceae), and *Vitex limoniifolia* Wall. ex Kurz (Verbenaceae) are common on the island and leafless from about October–November until May–June, most of them flowering while leafless. Most of these trees, however, are either immature or stunted due to coppicing growth. There are very few large trees left and those that are present are not useful for construction, making charcoal, etc. It is interesting to note that these native tree species are successfully reproducing as evidenced by the presence of their seedlings and saplings throughout the island. Less common trees of potentially lesser stature include *Capparis grandis* L. f. (Capparaceae) and *Combretum quadrangulare* Kurz (Combretaceae), both evergreen species; and several deciduous trees, e.g. the spiny *Flacourtia indica* (Burm. f.) Merr. and *Flacourtia jangomas* (Lour.) Raeusch. (Flacourtiaceae), *Sterculia foetida* L. and *Sterculia pexa* Pierre (Sterculiaceae), *Lannea coromandelica* (Houtt.) Merr. (Anacardiaceae), and *Wrightia arborea* (Dennst.) Mabb.

(Apocynaceae) (Fig. 1).

It should be noted that several other deciduous trees which probably were common canopy species before man arrived are present, but scarce, on the island. Some of these include *Canarium subulatum* Guill. and *Garuga floribunda* Decne. (both Burseraceae), *Adenantha pavonina* L. var. *microsperma* (Teijsm. & Binn.) Niels. (Leguminosae, Mimosoideae), *Azelia xylocarpa* (Kurz) Craib (Leguminosae, Caesalpinioideae), and *Hymenodictyon orixense* (Roxb.) Mabb. [*H. excelsum* (Roxb.) Wall.] (Rubiaceae). These trees, because of their great utility and commercial value have been exploited almost to the point of elimination. It would be reasonable to assume that there are species, including trees, that have been extirpated from the flora of the island due to human activities.

Introduced Species

Aside from various domestic and commercial fruit tree species such as *Annona squamosa* L. (Annonaceae), *Carica papaya* L. (Caricaceae), *Mangifera indica* L. (Anacardiaceae); little else, except for ornamental plants, is grown on the island. The establishment of Royal facilities on the east side of Si Chang Island, however, has had a detrimental effect on the native vegetation, not only with palace amenities which have been abandoned for decades, but also with the introduction of several alien tree species that have now become naturalized there.

Leucaena leucocephala (Lmk.) De Wit and *Pithecellobium dulce* (Roxb.) Bth. (both Leguminosae, Mimosoideae), *Delonix regia* (Boj. ex Hk.) Rafin. and *Tamarindus indica* L. (both Leguminosae, Caesalpinioideae), and *Plumeria* hybrids and cultivars (Apocynaceae). These tree species have become well-established in the Palace area and all except *Plumeria* have spread. Although many of these trees are said to be of "historical" value and hence should be preserved, it should be realized that these introduced species were planted and have been preserved at the expense of the native flora. I am also curious as to why there is no *Cocos nucifera* L. (Palmae, coconut palm) on the island.

Beach Flora

The beach flora in Thailand and indeed throughout most of tropical Asia is uniform and well known. Si Chang Island, even with its limestone bedrock, does not differ in this respect except for the fact that much of the beach vegetation has been damaged or destroyed by "development". The beach flora is unique and only a few of its species are found naturally outside of this habitat (MAXWELL, 1974).

Sesuvium portulacastrum (L.) L. (Aizoaceae), a fleshy, prostrate herb full of iodine, is common on sand while the vine *Ipomoea tuba* (Schlech.) G. Don (Convolvulaceae) grows in thickets behind the beach along with the succulent, naturalized herb-treelet *Jatropha gossypifolia* L. (Euphorbiaceae). Some shrubs include *Pemphis acidula* Forst. (Lythraceae) and *Colubrina asiatica* (L.) Brongn. (Rhamnaceae), while *Azima sarmentosa* (Bl.) Bth. & Hk. f. (Salvadoraceae) and *Caesalpinia bonduc* (L.) Roxb. (Leguminosae, Caesalpinioideae) are scandent.

Beach trees include *Hibiscus tiliaceus* L. and *Thespesia populnea* (L.) Sol. ex Corr. (both Tiliaceae); *Terminalia catappa* L. (Combretaceae), which is often planted elsewhere; and *Manilkara hexandra* (Roxb.) Dub. (Sapotaceae).



Figure 1. Forested ravine on the SE. side of Si Chang Island, 29 November 1992, before many trees have dropped their leaves. Photo: Warren Brockelman.



Figure 2. *Euphorbia antiquorum* L. (Euphorbiaceae), common succulent treelet or tree on rugged limestone terrain with flowering and fruiting cyathia, 28 November 1992. Photo: Warren Brockelman.



Figure 3. Cliff and seaside vegetation on the west side of Si Chang Island showing the effects of exposure and minor quarrying, 14 February 1993. Vegetation in foreground has been inexplicably cleared away which will promote soil erosion and degrade the main environment as well. Photo: Warren Brockelman.



Figure 4. Limestone cliff and evergreen scrub vegetation with *Euphorbia antiquorum* L. (Euphorbiaceae), a succulent, spiny, and mostly leafless treelet or tree; *Ficus geniculata* Kurz (Moraceae), stunted by exposure; and *Atalantia monophylla* (L.) DC. (Rutaceae), a spiny treelet with edible fruits, in the foreground. A grassy area is in the middle and *Dracaena lourieri* Gagnep. (Agavaceae), and evergreen treelet or tree is on the ridge in the background. Photo: Warren Brockelman, 14 February 1993.



Figure 5. *Pseudodracontium harmandii* Engl. (Araceae), deciduous perennial herb which is common on exposed limestone cliffs; inflorescence 25 July 1993, Photo: Mark Graham.



Figure 6. *Pseudodracontium harmandii* Engl. with infructescence, Maxwell 92-683, 7 November 1992. Photo: Warren Brockelman.

Figure 7. Open, fire-maintained grassland in rugged limestone terrain after the rainy season, 29 November 1992. Photo: Warren Brockelman



Figure 8. Aerial view of Ko Si Chang from southeast, showing Laem Wang (right), old palace grounds, shoreside scrub vegetation and degraded field habitat in center. Photo: Si Chang Thong Terminal Co.





Figure 9. *Gardenia collinsae* Craib (Rubiaceae), deciduous treelet found in open scrub vegetation, described from specimens collected on the beach at Sriracha. Maxwell 93-823, 24 July 1993. Photo: Mark Graham.



Figure 10. *Pseuderanthemum graciliflorum* (Nees) Ridl. (Acanthaceae), a deciduous perennial herb mostly found in shaded places in scrub vegetation; Maxwell 92-773, 28 November 1992. Photo: Warren Brockelman

Figure 11. *Diospyros pubicalyx* Bakh. (Ebenaceae), an evergreen tree in open scrub vegetation; Maxwell 92-764, 28 November 1992. Photo: Warren Brockelman



Figure 12. *Cansjera rheedii* J.F. Gmel. (Opiliaceae), an evergreen woody climber in open scrub vegetation; Maxwell 92-768, 28 November 1992. Photo: Warren Brockelman



Mangrove Species

As noted above, there is a small, muddy, tidal, and very degraded area on the east coast which is all that remains of a mangrove habitat on the island. *Xylocarpus obovatus* (Bl.) A. Juss. (Meliaceae), *Ceriops decandra* (Griff.) Hou (Rhizophoraceae), and *Avicennia marina* (Forsk.) Vierh. (Verbenaceae) are the only species represented, out of a possible dozen or more that may have once occurred around the island. As with the beach flora, mangrove plants are habitat-specific.

REPLANTING PROGRAM

As long as grassland fires are controlled and cattle prevented from entering the areas to be reforested, the natural regrowth of many of the original tree species, specifically those with wind dispersed fruits or seeds, e.g. *Lagerstroemia floribunda* Jack var. *floribunda* (Lythraceae), *Terminalia calamansanai* (Blanco) Rolfe, and *Combretum quadrangulare* Kurz (both Combretaceae) will rapidly reappear in these open places. More attention will have to be given to those species with large fruits or large seeds which mostly were dependent on animals for dispersal and/or planting. *Spondias pinnata* (L.f.) Kurz (Anacardiaceae), *Sterculia foetida* L. (Sterculiaceae), and *Vitex limoniifolia* Wall. ex Kurz (Verbenaceae) will require nursery operations for their proliferation.

In an effort to demonstrate the feasibility and effectiveness of a replanting programme, it is suggested that a demonstration plot be established immediately. The area, perhaps 2–3 hectares, should be selectively cleared of all grasses while the regrowth of trees, etc. from this year be allowed to remain. Also, if possible, a similar area should be fenced with the adjacent grass cleared for at least 5 m on all sides. The purpose of this plot will be to show how fire prevention in an uncut grassland compares with a cut area which is also fenced off from cattle and arsonists in promoting regeneration.

NURSERY DEVELOPMENT

An experienced and dedicated nursery staff of perhaps 1 manager and 3 workers should be hired to investigate the best ways to collect, store, germinate, harden, and eventually plant material of the various trees, shrubs, climbers, and perhaps even perennial herbs found on the island that do not have an effective means of fruit/seed dispersal. Since water is a critical factor on the island, the nursery must be very careful in not only what they try to grow, but also the quantity of water for each species. More thought must be given on this matter as well as finding a suitable place for the nursery. All of the plant species required for reforestation are seasonal, that is, none of them flower or fruit throughout the year. However, the phenology of each species differs. Therefore, fruits/seeds of various species can be found throughout the year. It remains to be determined if there is a peak or low fruiting month for trees, but in any case fruits/seeds can and should be collected throughout the year.

RECOMMENDATIONS

It is not recommended to replant any of the introduced trees presently found on the island, especially *Pithecellobium dulce* (Roxb.) Bth. and *Leucaena leucocephala* (Lmk.) De Wit (both Leguminosae–Mimosoideae), *Tamarindus indica* L. and *Delonix regia* (Boj. ex Hk.) Rafin. (both Leguminosae–Caesalpinioideae), and cultivars and hybrids of *Plumeria* (Apocynaceae). It is not recommended to remove these species from where they presently grow unless, especially with *Delonix regia*, they are shading out other growth. It should be noted that *Pithecellobium dulce* and *Tamarindus indica* provide shade and edible seed arils, while *Leucaena leucocephala* is a valuable species for nitrogen fixation and green manure. The four legumes mentioned above have also been very successful in natural seed dispersal and subsequent growth in grassy and rugged flat areas. It is strongly recommended that any plant species, however showy or otherwise useful, e.g. fruit trees not be planted in areas that are intended to be reforested. These ornamentals, etc. could possibly be planted around various buildings in the port area, but not outside of it. I would not waste too much time, expense, or effort on ornamental plants mainly because of the calcareous soil and exposure on the island that will quickly kill most of them.

Care should be taken in the removal of soil in construction, etc. areas since it is very sparse on the island. This soil can be used in the nursery or added to compost heaps to increase its fertility. If it is at all feasible, sewage treatment facilities could be directed towards the creation of sludge, but one must be careful in this since this product has a notoriously variable pH.

ACKNOWLEDGMENTS

This project was funded by the Si Chang Thong Terminal Co., Ltd. I appreciate the help of Dr. Warren Brockelman of the Center for Conservation Biology, Mahidol University in carrying out this project. Mr. Amnuay Sungpong, an employee of the Si Chang Thong Terminal Co., Ltd. on Si Chang Island is thanked for his faithful and energetic field assistance. The Co-ordination of Dr. Chariya Brockelman with all parties concerned is appreciated. Thanks are also given to two of my botanical collaborators and friends at the Rijksherbarium, Leiden, Netherlands, viz. Dr. J.F. Veldkamp for comments on a few of the grasses, and Dr. Wilbert Hetterscheid who assisted in the identification of some Araceae.

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APPENDIX. List of Species, etc. found on Si Chang Island. Abbreviations:

Habit		Habitat		Abundance	
A	annual	B	Beach	VC	very common
P	perennial	DA	disturbed area	C	common
E	evergreen	M	mangrove	U	uncommon
D	deciduous	P/C	planted/cultivated	R	rare
H	herb	S	scrub forest		
V	vine				
C/WC	climber/woody climber				
S	shrub				
Sc	scandent shrub				
T ^{lt}	treelet				
T	tree				
El	epilithic				
Ep	epiphyte				

Categories given in order: habit, habitat, abundance, approximate flowering period, fruiting period, leafy period.

ANGIOSPERMS—DICOTS**ANNONACEAE**

Cananga latifolia (Hk. f. & Th.) Fin. & Gagnep.

D?T, S, R, flowers?, fruits?

Polyalthia cerasoides (Roxb.) Bth. ex Bedd.

ET^{lt}-T, S, U, Jan.-Feb., April-May

MENISPERMACEAE

Tiliacora triandra (Colebr.) Diels EV, S, C, Jan.-Feb., April-May

Tinospora crispa (L.) Hk. f. & Th.

DV, S, C, Dec.-Jan., Feb.-March, May-Dec.

Tinospora sinensis (Lour.) Merr.

DV, S, C, Dec.-Jan., Feb.-March, May-Dec.

CAPPARACEAE

Capparis grandis L.f. ET, S, U, April-May, Sept.-Oct.

Capparis micrantha DC. ssp. *micrantha* ET^{lt}, S, C, Jan.-Feb., April-June

Cleome viscosa L. AH, DA, C, Jan.-Dec., Jan.-Dec.

Crateva adansonii DC. ssp. *trifoliata* (Roxb.) Jacobs

DT, S, U, Feb.-March, Sept.-Oct., March-Nov.

PORTULACACEAE

Portulaca quadrifida L. PH, DA, C, Jan.–Dec., Jan.–Dec.

Portulaca pilosa L. ssp. *grandiflora* (Hk.) Gees.

PH, DA, C, Jan.–Dec., Jan.–Dec.

FLACOURTIACEAE

Flacourtia indica (Burm. f.) Merr.

DT, S & DA, C, Feb.–May, July–Sept., May–Nov.

Flacourtia jangomas (Lour.) Raeusch. E/DT, DA & S, April–May, July–Aug.

MALVACEAE

Abutilon indicum (L.) Sw. ssp. *indicum* A/PH, DA, C, Jan.–Dec., Jan.–Dec.

Hibiscus tiliaceus L. ET, B, C, May–July, July–Sept.

Malvastrum coromandelicum (L.) Garcke A/PH, DA, C, Jan.–Dec., Jan.–Dec.

Sida cordifolia L. A/PH, DA, C, Jan.–Dec., Jan.–Dec.

Sida rhombifolia L. ssp. *rhombifolia* PH, DA, C, Jan.–Dec., Jan.–Dec.

Thespesia populnea (L.) Sol. ex Corr. ET, B, C, Feb.–April, July–Sept.

BOMBACACEAE

Bombax kerrii Craib (*B. anceps* Pierre var. *cambodiana* (Pierre) Roby.)

DT, S, C, Jan.–Feb., Feb.–March, May–Nov.

STERCULIACEAE

Firmiana colorata (Roxb.) R. Br.

DT, S, C, Feb.–March, April–May, May–Nov.

Pterocymbium tinctorium (Blanco) Merr. var. *javanicum* (R. Br.) Kosterm.

DT, S, U, Feb.–March, April–May, May–Nov.

Sterculia angustifolia Roxb. DT, S, U, Nov.–Jan., Feb.–July, March–Nov.

Sterculia foetida L. DT, DA & S, C, Nov.–Feb., Nov.–Feb., March–Nov.

Sterculia pexa Pierre DT, S, U, Nov.–March, Feb.–March, March–Nov.

TILIACEAE

Grewia eriocarpa Juss. ET/lt/T, S, C, May–July, Sept.–Nov.

ZYGOPHYLLACEAE

Tribulus terrestris L. A/PH, DA, C, Jan.–Dec., Jan.–Dec.

RUTACEAE

Atalantia monophylla (L.) DC. ET/lt/T, S, C, Oct.–Dec., Nov.–July

Micromelum minutum (Forst. f.) Wight & Arn.

E/D T/lt, DA & S, U, Feb.–April, May–Aug.

Murraya paniculata (L.) Jack ES/T/lt, S, U, Feb.–Aug., May–Nov.

BURSERACEAE

Canarium subulatum Guill. DT, S, U, April–May, July–Sept., May–Nov.

Garuga floribunda Decne. DT, S, U, Feb.–March, May–Aug., May–Nov.

MELIACEAE

Aglaia sp. ET, S, R, flowers?, fruits?

Melia azedarach L. (planted) DT, P/C, U, flowers?, fruits?, May–Nov.

Xylocarpus obovatus (Bl.) A. Juss. ET, M, U, May–June, fruits?

ICACINACEAE

Pyrenacantha volubilis Wight EV, S, R, flowers?, Aug.–Oct.

SALVADORACEAE

Azima sarmentosa (Bl.) Bth. & Hk. f. ESc, B, U, Dec.–Feb., fruits?

CARDIOPTERIDACEAE

Cardiopteris quinqueloba (Hassk.) Hassk. AV, DA, C, July–Sept., Oct.–Jan.

CELASTRACEAE

Salacia chinensis L. EWC, B, R, flowers?, fruits?

RHAMNACEAE

Colubrina asiatica (L.) Brongn. ES, B, U, April–June, Sept.–Dec.

Ventilago denticulata Willd. (*V. calyculata* Tul.) EWC, S, C, Oct.–Dec., Jan.–March

Ziziphus nummularia (Burm. f.) W. & A. ET'lt, DA, C, June–Aug., Nov.–Jan.

Ziziphus oenoplia Mill. var. *brunoniana* (Cl. ex Brand.) Tard.

EWC, DA, C, June–Aug., Nov.–Jan.

VITACEAE

Ampelocissus martini Pl. DV, DA & S, C, June–Aug., Sept.–Nov., June–Nov.

Cayratia pedata Lour. E/DV, S, U, April–June, fruits?

Cayratia trifolia (L.) Domin E/DV, DA, C, May–Aug., July–Sept.

Cissus marcanii Craib EWC, S, U, Feb.–May, July–Sept.

Tetrastigma lanceolarium (Roxb.) Pl. EV/WC, S, U, April–June, fruits?

SAPINDACEAE

Cardiospermum halicacabum L. var. *halicacabum*

AV, DA, C, July–Sept., Aug.–Nov.

ANACARDIACEAE

Lannea coromandelica (Houtt.) Merr.

DT, S & DA, Feb.–March, April–May, May–Nov.

Spondias pinnata (L. f.) Kurz DT, S, C, Feb.–March, July–Nov., May–Nov.

LEGUMINOSAE–MIMOSOIDEAE

Adenantha pavonina L. var. *microsperma* (Teijsm. & Binn.) Niels.

DT, S, U, April–June, Nov.–April, April–Nov.

Albizia odoratissima (L. f.) Bth.

DT, S & DA, U, April–June, Feb.–March, April–Nov.

Entada glandulosa Pierre ex Gagnep.

DV, DA, C, May–Sept., fruits?, May–Nov.

Leucaena leucocephala (Lmk.) De Wit (naturalized)

ET^{lt}/T, DA, C, April–Sept., Nov.–Jan.

Pithecellobium dulce (Roxb.) Bth. (naturalized)

ET, DA, C, April–Sept., Nov.–Jan.

LEGUMINOSAE–CAESALPINIOIDEAE

Afzelia xylocarpa (Kurz) Craib DT, S, U, April–May, Oct.–Dec., May–Nov.

Bauhinia bracteata (Grah. ex Bth.) Bak.

EWC, S, C, July–Sept., Nov.–Jan.

Caesalpinia bonduc (L.) Roxb. E (D?) Sc, B, U, Jan.–Feb., May–July

Cassia siamea Lmk. ET, DA, U, Jan.–Dec., Jan.–Dec.

Delonix regia (Boj. ex Hk.) Rafin. (naturalized)

DT, DA & P/C, C, Feb.–May, Oct.–Dec., May–Nov.

Peltophorum dasyrrachis (Miq.) Kurz

D^tlt/T, S, U, Feb.–March, Oct.–Dec., Feb.–Nov.

Sarac ?indica L. ET, S, U, flowers?, fruits?

Tamarindus indica L. (naturalized) ET, DA & P/C, C, Oct.–Dec., Aug.–Nov.

LEGUMINOSAE–PAPILIONOIDEAE

Abrus precatorius L. AV, DA, C, Oct.–Nov., Dec.–Feb.

Alysicarpus vaginalis (L.) A. DC. A/PH, DA & S, C, Sept.–Dec., Nov.–Feb.

Cajanus scarabaeoides (L.) du P.T. var. *scarabaeoides*

EV, DA, C, Aug.–Nov., Oct.–Jan.

Canavalia maritima (Aubl.) Thou. EV, S, C, Sept.–Dec., Nov.–Feb.

Christia vespertilionis (L. f.) Bakh. f. var. *vespertilionis*

AH, DA & S, U, Jan.–March, June–Aug.

Clitoria ternatea L. A/PH, DA, C, Aug.–Dec., Sept.–Feb.

Crotalaria verrucosa L. AH, S & DA, U, July–Sept., Oct.–Dec.

Derris scandens (Roxb.) Bth. EWC, S & DA, C, Aug.–Oct., Nov.–Jan.

Derris ?thyrsoflora (Bth.) Bth. EWC, S, U, Flowers?, fruits?

Eriosema chinense Vog. PH, S & DA, C, July–Sept., Sept.–Dec.

Erythrina stricta Roxb. DT, S, C, Feb.–March, March–April, May–Nov.

Indigofera tinctoria L. DS, S, U, Aug.–Sept., Dec.–Jan., May–Nov.

Macropodium lathyroides (L.) Urb. var. *semierectum* (L.) Urb.

(naturalized) A/PH, DA, U, Jan.–Dec., Jan.–Dec.

Mucuna pruriens (L.) A. DC. AV, S & DA, C, Nov.–Jan., Dec.–Feb.

Rhynchosia minima (L.) A. DC. A/PH, DA, C, Aug.–March, Oct.–April

Tephrosia pumila (Lmk.) Pers. ssp. *pumila* AH, DA, C, Aug.–Nov., Oct.–Dec.

Uria lagopodioides (L.) Desv. ex DC. AH, DA, C, June–Nov., Aug.–Dec.

RHIZOPHORACEAE

Ceriops decandra (Griff.) Hou ET, M, R, Jan.–March, July–Sept.

COMBRETACEAE

Combretum quadrangulare Kurz ET, DA, C, Aug.–Sept., Nov.–Jan.

Quisqualis indica L. (cultivated) EV, P/C, U, Nov.–Dec., fruits?

Terminalia calamansanai (Blanco) Rolfe

DT, S & DA, C, July–Aug., Nov.–Feb., May–Nov.

Terminalia catappa L. ET, B & P/C, U & C, July–Sept., Oct.–Dec.

LYTHRACEAE

Lagerstroemia balansae Koeh. ES/T^{lt}, S & DA, U, Sept.–Feb., Nov.–March

Lagerstroemia floribunda Jack var. *floribunda*

ET, DA, C, July–Nov., Nov.–March

Pemphis acidula Forst. ES, B, U, May–July, July–Sept.

Rotala indica (Willd.) Koeh. AH, DA, C, July–Dec., Aug.–Jan.

PASSIFLORACEAE

Adenia heterophylla (Bl.) Kds. ssp. *heterophylla* var. *heterophylla*

AV, DA, U, Jan.–March, fruits?

CUCURBITACEAE

Coccinia grandis (L.) Voigt A/PV, DA, C, Jan.–Dec., Jan.–Dec.

Gomphogyne cissiformis Griff. AV, S & DA, U, July–Sept., Oct.–Dec.

Neoalsomitra sarcophylla (Wall.) Hutch. EV, S, U, flowers?, fruits?

Neoalsomitra [*Alsomitra angustipetala* (Craib) Craib]

EV, S & DA, U, Aug.–Oct., fruits?

Solena heterophylla Lour. EV, DA, C, July–Sept., Sept.–Dec.

CACTACEAE

Opuntia elatior Mill. (naturalized) EH, DA, U, July–Aug., Sept.–Oct.

AIZOACEAE

Sesuvium portulacastrum (L.) L. EH, B, C, July–Sept., Aug.–Oct.

Trianthema portulacastrum L. A/PH, DA, C, Jan.–Dec., Jan.–Dec.

RUBIACEAE

Canthium dicoccum (Gaertn.) T. & B. var. *abbreviatum* Craib

ET, S, U, March–April, July–Sept.

Gardenia collinsae Craib DT^{lt}, S, U, Feb.–July, July–Nov., May–Nov.

Gardenia ?truncata Craib D[?]T, S, R, flowers? fruits?

Hedyotis pterita Bl. AH, S, C, July–Nov., Aug.–Dec.

Hymenodictyon orixense (Roxb.) Mabb. [*H. excelsum* (Roxb.) Wall.]

DT, S, U, May–June, Nov.–Feb., May–Nov.

RUBIACEAE (Cont.)

- Knoxia corymbosa* Willd. AH, DA, U, July–Oct., Aug.–Nov.
Morinda citrifolia L. ET, P/C, U, Jan.–March, April–June
Morinda coreia Ham. DT, S, U, April–June, July–Sept., May–Nov.
Paederia foetida L. var. *microcarpa* Kurz AV, DA, C, Sept.–Nov., Nov.–Jan.
Pavetta indica L. ET^{lt}, S, U, April–May, Sept.–Oct.
Tarenna vanprukii Craib var. *vanprukii*
 ET^{lt}, S, C, Feb.–March, Sept.–Nov.

COMPOSITAE

- Eupatorium odoratum* L. A/PH, DA, C, Dec.–Jan., Jan.–Feb.
Tridax procumbens L. A/PH, DA, C, Jan.–Dec., Jan.–Dec.
Vernonia cinerea (L.) Less. var. *cinerea*
 A/PH, DA, C, Jan.–Dec., Jan.–Dec.

SAPOTACEAE

- Manilkara hexandra* (Roxb.) Dub. ET, B, U, July–Aug., fruits?
Planchonella obovata (R. Br.) Pierre ET, S, R, flowers?, fruits?

EBENACEAE

- Diospyros bejardii* Lec. ET^{lt}/T, S, C, July–Aug., Nov.–Dec.
Diospyros castanea (Craib) Flet. ET, S & DA, U, Jan.–March, fruits?
Diospyros mollis Griff. DT, S & DA, U, April–May, Sept.–Nov.
Diospyros montana Roxb. DT, S, U, March–April, Aug.–Oct., March–Nov.
Diospyros pubicalyx Bakh. ET, S, C, April–May, Sept.–Dec.

OLEACEAE

- Jasminum funale* Dcne. EC, S, C, May–Nov., July–Dec.

APOCYNACEAE

- Aganosma marginata* (Roxb.) G. Don EWC, S, U, May–July, Oct.–Nov.
Cerbera manghas L. ET, DA, R, July–Aug., fruits?
Plumeria cultivars & hybrids ET^{lt}/T, P/C, C, Jan.–Dec., Jan.–Dec.
Wrightia arborea (Dennst.) Mabb. DT, DA, U, Aug.–Oct., May–June, May–Nov.

ASCLEPIADACEAE

- Calotropis gigantea* (Willd.) Dry. ex W.T. Ait.
 ES, B & DA, U, Jan.–Dec., Jan.–Dec.
Heterostemma ? *siamicum* Craib EV, DA, U, flowers?, fruits?
Hoya acuta Haw. var. *acuta* EV, S, C, Feb.–March, June–Aug.
Hoya diversifolia Bl. EV, S, C, May–July, fruits?
Hoya kerrii Craib (*H. obovata* Dcne.) EV, S, C, April–May, fruits?
Raphistemma hooperianum (Bl.) Dcne. EV, DA, R, Sept.–Oct., fruits?
Sarcostemma brunonianum Wight & Arn. EV, S, C, Jan.–March, Feb.–April
Secamone ferruginea Pierre ex Cost. EV/WC, S, C, Feb.–July, Oct.–Dec.

Tylophora indica (Burm. f.) Merr. EV, B & S, U, Feb.–Sept., fruits?
Zygotelma benthami Baill. EV, DA, C, July–Nov., fruits?

LOGANIACEAE

Cynoctonum mitreola (L.) Britt. AH, DA, U, Sept.–Dec., Oct.–Jan.

BORAGINACEAE

Cordia cochinchinensis Gagnep. ESc, DA, U, April–May, July–Nov.

CONVOLVULACEAE

Ipomoea digitata L. var. *digitata* A/PV, DA, U, flowers?, fruits?
Ipomoea nil (L.) Roth AV, DA, C, Oct.–Dec., Nov.–Jan.
Ipomoea obscura (L.) Ker–Gawl. AV, DA, C, Oct.–Feb., Nov.–March
Ipomoea pes-tigridis L. AV, DA, C, Aug.–Nov., Sept.–Dec.
Ipomoea tuba (Schlech.) G. Don PV, B & DA, C, July–Feb., Sept.–March
Jacquemontia paniculata (Burm. f.) Hall. f. var. *paniculata*
 AV, DA, C, Oct.–Feb., Nov.–March
Lettsomia (Argyreaia) *collinsae* (Craib) Kerr
 PV, DA & S, U, Aug.–Sept., fruits?
Merremia hederacea (Burm. f.) Hall. f. forma *pubescens* Oost.
 AV, DA, C, Dec.–Feb., Jan.–March

SCROPHULARIACEAE

Lindernia crustacea (L.) F. Muell. var. *crustacea*
 AH, DA, C, Aug.–Dec., Oct.–Feb.
Lindernia pierreanoides Yama. AH, DA, U, Aug.–Oct., Sept.–Nov.
Lindernia viscosa (Horn.) Bold. AH, DA, U, Sept.–Dec., Oct.–Jan.

GESNERIACEAE

Chirita hamosa Wall. ex R. Br. var. *hamosa*
 PDEIH, S, R, Aug.–Sept., Sept.–Oct., May–Nov.

BIGNONIACEAE

Millingtonia hortensis L. f. DT, DA, U, Oct.–Dec., Feb.–March, May–Feb.
Stereospermum colais (B.–H. ex Dill.) Mabb.
 DT, DA, U, April–May, Nov.–Feb., May–Nov.

ACANTHACEAE

Dipteracanthus repens (L.) Hassk. EH, DA, C, June–Sept., Aug.–Nov.
Justicia procumbens L. AH, DA, C, Sept.–Nov., Oct.–Dec.
Pseuderanthemum graciliflorum (Nees) Ridl.
 DPH, S, C, Oct.–Dec., Nov.–Jan., May–Dec.
Ruellia tuberosa L. PH, DA, C, July–Oct., Aug.–Nov.

VERBENACEAE

- Avicennia marina* (Forsk.) Vierh. ET, M, R, July–Aug., Oct.–Nov.
Clerodendrum inerme Gaertn. ES, B, U, Aug.–Oct., Oct.–Dec.
Glossocarya mollis Wall. ex Griff.
 DSc, S, C, Oct.–Nov., Dec.–Jan., May–Jan.
Lantana camara L. (naturalized) ES, DA, C, Jan.–Dec., Jan.–Dec.
Premna collinsae Craib DT, DA, U, Sept.–Oct., Dec.–Feb., May–Nov.
Premna corymbosa (Burm. f.) Rottle. & Willd. var. *corymbosa*
 DSc, S, C, Feb.–March, April–May, May–Nov.
Sphenodesme mollis Craib DWc, S, U, Nov.–Dec., Feb.–July, May–Dec.
Vitex limoniifolia Wall. ex Kurz
 DT, S & DA, C, Oct.–Nov., July–Aug., May–Nov.
Vitex pinnata L. DT, DA, C April–May, Aug.–Sept., May–Nov.

LABIATAE

- Leonotis nepetaefolia* (L.) R. Br. (naturalized)
 AH, P/C, U, Sept.–Nov., Nov.–Dec.
Leucas flaccida R. Br. AH, DA, C, Aug.–Nov., Sept.–Dec.

NYCTAGINACEAE

- Boerhavia diffusa* L. (naturalized) PH, DA, C, Jan.–Dec., Jan.–Dec.

AMARANTHACEAE

- Achyranthes aspera* L. AH, DA, C, Oct.–Jan., Nov.–Feb.
Alternanthera repens (L.) O.K. PH, DA, C, Jan.–Dec., Jan.–Dec.
Gomphrena celosioides Mart. AH, DA, C, Jan.–Dec., Jan.–Dec.

BASELLACEAE

- Basella alba* L. AV, S, U, Aug.–Nov., Oct.–Dec.

ARISTOLOCHIACEAE

- Aristolochia curtisii* King AV, S, U, flowers?, fruits?

OPILIACEAE

- Cansjera rheedii* J.F. Gmel. EWc, S, U, Oct.–Dec., March–April

EUPHORBIACEAE

- Acalypha indica* L. AH, DA, C, June–Nov., July–Dec.
Blachia siamensis Craib ET^{lt}, S, VC, Dec.–Jan., Feb.–March
Bridelia ovata Dcne. var. *ovata* ES/T^{lt}, S, C, April–Sept., Oct.–Dec.
Cladogynos orientalis Zipp. ex Span. ES, S, U, Aug.–Dec., Nov.–Jan.
Drypetes hoaensis Gagnep. ET^{lt}/T, S, C, Feb.–March, fruits?
Euphorbia antiquorum L. ET^{lt}/lt, S, VC, Oct.–Nov., Dec.–Feb.
Euphorbia heterophylla L. AH, DA, C, July–Oct., Aug.–Nov.
Euphorbia hirta L. A/Ph, DA, C, Jan.–Dec., Jan.–Dec.

- Euphorbia microphylla* Hey. ex Roth PH, DA, U, Jan.–Dec., Jan.–Dec.
Euphorbia prostrata W. Ait. PH, DA, U, Jan.–Dec., Jan.–Dec.
Euphorbia vachellii Hk. & Arn. AH, S & DA, U, July–Sept., Aug.–Oct.
Jatropha gossypifolia L. (naturalized)
 PEH/S, B & DA, VC, Jan.–Dec., Jan.–Dec.
Phyllanthus amarus Schumach. & Thonn. AH, DA, C, Jan.–Dec., Jan.–Dec.
Phyllanthus columnaris M.–A.
 DT, S & DA, U, July–Aug., Sept.–Oct., May–Nov.
Phyllanthus urinaria L. AH, DA, C, July–Sept., Aug.–Nov.
Sebastiania chamaelea (L.) M.–A. EPH, B, U, Aug.–Oct., Sept.–Nov.

ULMACEAE

- Celtis philippensis* Blanco var. *philippensis*
 ET'lt/T, S, C, Feb.–March, April–Aug.

MORACEAE

- Ficus annulata* Bl. ET, S, C, Oct.–Dec., Nov.–Jan.
Ficus geniculata Kurz ET'lt, S, C, Sept.–Nov., Oct.–Dec.
Ficus heterophylla L. f. var. *heterophylla*
 EWC, DA, U, Sept.–Dec., Oct.–Jan.
Ficus rumphii Bl. DT, S, U, Feb.–April, March–May, May–Feb.
Ficus superba (Miq.) Miq. var. *superba*
 DT, S & DA, U, Nov.–Jan., Dec.–Feb., May–Dec.
Streblus asper Lour. ET'lt/T, S & DA, C, Aug.–Oct., fruits?

ANGIOSPERMS–MONOCOTS

COMMELINACEAE

- Commelina benghalensis* L. A/PH, DA, C, Aug.–Oct., Sept.–Nov.
Commelina paludosa Bl. A/PH, DA, C, Aug.–Oct., Sept.–Nov.
Cyanotis cristata (L.) D. Don DPH, DA, C, Aug.–Dec., Sept.–Jan., May–Nov.
Murdannia scapiflora (Roxb.) Roy. DPH, DA, C, April–May, June–July, May–Nov.

FLAGELLARIACEAE

- Flagellaria indica* L. EV, B, R, flowers?, fruits?

ZINGIBERACEAE

- Costus speciosus* (Koeh.) J.E. Sm. DPH, DA, C, Aug.–Sept., Oct.–Dec., May–Nov.
Curcuma sp. DPH, S & DA, U, flowers?, fruits?, May–Nov.
Globba villosula Gagnep. DPH, S & DA, C, Aug.–Sept., Oct.–Dec., May–Nov.

LILIACEAE

- Asparagus cochinchinensis* (Lour.) Merr.
 DPV, S & DA, U, flowers?, April–July, May–Dec.

Gloriosa superba L. DPV, DA, U, July–Sept., fruits?, May–Dec.

AGAVACEAE

Dracaena lourieri Gagnep. ET'lt/T, S, VC, July–Aug., Aug.–Oct.

AMARYLLIDACEAE

Crinum ?wattii Bak. DPH, DA, U, flowers?, fruits?, Feb.–Nov.

SMILACACEAE

Smilax ?bracteata Presl ssp. *bracteata* EV, B, U, flowers?, fruits?

ARACEAE

Aglaonema simplex Bl. EPH, S, C, April–July, Oct.–Nov.

Amorphophallus longituberosus (Engl.) Engl. & Gehrm.

DPH, S, C, Feb.–May, April–June, May–Nov.

Pseudodracontium harmandii Engl.

DPH, S, VC, April–Aug., Aug.–Nov., April–Nov.

Rhaphidophora peepla (Roxb.) Schott EV, S, U, July–Aug., fruits?

Typhonium sp. DPH, DA, C, Aug.–Sept., Sept.–Oct., May–Nov.

TYPHACEAE

Typha angustifolia L. EPH, aquatic, U, July–Aug., Nov.–Dec.

STEMONACEAE

Stemona tuberosa Lour. DPV, S & DA, C, April–May, May–June, May–Nov.

DIOSCOREACEAE

Dioscorea alata L. DPV, DA, C, Nov.–Dec., Feb.–March, May–Nov.

Dioscorea arachidna Pr. & Burk. var. *collinsae* (Pr. & Burk.) Pr. & Burk.

DPV, DA, U, Sept.–Oct., fruits?, May–Nov.

Dioscorea bulbifera L. DPV, DA, U, Sept.–Nov., Nov.–Jan., May–Nov.

Dioscorea hispida Denn. var. *reticulata* (Hk. f.) Pr. & Burk.

DPV, DA, C, April–June, Oct.–Nov., May–Nov.

Dioscorea membranacea Pierre ex Pr. & Burk.

DPV, DA, U, June–Aug., Aug.–Oct., May–Nov.

Dioscorea oryzetorum Pr. & Burk. var. *latifolia* Pr. & Burk.

DPV, S & DA, U, June–Aug., Nov.–Dec., May–Nov.

PALMAE

Calamus sp. EWC, DA, R, flowers?, fruits?

HYPOXIDACEAE

Hypoxis aurea Lour. D/EPH, S & DA, U, Aug.–Oct., Sept.–Nov.

ORCHIDACEAE

Cymbidium sp. EEpH, S, U, flowers?, fruits?

Eulophia andamanensis Rchb. f. DPH, S, C, May–June, July–Aug., May–Dec.

CYPERACEAE

Cyperus iria L. AH, DA, U, July–Oct., Aug.–Nov.

Cyperus rotundus L. ssp. *rotundus* PH, DA, C, Jan.–Dec., Jan.–Dec.

Fimbristylis adenolepis Kern AH, DA, C, July–Nov., Aug.–Dec.

GRAMINEAE

Brachiaria setigera (Retz.) C.E. Hubb. AH, DA, C, Sept.–Nov., Oct.–Dec.

Cenchrus brownii Roem. & Schult. PH, DA, C, Jan.–Dec., Jan.–Dec.

Chloris barbata Sw. AH, DA, C, Jan.–Dec., Jan.–Dec.

Chrysopogon orientalis (Desv.) A. Camus

DPH, DA, VC, Oct.–Dec., Nov.–Dec., May–Dec.

Cyrtococcum accrescens (Trin.) Stapf AH, DA, C, Sept.–Dec., Oct.–Jan.

Dactyloctenium aegyptium (L.) P. Beauv. PH, DA, C, Jan.–Dec., Jan.–Dec.

Digitaria ciliaris (Retz.) Koel. AH, DA, C, Aug.–Oct., Sept.–Nov.

Digitaria sp. AH, DA, C, Sept.–Nov., Oct.–Dec.

Diplachne fusca (L.) P. Beauv. AH, DA, U, Aug.–Oct., Sept.–Nov.

Echinochloa colonum (L.) Link PH, DA, C, Jan.–Dec., Jan.–Dec.

Eleusine indica (L.) Gaertn. PH, DA, C, Jan.–Dec., Jan.–Dec.

Eragrostis tenella (L.) P. Beauv. ex Roem. & Schult. var. *tenella*

AH, DA, C, Aug.–Oct., Sept.–Nov.

Eriochloa procera (Retz.) C.E. Hubb. A/PH, DA, C, Jan.–Dec., Jan.–Dec.

Heteropogon contortus (L.) P. Beauv. ex Roem. & Schult.

DPH, DA, C, Oct.–Nov., Nov.–Dec., May–Dec.

Leptochloa chinensis (L.) Nees AH, DA, C, Jan.–Dec., Jan.–Dec.

Pennisetum pedicellatum Trin. DPH, DA, C, Oct.–Dec., Nov.–Jan., May–Jan.

Phragmites vallatoria (Pluk. ex L.) Veldk.

EPH, DA, C, Oct.–Dec., Nov.–Jan.

Rhynchelytrum repens (Willd.) C.E. Hubb. (naturalized)

AH, DA, C, Aug.–Dec., Sept.–Jan.

Sehima nervosum (Rottl.) Stapf DPH, DA, C, Oct.–Dec., Nov.–Jan., May–Jan.

Setaria verticillata (L.) P. Beauv. AH, DA, C, Aug.–Dec., Sept.–Jan.

Sporobolus virginicus (L.) Kunth EPH, B, U, Aug.–Oct., Sept.–Nov.

Tripogon aff. jacquemontii Stapf AH, DA, C, Oct.–Dec., Nov.–Jan.

Urochloa panicoides P. Beauv. var. *pubescens* (Kunth) Bor

A/PH, DA, C, Jan.–Dec., Jan.–Dec.

BAMBUSOIDEAE

Thyrostachys siamensis (Kurz ex Munro) Gamb. (cultivated)

EH/S, P/C, U, flowers?. fruits?

FERN ALLY & FERNS**SELAGINELLACEAE**

Selaginella ostenfeldii Hieron. PDH, DA, C, strobili Oct.–Dec.,
stem and leaves May–Dec.

PARKERIACEAE

Adiantum zollingeri Mett. ex Kuhn PDH, DA, C, sori Oct.–Feb.,
fronds May–Dec.

POLYPODIACEAE

Drynaria quercifolia (L.) J. Sm, DEIEpPH, S, C, sori May–Oct.,
fertile fronds April–Nov.

Pyrrosia adnascens (Sw.) Ching EEIEpPH, S, C, sori July–Sept.,
fronds Jan.–Dec.

Summary of native and naturalized plants on Si Chang Island

	Families	Species, etc.
Angiosperms		
Dicots	53	196
Monocots	16	74
Fern Allies and Ferns	<u>3</u>	<u>4</u>
Total	<u>72</u>	<u>274</u>