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VASCULAR FLORA OF DOI MUANG AWN, CHIANG MAI PROVINCE, NORTHERN THAILAND

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ABSTRACT

A complete floristic survey of this rugged limestone mountain was conducted. The original primary, deciduous, seasonal hardwood forest with bamboo has been destroyed. A very degraded, fire-damaged remnant of this kind of forest persists with some deciduous dipterocarp-oak, seasonal, hardwood forest components in very degraded places. A total of 69 families and 227 species, *etc.* of vascular plants were found. Information concerning the habit, seasonality, habitat, abundance, as well as flowering, fruiting, and leafing phenologies are included for each taxon. The area is in desperate need of conservation.

INTRODUCTION

Doi (mountain) Muang* Awn** is an isolated limestone hill located at Mae Awn Village, Sahagawn Subdistrict, Mae Awn Branch District (formerly included in Sahngampang District) Chiang Mai Province, northern Thailand. It is situated along highway 1317 at km. 28. The mountain is an integral part of Wat (temple) Tahm (cave) Muang Awn (at *c.* 450 m. elevation) and includes a cave (Wiang Pah Cave at *c.* 550 m.) with Buddhist statues inside, on the east side, other caves on the base of the west side, and a Buddhist shrine on the summit (*c.* 700 m). It's coordinates are approximately 18°47'N latitude and 99°15'E longitude. The mountain is also known as Doi Tham, includes an area of *c.* 0.25 km^2 (25 ha), and is about 25 km east of the centre of Chiang Mai City. We were attracted to this place because it is the closest limestone area to Chiang Mai University and is readily accessible for rewarding day collecting trips. Our first visit there was in July 1989 with intermittent visits until late 1998.

GEOLOGY AND CLIMATE

The area includes a narrow, N-S band of Permian limestone belonging to the Pha Huay Formation, Ratburi Group, which is about 250 million years old (Geological Map of Thailand, 1977). The landscape is typically rugged and cracked with numerous depressions, sinkholes, vertical cliffs, and caves; but lacks flowing water. A nearby hill to the NE has recently been destroyed by quarrying.

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** in reference to the brownish colour of the water in the Mae Awn River due to heavy turbidity during the rainy season

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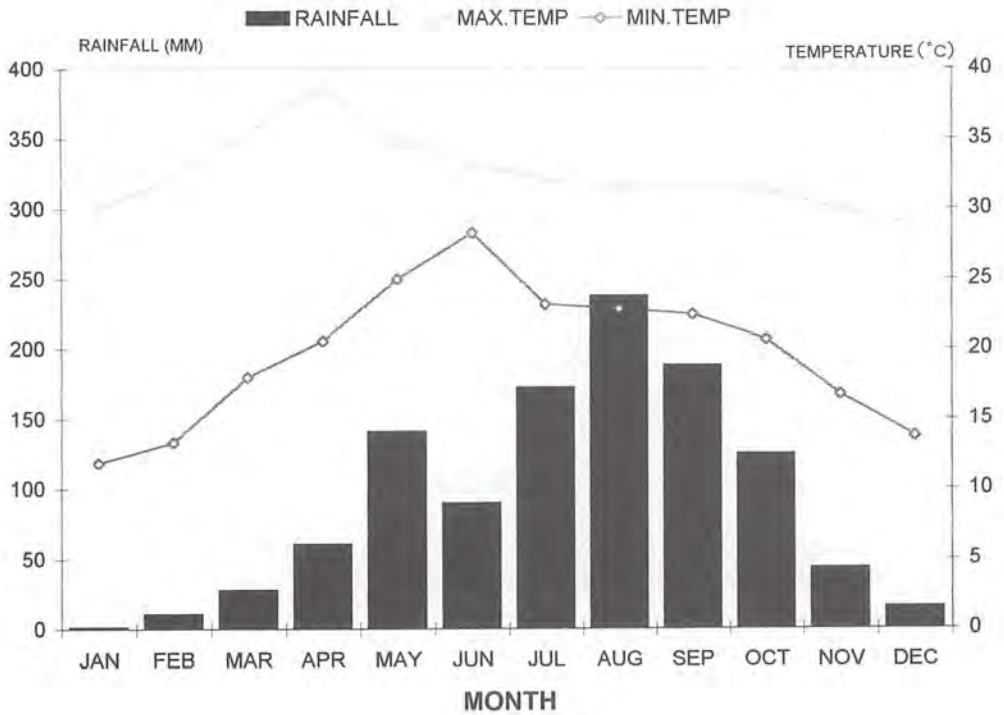

Figure 1. Temperature and rainfall averages at Doi Muang Awn, 1989–1998.
Source: Meteorological Department, Chiang Mai.

The climate of northern Thailand is seasonal (monsoonal) with three distinct seasons. The rainy season is from June to October with annual averages of over 1000 mm in the lowlands. A cool, dry period follows from November to February with an average temperature range of 15–35°C in lowland areas. The hot, dry season is from March to May when lowland temperatures frequently are over 40°C. Forest fires are started during this time which usually burn all of the dry vegetation on the mountain.

Climatological data for Doi Muang Awn is from Chiang Mai, the closest recording station (Figure 1). The hottest month is April while the coolest is January. The highest temperature recorded during our study period was 41.4°C in April 1995 and the lowest was 7.7°C in December 1993. August is typically the wettest month with a high of 340.4 mm in August 1991. December, January, and February have the lowest amount of rain and in most years there is none. The most amount of rain was in 1994 with 1442.1 mm and the least was 738.7 mm in 1993. The average amount of rain from 1989–1998 is 1108.9 mm.

VEGETATION

Doi Muang Awn has suffered from extensive logging, but still retains vestiges of it's original facies. The epilithic flora (calciphytes) is well-developed in places, but as with the geophytic flora, degradation has caused the area to become hotter, drier, and more exposed than it originally was. We have been able to study the flora of some other lowland limestone areas in northern Thailand, the most intact being at Doi Chiang Dao, Chiang Mai Province, which is *c.* 80 km to NW (MAXWELL, 1992; 1996; MAXWELL *ET AL.* 1997). Chiang Mai City was established 700 years ago and since that time the vegetation in all lowland areas in the region has been either completely destroyed or severely degraded. The presence of an ancient ceramic industry *c.* 5 km east of Doi Muang Awn at Mae Awn Reservoir indicates that the vegetation has been abused for a long time. Centuries of logging, hunting, grazing, and fire have resulted in very degraded, deciduous, often scrub vegetation in the Muang Awn area (Figures 2, 3).

The original lowland forest cover in northern Thailand was primary, deciduous, and quite seasonal. It was composed of large (30–40 m), commercially valuable, hardwood trees dominated by *Tectona grandis* L. f. (Verbenaceae, teak), with lesser amounts of *Xylia xylocarpa* (Roxb.) Taub. var. *kerrii* (Craib & Hutch.) Niels. (Leguminosae, Mimosoideae), *Pterocarpus macrocarpus* Kurz (Leguminosae, Papilionoideae), *Afzelia xylocarpa* (Kurz) Craib (Leguminosae, Caesalpinioideae); *Hymenodictyon orixense* (Roxb.) Mabb., *Mitragyna rotundifolia* (Roxb.) O.K., and *M. hirsuta* Hav. (all Rubiaceae). Less valuable canopy species included: *Lagerstroemia cochinchinensis* Pierre var. *ovalifolia* Furt. & Mont. and *L. tomentosa* Presl (Lythraceae), *Garuga pinnata* Roxb. (Burseraceae), *Spondias pinnata* (L. f.) Kurz (Anacardiaceae), *Terminalia bellirica* (Gaertn.) Roxb. (Combretaceae), *Tetrameles nudiflora* R. Br. *ex* Benn. (Datiscaceae), *Irvingia malayana* Oliv. *ex* Benn. (Irvingiaceae), which is evergreen; and *Chukrasia tabularis* A. Juss. (Meliaceae). The more commercially valuable timber trees have been extensively exploited, so much so that most of the original canopy species are rare or uncommon and rarely large. Only remnants of this kind of forest remain, the largest and most intact being in Mae Yom National Park, Prae Province. The vegetation in this forest has been studied, thus comparisons between this places and other lowland forested areas in northern Thailand can be made (MAXWELL, 1992a).

Understorey (up to *c.* 20 m) trees included: *Berrya mollis* Wall. *ex* Kurz and *Colona flagrocarpa* (Cl.) Craib (both Tiliaceae), *Cassia fistula* L. (Leguminosae, Caesalpinioideae), *Millettia brandisiana* Kurz and *Dalbergia cultrata* Grah. *ex* Bth. (both Leguminosae, Papilionoideae), *Anogeissus acuminata* (Roxb. *ex* DC.) Guill. & Perr. and *Combretum quadrangulare* Kurz (both Combretaceae), *Schleichera oleosa* (Lour.) Oken (Sapindaceae), and *Vitex limoniifolia* Wall. *ex* Kurz (Verbenaceae). *Bambusa membranacea* (Munro) Stap. & Xia, *Bambusa bambos* (L.) Voss. *ex* Vilm., *B. tulda* Roxb., *B. vulgaris* Schrad. *ex* Wend. var. *vulgaris, Cephalostachyum pergracile* Munro, and other bamboos (Gramineae, Bambusoideae) are also common. These bamboos, as well as many of the less valuable canopy and understorey trees, have become more abundant as more gaps have been created in the canopy. Forested areas which still retain vestiges of the original, albeit degraded, facies are still primary in succession. We have called this kind of for-mation deciduous hardwood + bamboo (BB/DF) (MAXWELL, *op. cit.*; MAXWELL *ET AL.*, *op. cit.*).

The original canopy on Doi Muang Awn has been totally destroyed while the understorey is patchy and consists of both immature canopy and understorey trees. The tallest trees are presently up to *c.* 15 m tall and are in constant threat of being cut. Some of the original canopy components which are still present include: *Tectona grandis, Xylia xylocarpa* var. *kerrii, Afzelia xylocarpa, Hymenodictyon orixense, Mitragyna rotundifolia, Garuga pinnata, Spondias pinnata,* and *Chukrasia tabularis.* None of these trees are of mature size; however, many individuals are reproductive. Coppicing, stunting, and various irregular or deformed growth due to fire and hacking are common.

Understorey trees, most of which form much of the present canopy, include: *Bombax anceps* Pierre var. *anceps* (Bombacaceae), *Colona flagrocarpa, Sterculia villosa* Roxb. (Sterculiaceae), *Cassia fistula, Dalbergia cana* Grah. *ex* Kurz var. *cana* and *D. cultrata* (Leguminosae, Papilionoideae), *Anogeissus acuminata, Schleichera oleosa, Morinda tomentosa* Hey. *ex* Roth (Rubiaceae); *Vitex canescens* Kurz, *V. limoniifolia, V. peduncularis* Wall. *ex* Schauer (Verbenaceae); *Markhamia stipulata* (Wall.) Seem. *ex* K. Sch. var. *stipulata* and *Stereospermum neuranthum* Kurz (both Bignoniaceae). *Bambusa membranacea* and *Thyrsostachys siamensis* (Kurz *ex* Munro) Gamb. (both Gramineae, Bambusoideae) are, in most places, either dominant or as common as the woody flora. *Chionanthus ramiflorus* Roxb. (Oleaceae, Figure 10), an evergreen tree, is also found among all the deciduous species there.

The ground flora is diverse and consists of both annual and deciduous perennial herbs as well as seedlings of woody species. Some common annuals are: *Polygala umbonata* Craib (Polygalaceae), *Rungia parviflora* (Retz.) Nees var. *ciliata* Brem. (Acanthaceae), *Digitaria bicornis* (L.) Roem. & Schult. and *Urochloa reptans* (L.) Stapf (both Gramineae), and *Selaginella repanda* (Desv.) Spr. (Selaginellaceae). Deciduous perennial herbs include: *Gynura pseudochina* (L.) DC. (Compositae), *Barleria cristata* L. and *B. strigosa* Willd. (Acanthaceae), *Chloranthus nervosus* Coll. & Hemsl. (Chloranthaceae), *Premna nana* Coll. & Hemsl. (Verbenaceae), *Sauropus hirsutus* Beille (Euphorbiaceae), *Commelina diffusa* Burm. f. (Commelinaceae); *Boesenbergia longiflora* (Wall.) O.K., *Curcuma zedoaria* (Berg.) Rosc., and *Globba kerrii* Craib (all Zingiberaceae); *Amorphophallus macrorhizus* Craib (Figure 7) and *A. paeoniifolius* (Denn.) Nichol. (Figures 5, 6), *Arisaema cuspidatum* (Roxb.) Engl., and *Hapaline benthamiana* Schott (all Araceae), *Geodorum recurvum* (Roxb.) Alst. (Orchidaceae, Figure 8), *Oryza meyeriana* (Zoll. & Mor.) Baill. var. *granulata* (Watt) Duist. (Gramineae, wild rice), and *Selaginella ostenfeldii* Hier. (Selaginellaceae).

Some common deciduous vine are: *Stephania oblata* Craib, *Tinospora crispa* (L.) Hk. f. & Thoms., and *T. sinensis* (Lour.) Merr. (all Menispermaceae), *Ampelocissus martinii* Planch. (Vitaceae), *Paederia pallida* Craib (Rubiaceae), *Smilax verticalis* Gagnep. (Smilacaceae), *Stemona kerrii* Craib (Stemonaceae); *Dioscorea alata* L., *D. decipiens* Hk. f., and *D. membranacea* Pierre *ex* Prain & Burk. (Dioscoreaceae). Some annual vines are: *Cardiospermum halicacabum* L. var. *halicacabum* (Sapindaceae); *Diplocyclos palmatus* (L.) C. Jeff., *Gomphogyne cissiformis* Griff., and *Trichosanthes rubriflos* Thor. *ex* Cay. (all Cucurbitaceae), and *Ipomoea nil* (L.) Roth var. *nil* (Convolvulaceae).

Woody climbers are uncommon and are all deciduous. Some examples are: *Millettia extensa* (Bth.) Bth. *ex* Baker (Leguminosae, Papilionoideae), *Ventilago denticulata* Willd. (Rhamnaceae), *Aganosma marginata* (Roxb.) G. Don (Apocynaceae), and *Argyreia aggregata* Roxb. var. *aggregata* (Convolvulaceae). *Harrisonia perforata* (Blanco) Merr. (Simaroubaceae), *Pueraria stricta* Kurz, and *P. wallichii* DC. (Leguminosae, Papilionoideae)

Figure 2. Doi Muang Awn, SW. side, during the hot, dry season. Photo: P. Palee, 2 May 1995.

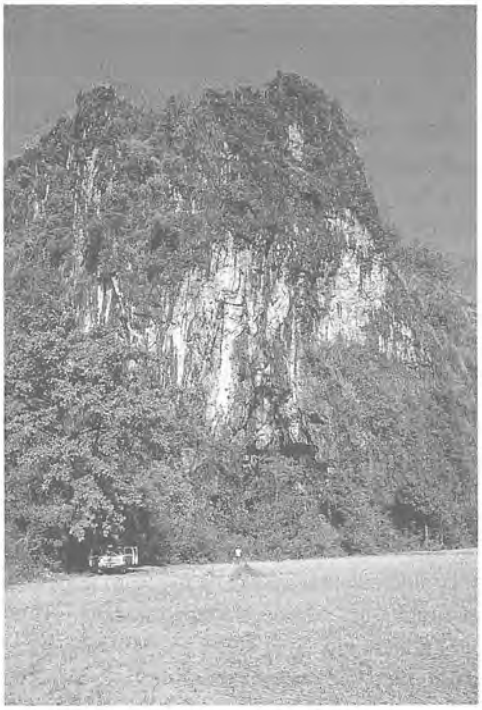

Figure 3. Doi Muang Awn, SW. side, during the rainy season. Photo: P. Palee, 28 August 1998

Figure 4. West side of Doi Muang Awn showing the rugged vertical cliffs with deciduous, epilithic vegetation. Photo: P. Palee, 29 July 1998.

are common deciduous shrubs which are often scandent. *Desmodium laxiflorum* DC. ssp. *laxiflorum* (Leguminosae, Papilionoideae), *Antidesma acidum* Retz., and *Mallotus montanus* (M.–A.) A.S. (both Euphorbiaceae) are some examples of deciduous shrubs and treelets.

Some common epiliths, most of which are annual or deciduous, are: *Impatiens violaeflora* Hk. f. (Balsaminaceae), *Lindenbergia indica* (L.) Vat. (Scrophulariaceae), *Chirita hamosa* Wall. *ex* R. Br. and *C. kerrii* Craib (Gesneriaceae), *Cyanotis cristata* (L.) D. Don (Commelinaceae), *Colocasia fallax* Schott (Araceae), and *Adiantum zollingeri* Mett. *ex* Kuhn (Parkeriaceae). *Epipremnum giganteum* (Roxb.) Schott (Araceae) is an evergreen, epilithic vine/creeper found in mostly shaded places on the limestone. *Boehmeria malabarica* Wall. *ex* Wedd. (Urticaceae, Figure 9), a deciduous shrub; *Firmiana kerrii* (Craib) Kosterm. (Sterculiaceae), a deciduous, epilithic treelet; and *Ficus geniculata* Kurz (Moraceae), a deciduous, epilithic treelet or small tree; are only known from exposed, rocky, rugged areas (Figure 4).

Deciduous Dipterocarp–Oak, Seasonal, Hardwood Forest (DOF)

As in other BB/DF areas in northern Thailand, severely degraded habitats often have varying degrees of DOF components. Clear-cut BB/DF areas have usually regenerated into DOF, which is a secondary, fire-climax kind of forest and includes many species which are not found in BB/DF (MAXWELL, 1992, 1996; MAXWELL *ET AL.*, 1997). The hills surrounding Doi Muang Awn are very degraded DOF (scrub) which is vastly inferior growth compared to that on Doi Muang Awn. DOF species have mixed with BB/DF on Doi Muang Awn, but not enough to be distinguished as DOF. The most common DOF components include: *Shorea obtusa* Wall. *ex* Bl. and *S. siamensis* Miq. var. *siamensis* (Dipterocarpaceae), *Terminalia alata* Hey. *ex* Roth and *T. chebula* Retz. var. *chebula* (Combretaceae), all deciduous trees; and *Catunaregam spathulifolia* Tirv. (Rubiaceae), a deciduous treelet–small tree (Figure 11). *Geniosporum coloratum* (D. Don) O.K. (Labiatae) and *Liparis sootepensis* Rol. *ex* Dow. (Orchidaceae), are deciduous ground herbs. Further destruction of the BB/DF on Doi Muang Awn will allow more DOF to develop there.

CONSERVATION

Doi Muang Awn, amazingly, has been excluded from Mae Dah Cry National Park in which most of the deforested and scrub-covered hills in the area are included. This is unfortunate since if the mountain were officially under the auspices of the national park then there could be putative control of the forest desruction there. As it is, the forest has absolutely no chance to regenerate since cutting and arson are uncontrollable. Since the area is under the management of Muang Awn Temple, it should be possible to organize a conservation programme there since Buddhist monks are usually receptive and become interested in such efforts. Their major concern in Doi Muang Awn is the caves which have Buddhist images inside. The ecological and environmental values of rehabilitating the BB/DF forest there as well as protecting many of the caves from desecration and bat poaching are numerous and simple: prevent further cutting, burning, poaching, *etc.* and promote forest growth and monastic serenity there. Along with cooler ground temerpatures, shade, and increased biodiversity—all basic requirements for meditation, conservation of Doi

Figure 5. *Amorphophallus paeoniifolius* (Denn.) Nichol. (Araceae). This genus of deciduous, perennial, ground herbs produces inflorescences and infructescences (Figure 6) separately and in different years from the leaves. Photo: P. Palee, 2 May 1995 (Palee 277).

Figure 6. *Amorphophallus paeoniifolius* (Denn.) Nichol. (Araceae), infructescence. Photo: P. Palee, 17 November 1995.

Figure 7. *Amorphophallus macrorhizus* Craib (Araceae), a deciduous, perennial, ground herb which has elongate tubers deep in the soil. Photo: P. Palee, 2 May 1995 (Palee 276).

Figure 8. *Geodorum recurvum* (Roxb.) Alst. (Orchidaceae), a common, deciduous, perennial, ground herb. Photo: P. Palee, 5 June 1995 (Palee 289).

Figure 9. *Boehmeria malabarica* Wall. *ex* Wedd. (Urticaceae), on the summit of Doi Muang Awn (700 m). This is a deciduous, monoecious, epilithic shrub found in exposed places on the rugged limestone. Photo: P. Palee, 22 July 1998 (Palee 386).

Figure 10. *Chionanthus ramiflorus* Roxb. (Oleaceae), one of the few evergreen trees found on Doi Muang Awn; this one on the summit cliffs on the west side; Photo: P. Palee, 22 July 1998 (Maxwell 98–724).

Figure 11. *Catunaregam spathulifolia* Tirv. (Rubiaceae), a deciduous treelet or small tree found in deciduous, dipterocarp-oak, seasonal, hardwood forested areas on Doi Muang Awn. Photo: P. Palee, 22 July 1998 (Palee 389).

Muang Awn could be an example to others that forest conservation is far more beneficial and progressive than rampant pillaging and devastation, especially when the mountain is the last place in the area that has any forest or natural features remaining.

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Appendix 1. List of species. The details, in coded form, for each species are presented in the following order: habit, seasonality, habitat, abundance; flowering, fruiting, and leafing periods. The coded abbreviations are as follows:

habit:

cr	=	creeping
cul	=	cultivated
epi	=	epiphyte
epl	=	epilithic
g	=	ground
h	=	herb
l	=	treelet
par	=	parasite
s	=	shrub
sc	=	scandent
t	=	tree
v	=	vine
wc	=	woody climber

seasonality:

a	=	annual
d	=	deciduous
e	=	evergreen
p	=	perennial

habitat:

bb/df	=	bamboo + deciduous forest
da	=	disturbed area
dof	=	deciduous dipterocarp–oak forest
sg	=	secondary growth

abundance:

1	=	rare
2	=	uncommon
3	=	common
4	=	abundant

phenology:

fl	=	flowering
fr	=	fruiting
lf	=	leafing

months:

ja	=	January
fb	=	February
mr	=	March
ap	=	April
my	=	May
jn	=	June
jl	=	July
ag	=	August
sp	=	September
oc	=	October
nv	=	November
dc	=	December

Species	Habit	Seasonality	Habitat	Abundance	Phenology		
					fl	fr	lf
ANGIOSPERMS-DICOTS							
Annonaceae							
Cananga latifolia (Hk. f. & Th.) Fin. & Gagnep.	t	pd	bb/df	4	my-jn	my-jn	my-dc
Menispermaceae							
Cyclea barbata Miers	v	pd	bb/df	3	ag-oc	ag-oc	my-dc
Cyclea varians Craib	v	a	bb/df	4	jn-ag	jl-sp	my-dc
Stephania oblata Craib	v	pd	bb/df	3	my-jl	jn-ag	my-dc
Tinospora crispa (L.) Hk. f. & Thoms.	v	pd	bb/df	3	fb-mr	ap-jn	jn-dc
Tinospora sinensis (Lour.) Merr.	v	pd	bb/df	3	ja-fb	ap-my	jn-dc
Polygalaceae							
Polygala umbonata Craib	gh	a	bb/df	4	sp-dc	oc-ja	jn-ja
Dipterocarpaceae							
Shorea obtusa Wall. *ex* Bl.	t	pd	dof, bb/df	3	mr-ap	my-jn	ap-dc
Shorea siamensis Miq. var. *siamensis*	t	pd	dof, bb/df	3	ja-fb	mr-ap	ap-dc
Malvaceae							
Hibiscus glanduliferus Craib	l	pd	bb/df	3	jl-oc	dc-fb	my- ja
Sida mysorensis Wight & Arn.	gh	pd	bb/df	4	dc-fb	ja-mr	jn-mr
Urena lobata L. ssp. *lobata* var. *lobata*	gh	pe	bb/df	3	sp-ja	nv-mr	ja-dc
Bombacaceae							
Bombax anceps Pierre var. *anceps*	t	pd	bb/df	3	nv-ja	mr-ap	my-dc
Sterculiaceae							
Firmiana kerrii (Craib) Kosterm.	t (l)	pd	rocks, cliffs in bb/df	3	ja-fb	mr-ap	my-dc
Helicteres hirsuta Lour.	s	pd	bb/df	4	sp-oc	nv-fb	my-fb
Sterculia villosa Roxb.	t	pd	bb/df	3	ja-fb	sp-jn	ap-dc
Tiliaceae							
Colona floribunda (Kurz) Craib	t	pd	bb/df	3	sp-nv	nv-ja	ap-ja

Species	Habit	Seasonality	Habitat	Abundance	Phenology		
					fl	fr	lf
Grewia abutilifolia Vent. *ex* Juss.	s	pd	bb/df	4	my-jl	oc-nv	my-dc
Grewia eriocarpa Juss.	t (l)	pd	bb/df	3	ap-jn	ag-oc	ap-dc
Grewia hirsuta Vahl	l (wc,s)	pd	rocks, cliffs in bb/df	3	jl-ag	sp-nv	my-dc
Grewia polygama Roxb.	l (s)	pd	bb/df	4	jl-sp	oc-nv	my-dc
Oxalidaceae							
Biophytum sensitivum (L.) DC.	gh	a	bb/df	4	jl-oc	ag-nv	my-dc
Balsaminaceae							
Impatiens violaeflora Hk. f.	epl, gh	a	bb/df	4	jn-oc	jl-nv	my-dc
Simaroubaceae							
Harrisonia perforata (Blanco) Merr.	wc, sc	pd	da, sg in bb/df	3	ap-my	sp-oc	ap-dc
Burseraceae							
Canarium subulatum Guill.	t	pd	dof, bb/df	3	ap-my	jl-ag	my-dc
Garuga pinnata Roxb.	t	pd	bb/df	4	fb-mr	my-jl	my-dc
Protium serratum (Wall. *ex* Colebr.) Engl.	t	pd	bb/df	3	fb-ap	jl-ag	mr-fb
Meliaceae							
Chukrasia tabularis A. Juss.	t	pd	bb/df	4	jn-sp	ja-my	my-ja
Rhamnaceae							
Ventilago denticulata Willd.	wc	pd	rocks, cliffs in bb/df	3	oc-nv	ja-fb	ap-fb
Vitaceae							
Ampelocissus martinii Planch.	v	pd	bb/df	3	mr-ap	sp-oc	ap-dc
Cayratia trifolia (L.) Dom. var. *trifolia*	v	pd	bb/df	3	my-ag	ag-nv	my-dc
Cissus hastata Miq.	v	pd	bb/df	4	ag-oc	oc-dc	my-dc
Leeaceae							
Leea rubra Bl. *ex* Spreng.	gh (l)	pd	bb/df	3	jn-jl	ag-oc	my-dc
Sapindaceae							
Cardiospermum halicacabum L. var. *halicacabum*	v	pd	bb/df	3	sp-oc	nv-dc	my-nv

Species	Habit	Seasonality	Habitat	Abundance	Phenology		
					fl	fr	lf
Schleichera oleosa (Lour.) Oken	t	pd	dof, bb/df	3	mr-my	my-jl	ap-dc
Sisyrolepis muricata (Pierre) Leenh.	t	pd	rocks in	3	my-jn	ap-my	ap-dc
Anacardiaceae							
Buchanania lanzan Spreng.	t	pd	dof	3	ja-mr	mr-my	my-fb
Lannea coromandelica (Houtt.) Merr.	t	pd	dof mxf	3	ja-mr	ap-my	ap-dc
Spondias pinnata (L. f.) Kurz	t	pd	bb/df	3	fb-mr	jl-sp	my-dc
Leguminosae, Mimosoideae							
Acacia megaladena Desv. var. *indo-chinensis* I. Neils.	wc	pd	da in bb/df	3	jl-ag	nv-dc	my-dc
Albizia odoratissima (L. f.) Bth.	t	pd	bb/df	3	ap-my	oc-ja	my-ja
Mimosa diplotricha C. Wright *ex* Sauv. var. *diplotricha*	gh	a	da in dof	4	sp-nv	nv-ja	jn-ja
Leguminosae, Caesalpinioideae							
Afzelia xylocarpa (Kurz) Craib	t	pd	bb/df	3	mr-ap	ag-fb	mr-dc
Bauhinia racemosa Lmk.	t (l)	pd	bb/df	2	nv-dc	sp-oc	my-dc
Bauhinia viridescens Desv. var. *viridescens*	s	pd	bb/df	3	ag-sp	nv-ja	my-ja
Caesalpinia hymenocarpa (Prain) Hatt.	wc, sc	pd	bb/df	3	sp-oc	dc-ja	my-fb
Cassia fistula L.	t	pd	bb/df	3	mr-ap	ja-mr	ap-dc
Tamarindus indica L.	cul, t	pe	da in bb/df	3	my-jn	ja-mr	ja-dc
Leguminosae, Papilionoideae							
Cajanus scarabaeoides (L.) du P.-T. var. *scarabaeoides*	v	pe	bb/df	3	sp-dc	ag-dc	ja-dc
Crotalaria spectabilis Roth ssp. *spectabilis*	h	pd	bb/df	3	oc-nv	nv-ja	sp-ja
Dalbergia cana Grah. *ex* Kurz var. *cana*	t	pd	bb/df	3	fb-mr	ap-my	ap-dc
Dalbergia cultrata Grah. *ex* Bth.	t	pd	bb/df	3	mr-ap	sp-oc	ap-dc
Dalbergia rimosa Roxb.	sc, wc (t)	pd	bb/df	3	ap-jl	sp-dc	mr-dc
Desmodium gangeticum (L.) DC.	s (l)	pd	bb/df	3	oc-nv	dc-ja	my-ja
Desmodium laxiflorum DC. ssp. *laxiflorum*	l (h)	pd	bb/df	4	oc-nv	nv-ja	my-ja
Desmodium motorium (Houtt.) Merr.	l (s, h)	pd	bb/df	4	sp-nv	nv-ja	my-ja
Desmodium oblongum Wall. *ex* Bth.	l (s h)	pd	bb/df	4	oc-ja	dc-mr	my-mr
Desmodium rugosum Prain var. *moniliferum* Oha.	s (h)	pd	bb/df	4	my-jn	oc-nv	ap-dc
Millettia extensa (Bth.) Bth. *ex* Baker	wc	pd	dof, bb/df	3	mr-ap	ag-oc	ap-dc

Species	Habit	Seasonality	Habitat	Abundance	Phenology		
					fl	fr	lf
Mucuna pruriens (L.) A. DC. var. *pruriens*	v	pe	bb/df	3	oc-ja	dc-fb	ja-dc
Pueraria stricta Kurz	s, sc	pd	bb/df	4	sp-dc	dc-fb	my-fb
Pueraria wallichii DC.	s, sc	pd	bb/df	4	oc-dc	ja-mr	my-mr
Vigna dalzelliana (O.K.) Verd. var. *dalzelliana*	v (h)	pd	bb/df	4	sp-nv	nv-ja	my-ja
Combretaceae							
Anogeissus acuminata (Roxb. *ex* DC.) Guill. & Perr.	t	pd	bb/df	3	ja-fb	mr-ap	ap-fb
Combretum latifolium Bl.	wc	pd	bb/df	3	dc-ja	ap-my	ap-fb
Terminalia alata Hey. *ex* Roth	t	pd	dof, bb/df	3	my-jn	sp-oc	my-dc
Terminalia chebula Retz. var. *chebula*	t	pd	bb/df	3	mr-ap	jl-dc	mr-dc
Lythraceae							
Lagerstroemia venusta Wall. *ex* Cl.	t	pd	bb/df	3	sp-oc	oc-dc	my-dc
Passifloraceae							
Adenia penangiana (Wall. *ex* G. Don) Wild. var. *penangiana*	h, v	pd	bb/df	2	ag-sp		my-dc
Adenia pinnasecta (Craib) Craib var. *pinnasecta*	v	pd	bb/df	2	jl-ag	sp-nv	my-dc
Cucurbitaceae							
Coccinia grandis (L.) Voigt	v	a	bb/df	3	jl-oc	nv-fb	jn-fb
Diplocyclos palmatus (L.) C. Jeff.	v	a	bb/df	4	ag-oc	sp-oc	my-dc
Gomphogyne cissiformis Griff.	v	a	bb/df	4	sp-nv	oc-dc	my-dc
Gynostemma pentaphyllum (Thunb.) Mak.	v	a	bb/df	3	jl-sp	sp-nv	my-dc
Mukia maderaspatana (L.) M.J. Roem.	v	a	bb/df	4	my-oc	ag-dc	ap-dc
Trichosanthes rubriflos Thor. *ex* Cay.	v	a	bb/df	3	jn-ag	sp-oc	my-dc
Zehneria wallichii (Cl.) C. Jeff.	v	a	bb/df	4	jl-oc	sp-dc	my-dc
Araliaceae							
Schefflera bengalensis Gamb.	epl, s, sc	pe	rocks in bb/df	3	oc-dc	ja-mr	ja-dc
Alangiaceae							
Alangium salvifolium (L.f.) Wang. ssp. *hexapetalum* (Lmk.) Wang.	t	pd	da sg in bb/df	3	mr	ap-my	ap-dc
Rubiaceae							
Catunaregam spathulifolia Tirv.	l	pd	dof, bb/df	3	ap-my	ag-oc	my-dc

Species	Habit	Seasonality	Habitat	Abundance	Phenology		
					fl	fr	lf
Hymenodictyon orixense (Roxb.) Mabb.	t	pd	bb/df	4	my-jn	nv-ja	my-dc
Mitragyna rotundifolia (Roxb.) O.K.	t	pd	bb/df	3	sp-oc	nv-ja	my-ja
Morinda tomentosa Hey. *ex* Roth	t	pd	bb/df	3	ap-my	jn-ag	ap-dc
Paederia pallida Craib	v	a	bb/df	3	sp-nv	ap-my	jl-my
Compositae							
Bidens pilosa L. var. *minor* (Bl.) Sherff	gh	a	da in bb/df	3	oc-mr	dc-ap	jn-ap
Blumea lacera (Burm. f.) DC.	gh	a	bb/df	4	dc-fb	ja-mr	jn-mr
Eupatorium odoratum L.	gh	pd	da in dof bb/df	4	nv-ja	dc-fb	my-fb
Gynura pseudochina (L.) DC.	gh	pd	bb/df	3	ap-jn	my-jl	my-dc
Tridax procumbens L.	gh	a	da in bb/df	3	jn-nv	jl-dc	my-dc
Vernonia garrettiana Craib	gh	pd	bb/df	4	dc-ja	ja-fb	jn-fb
Vernonia roxburghii Less.	gh	pd	bb/df	4	dc-fb	fb-mr	jn-mr
Plumbaginaceae							
Plumbago zeylanica L.	gh	a	bb/df	3	nv-dc	dc-fb	jn-fb
Sapotaceae							
Palaquium garrettii Flet.	t	pe	bb/df	2	nu-ja	oc-my	ja-dc
Ebenaceae							
Diospyros mollis Griff.	t	pd	bb/df	3	ap-my	sp-nv	ap-fb
Oleaceae							
Chionanthus ramiflorus Roxb.	t	pe	bb/df	3	ja-ag	nv-fb	ja-dc
Jasminum siamense Craib	s (v, h)	pd	bb/df	3	my	jl-ag	ap-dc
Apocynaceae							
Aganosma marginata (Roxb.) G. Don	wc	pd	rocks, cliffs in bb/df	3	ap-my	sp-dc	my-dc
Amyalocalyx microlobus Pierre *ex* Spire	wc	pd	bb/df	4	jn-sp	oc-nv	my-dc
Holarrhena pubescens (Buch.-Ham.) Wall. *ex* G. Don	t	pd	bb/df	3	mr-my	oc-dc	ap-dc
Asclepiadaceae							
Cryptolepis buchananii Roem. & Schult.	v	pd	bb/df	2	jn-jl	sp-dc	my-dc
Heterostemma siamicum Craib	v	pe	bb/df	4	ag-nv	dc-ja	ja-dc

Species	Habit	Seasonality	Habitat	Abundance	Phenology		
					fl	fr	lf
Myriopteron extensum (Wight) K. Sch.	v	a	bb/df	4	ag-oc	ja-fb	my-ja
Raphistemma pulchellum (Roxb.) Wall.	v (h)	pd	bb/df	2	sp-oc	mr-ap	my-ja
Streptocaulon juventas (Lour.) Merr.	v	pe	bb/df	4	jl-oc	nv-ja	ja-dc
Zygostelma benthamii Baill.	v	pe	bb/df	2	oc-nv	?	my-dc
Loganiaceae							
Mitreola petiolata (Geml.) Torr. & Gray	h	a	bb/df	3	ag-oc	oc-dc	my-dc
Convolvulaceae							
Argyreia aggregata Roxb.	wc	pd	bb/df	2	nv-dc	fb-mr	jn-mr
Argyreia kerrii Craib	v	pd	bb/df	4	ag-nv	nv-ja	my-ja
Argyreia osyrensis (Roth) Choisy	v	pe	bb/df	4	ag-oc	dc-fb	ja-dc
Ipomoea hederifolia L.	v	a	bb/df	4	oc-dc	dc-ja	my-ja
Ipomoea nil (L.) Roth var. *nil*	v	a	bb/df	4	oc-nv	ja-fb	jn-fb
Ipomoea sinensis (Desr.) Choisy	v	pd	bb/df	4	ag-oc	nv-dc	jn-dc
Solanaceae							
Physalis minima L.	gh	a	da, sg in bb/df	3	jl-sp	sp-nv	my-dc
Scrophulariaceae							
Lindenbergia indica (L.) Vat.	epl, h	a	bb/df	3	sp-dc	oc-ja	my-dc
Orobanchaceae							
Aeginetia indica Roxb.	par, h	pd	bb/df	3	ag-oc	sp-nv	leafless
Gesneriaceae							
Chirita hamosa Wall. *ex* R. Br.	epl, h	a	rocks, cliffs	3	ag-oc	sp-nv	my-dc
Chirita kerrii Craib	epl, h	a	rocks, cliffs in bb/df	2	ag-sp	oc-nv	my-dc
Ornithoboea wildeana Craib	epl, h	pd	rocks, cliffs in bb/df	3	oc-nv	dc-ja	jn-ja
Rhynchoglossum obliquum Bl.	epl, h	a	rocks, cliffs	4	sp-nv	oc-dc	my-dc
Bignoniaceae							
Markhamia stipulata (Wall.) Seem. *ex* K. Sch. var. *stipulata*	t	pd	da sg in bb/df	3	nv-mr	sp-dc	my-fb
Oroxylum indicum (L.) Kurz	t (l)	pd	da in bb/df	3	sp-oc	ja-mr	ap-dc
Stereospermum neuranthum Kurz	t	pd	bb/df	3	my-jn	nv-ja	my-dc

Species	Habit	Seasonality	Habitat	Abundance	Phenology		
					fl	fr	lf
Acanthaceae							
Barleria cristata L.	gh	pd	bb/df	4	sp-nv	nv-ja	my-ja
Barleria strigosa Willd.	gh	pd	bb/df	4	sp-nv	nv-ja	my-ja
Dicliptera roxburghiana Nees	gh	a	bb/df	4	dc-mr	ja-ap	jn-ap
Perilepta siamensis (Cl.) Brem.	gh	pd	bb/df	4	dc-fb	fb-ap	jn-mr
Rungia parviflora (Retz.) Nees var. *ciliata* Brem.	gh	a	bb/df	4	sp-dc	nv-fb	jn-fb
Verbenaceae							
Clerodendrum paniculatum L.	l (h)	pd	bb/df	4	jl-oc	oc-dc	my-dc
Premna nana Coll. & Hemsl.	s (h)	pd	bb/df	3	ap-my	ag-oc	ap-dc
Tectona grandis L. f.	t	pd	bb/df	3	jl-oc	oc-ja	my-ja
Vitex canescens Kurz	t	pd	bb/df	3	mr-ap	ap-my	ap-dc
Vitex limoniifolia Wall. *ex* Kurz	t	pd	bb/df	3	jl-sp	oc-dc	my-dc
Vitex peduncularis Wall. *ex* Schauer	t	pd	bb/df	3	mr-jn	my-ag	ap-dc
Labiatae							
Anisomeles indica (L.) O.K.	gh	a	bb/df	3	sp-ja	oc-dc	jn-dc
Geniosporum coloratum (D. Don) O.K.	gh	pd	dof	2	my-jn	jn-jl	ap-dc
Hyptis suaveolens (L.) Poit.	gh	a	bb/df, da	3	oc-nv	oc-dc	sp-fb
Plectranthus parishii Hk. f.	gh	pd	bb/df	4	oc-nv	nv-dc	my-dc
Nyctaginaceae							
Boerhavia erecta L.	gh	pd	bb/df	3	sp-nv	nv-ja	my-ja
Amaranthaceae							
Achyranthes aspera L.	gh	pe	da in bb/df	3	nv-ja	dc-fb	my-fb
Aerva sanguinolenta (L.) Bl.	gh	pe	bb/df	4	dc-mr	ja-ap	ja-dc
Aristolochiaceae							
Aristolochia pierrei Lec.	v	pd	bb/df	3	ag-oc	dc-ja	my-dc
Piperaceae							
Peperomia pellucida (L.) H.B.K.	epl, epi, h	a	rocks, cliffs in bb/df	3	jl-nv	ag-dc	my-dc
Chloranthaceae							
Chloranthus nervosus Coll. & Hemsl.	gh	pd	bb/df	4	mt-jl	jn-ag	my-dc
Lauraceae							
Litsea glutinosa (Lour.) C.B. Rob. var. *glutinosa*	t	pd	bb/df	3	jl-oc	oc-dc	my-mr

Species	Habit	Seasonality	Habitat	Abundance	Phenology		
					fl	fr	lf
Loranthaceae							
Scurrula atropurpurea (Bl.) Dans.	par, epi, s	pe	bb/df	4	ja-dc	ja-dc	ja-dc
Opiliaceae							
Melientha suavis Pierre ssp. *suavis*	t (l)	pe	dof, bb/df	1	fb	my	ja-dc
Euphorbiaceae							
Antidesma acidum Retz.	l	pd	bb/df	3	ap-jl	sp-nv	my-dc
Antidesma sootepense Craib	t (l)	pe	bb/df	3	my-jl	sp-dc	ja-dc
Bridelia affinis Craib	l (s)	pd	bb/df	3	ag-oc	oc-dc	my-dc
Bridelia stipularis (L.) Bl.	t, l, wc	pd	bb/df	3	sp-nv	dc-fb	my-fb
Croton roxburghii N. P. Balakr.	t	pd	bb/df	3	ja-mr	mr-ap	my-mr
Drypetes roxburghii (Wall.) Huru.	t	pe	bb/df	2	mr-ap	jl-ag	ja-dc
Euphorbia heterophylla L.	gh	a	da in dof,	3	jn-dc	jn-dc	jn-ja
Euphorbia hirta L.	gh	a	da in bb/df	3	jn-dc	jl-ja	my-ja
Euphorbia parviflora L.	gh	a	bb/df	3	ag-oc	ag-oc	my-nv
Mallotus montanus (M.-A.) A.S.	l (s)	pd	bb/df	3	my-jl	jn-ag	my-dc
Phyllanthus columnaris M.-A.	t	pd	da in bb/df	3	jl-oc	sp-nv	my-dc
Sauropus hirsutus Beille	gh	pd	bb/df	4	jn-sp	ag-nv	my-dc
Securinega virosa (Roxb. *ex* Willd.) Baill.	l(s)	pd	bb/df	3	mr-jn	jn-ag	ap-dc
Moraceae							
Ficus geniculata Kurz	t (l)	pd	rocks, cliffs in bb/df	3	ap-dc	my-ja	my-ja
Ficus maclellandii King var. *rhododendrifolia* Corn.	epl, l	pd	rocks, cliffs in bb/df	3	sp-ja	sp-ja	my-ja
Ficus microcarpa L. f. var. *microcarpa* forma *microcarpa*	epl, epi, t	pe	bb/df	2	ja-ag	ja-ag	ja-dc
Ficus religiosa L.	cul, t	pd	da in bb/df	1	jn-ag	jn-ag	my-mr
Ficus virens Ait. var. *sublanceolta* (Miq.) Corn.	epl, epi, t (l)	pd	bb/df	3	ag-ja	ag-ja	my-ja
Urticaceae							
Boehmeria clidemioides Miq. var. *clidemioides*	l (s)	pd	bb/df	3	jn-dc	ag-fb	my-fb
Boehmeria malabarica Wall. *ex* Wedd.	epl, l (s)	pd	rocks, cliffs in bb/df	3	jn-ag	nv-dc	my-dc

Species	Habit	Seasonality	Habitat	Abundance	Phenology		
					fl	fr	lf
Pouzolzia pentandra (Roxb.) Benn.	gh	pd	bb/df	4	jl-ap	sp-nv	my-dc
MONOCOTS							
Commelinaceae							
Commelina diffusa Burm. f.	gh	a	bb/df	3	jn-nv	ag-dc	my-fb
Cyanotis cristata (L.) D. Don	epl, epi, h	pd	bb/df	4	jl-oc	ag-nv	my-dc
Zingiberaceae							
Boesenbergia longiflora (Wall.) O.K.	epl, h	pd	bb/df	4	jn-ag	ag-sp	my-dc
Boesenbergia rotunda (L.) Mansf.	gh	pd	bb/df	3	jl-sp	sp-nv	my-dc
Costus speciosus (Koeh.) J.E. Sm.	epl, h	pd	bb/df	3	ag-sp	nv-dc	jn-dc
Curcuma parviflora Wall.	gh	pd	bb/df	3	ag-sp	sp-oc	jn-dc
Curcuma zedoaria (Berg.) Rosc.	gh	pd	bb/df	3	ap-jn	jl-ag	ap-dc
Curcuma sp.	gh	pd	bb/df	2	jl-ag		my-dc
Globba kerrii Craib	gh	pd	bb/df	4	jn-sp	ag-nv	my-dc
Globba laeta K. Lar.	gh	pd	bb/df	4	ag-oc	sp-nv	my-dc
Globba nuda K. Lar.	gh	pd	bb/df	4	ap-jn	my-jl	jn-nv
Globba aff. *obscura* K. Lar.	gh	pd	bb/df	4	my-jl	jn-ag	ap-nv
Globba villosula Gagnep.	gh	pd	bb/df	4	jn-sp	jl-oc	my-nv
Kaempferia rotunda L.	gh	pd	bb/df	3	mr-my	my-ag	my-dc
Marantaceae							
Halopegia brachystachys Craib	gh	pd	bb/df	3	jl-sp	sp-nv	jn-dc
Liliaceae							
Chlorophytum intermedium Craib var. *intermedium*	gh	pe	bb/df	3	jl-sp	sp-nv	ja-dc
Dianella ensifolia (L.) DC.	gh	pe	bb/df	3	fb-my	my-ag	ja-dc
Smilacaceae							
Smilax verticalis Gagnep.	gh	pd	bb/df	3	ap-jn	jl-sp	my-dc
Araceae							
Amorphophallus macrorhizus Craib	gh	pd	bb/df	3	ap-jn	jn-jl	jn-nv
Amorphophallus paeoniifolius (Denn.) Nichol.	gh	pd	bb/df	3	ap-jn	nv-dc	my-dc
Arisaema cuspidatum (Roxb.) Engl.	gh	pd	bb/df	3	ap-jn	ag-sp	ap-nv
Colocasia fallax Schott	h	pd	rocks, cliffs	3	jn-sp	sp-nv	my-dc

Species	Habit	Seasonality	Habitat	Abundance	Phenology		
					fl	fr	lf
Epipremnum giganteum (Roxb.) Schott	epi, epl, v, cr	pe	rocks in bb/df	3	ja-mr	oc-dc	ja-dc
Hapaline benthamiana Schott	gh	pd	bb/df	3	ap-jn	my-jl	my-dc
Rhaphidophora peepla (Roxb.) Schott	v, cr	pe	bb/df	3	sp-dc	mr-my	ja-dc
Typhonium albidinervum C.Z. Fang & H. Li *ex* H. Li, Shiao, & Tseng	gh	pd	bb/df	3	my-jn	?	my-dc
Stemonaceae							
Stemona kerrii Craib	v	pd	bb/df	3	my-sp	jl-nv	my-dc
Dioscoreaceae							
Dioscorea alata L.	v	pd	da in bb/df	3	oc-ja	dc-fb	my-fb
Dioscorea arachidna Prain & Burk. var. *arachidna*	v	pd	bb/df	4	ag-oc	oc-ja	my-ja
Dioscorea birmanica Prain & Burk.	v	pd	da, sg in bb/df	3	jl-ag	oc-nv	my-nv
Dioscorea bulbifera L.	v	pd	bb/df	4	sp-nv	nv-ja	my-dc
Dioscorea decipiens Hk. f.	v	pd	bb/df	4	sp-nv	oc-ja	my-ja
Dioscorea hispida Denn. var. *mollissima* (Bl.) Prain & Burk.	v	pd	da in bb/df	3	jl-ag	oc-nv	my-dc
Dioscorea kamoonensis Kunth var. *straminea* Prain & Burk.	v	pd	bb/df	4	ag-oc	dc-ja	my-dc
Dioscorea membranacea Pierre *ex* Prain & Burk.	v	pd	bb/df	4	jn-sp	ag-oc	my-dc
Orchidaceae							
Geodorum attenuatum Griff.	gh	pd	bb/df	3	jn-jl	?	my-dc
Geodorum citrinum Jacks.	gh	pd	bb/df	3	jn-jl	?	my-dc
Geodorum densiflorum (Lmk.) Schltr.	gh	pd	bb/df	3	jn-jl	?	my-dc
Geodorum recurvum (Roxb.) Alst.	gh	pd	bb/df	3	my-jn	?	my-dc
Habenaria amplexicaule Rol. *ex* Dow.	gh	pd	bb/df	3	oc-nv	nv-dc	my-dc
Habenaria dentata (Sw.) Schltr.	gh	pd	bb/df	3	sp-oc	nv-dc	my-dc
Habenaria lucida Wall. *ex* Lindl.	gh	pd	bb/df	3	ag-sp	oc-nv	my-dc
Liparis sutepensis Rol. *ex* Dow.	gh	pd	dof	2	ag-sp	oc-nv	my-dc
Nervilia aragoana Gaud.	gh	pd	bb/df	3	ap-my	?	my-nv
Gramineae							
Apluda mutica L.	gh	pd	bb/df	4	nv-dc	dc-ja	my-ja
Digitaria bicornis (L.) Roem. & Schult.	gh	a	da in bb/df	3	jn-nv	jl-dc	my-dc
Microstegium vagans (Nees *ex* Steud.) A. Camus	gh	pd	bb/df	4	nv-fb	dc-mr	jn-mr
Mnesithea granularis (L.) Kon. & Sos.	gh	a	bb/df	4	ag-oc	ag-oc	jn-dc

Species	Habit	Seasonality	Habitat	Abundance	Phenology		
					fl	fr	lf
Oryza meyeriana (Zoll. & Mor.) Baill. var. *granulata* (Watt) Duist.	gh	pd	bb/df	4	jn-ag	jl-sp	my-dc
Rottboellia cochinchinensis (Lour.) Clay.	gh	a	bb/df	4	sp-nv	oc-dc	jn-dc
Urochloa reptans (L.) Stapf	gh	a	da in bb/df	3	jn-nv	jl-dc	my-dc
Gramineae (Bambusoideae)							
Bambusa membranacea (Munro) Stap. & Xia	gh	pd	bb/df	4	ja-ap	fb-my	my-ja
Thyrsostachys siamensis (Kurz *ex* Munro) Gamb.	gh	pd	bb/df	4	ja-fb	fb-mr	my-mr
FERN ALLIES & FERNS							
Selaginellaceae							
Selaginella ostenfeldii Hier.	gh	pd	bb/df	4	jl-oc	jl-oc	jn-nv
Selaginella repanda (Desv.) Spr.	epl, h	a	bb/df	4	jl-nv	jl-nv	my-nv
Parkeriaceae							
Adiantum philippense L.	g, epl, h	pd	bb/df	3	jn-oc	jn-oc	my-nv
Adiantum zollingeri Mett. *ex* Kuhn	g, epl, h	pd	rocks in bb/df	4	jn-nv	jn-nv	my-nv
Dryopteridaceae							
Tectaria impressa (Fee) Holtt.	gh	pe	bb/df	4	ja-dc	ja-dc	ja-dc
Tectaria manilensis (Presl) Holtt.	epl, h	pd	rocks, cliffs in bb/df	3	jl-nv	jl-nv	jl-nv
Tectaria tenerifrons (Hk.) Ching	epl, h	pd	rocks, cliffs in bb/df	4	jl-oc	jl-oc	jl-nv

Summary of the Flora:

plant group	families	sp., ssp., var.
ANGIOSPERMS Dicots	56	167
Monocots	10	53
GYMNOSPERMS	0	0
FERN ALLIES & FERNS	3	7
Total	69	227