

Vascular flora of the El Edén Ecological Reserve, Quintana Roo, Mexico¹

Gillian P. Schultz²

4327 Meridian Ave. N., Seattle, Washington 98103

SCHULTZ, G. P. (4327 Meridian Ave. N., Seattle, WA 98103). Vascular flora of the El Edén Ecological Reserve, Quintana Roo, Mexico. *J. Torrey Bot. Soc.* 132: 311–322. 2005.—The El Edén Ecological Reserve, Quintana Roo, Mexico, is a 1500 hectare privately owned reserve created in 1992 for research and conservation of the dry tropical forests in the northeastern Yucatán Peninsula. The reserve lies within a greater bioregion known as the Yalahau, which has been noted for its extensive wetlands, rare elsewhere in the Peninsula. The vegetation of the reserve represents all the major vegetation types of the greater bioregion and includes mature semideciduous dry tropical forest, various aged stands of successional forest, seasonally inundated forest and palm/cattail savanna as well as several permanent water bodies. The purpose of this study is to document the flora of the reserve. The vascular flora of the El Edén Reserve includes comprises 404 species, 306 genera and 99 families. Ferns (Division Pteridophyta) account for 8 species and 8 genera in 7 families. Cycads (Division Cycadophyta) account for one species in one family. Flowering plants (Division Magnoliophyta) account for 395 species in 297 genera and 91 families. Monocots (Class Liliopsida) account for 68 species in 51 genera and 18 families. Dicots (Class Magnoliopsida) account for 327 species in 246 genera and 73 families. Exotics only account for 3.5% of the flora, and plants with pantropical distribution (mostly weedy herbs) account for 6.3%. Yucatán Peninsula endemics account for 9.5% (39 species) of the total flora.

Key words: flora, distribution, biodiversity, dry tropical forest, Yucatán Peninsula, Mexico.

The El Edén Ecological Reserve, Quintana Roo, Mexico (21°12' N Lat., 87°11' W Long.), is located in the northeastern Yucatán Peninsula in a bioregion designated the Yalahau Region (see Lee 1980, Snedaker et al. 1991, Lazcano et al. 1992, 1995). The reserve, founded in 1992 by Dr. Arturo Gómez-Pompa and others for conservation and research, comprises approximately 1500 hectares in the eastern border of the region (Fig. 1). The Yalahau Region covers an area of approximately 134 km² and is characterized by a vast system of wetlands, with the underlying

freshwater aquifer as the main source of freshwater for Cancún, one of the fastest growing cities in Mexico. Because baseline data is not available, it is unknown what environmental impacts the development of Cancún has had upon these ecosystems since its inception in 1972.

The region has been virtually unexplored biologically until the last twelve years. Preliminary faunal surveys suggest that the region has both a high percentage of Yucatán endemic animals and a relatively high representation of the Yucatán biodiversity (Lee 1980, Snedaker et al. 1991, Lazcano et al. 1992, Correa-Sandoval 1993, McKinnon 1993). While the region is known to have almost all of the major vegetation types found in the Yucatán Peninsula (Lazcano et al. 1995), very little research has been done to qualify and quantify the composition and structure of the vegetation and botanical diversity. The only other two botanical studies known to have been carried out in the region are the preliminary botanical investigations of J. S. Flores (1993) at the El Edén Reserve and preliminary floristic checklists and vegetation maps for the Yum Balam Reserve in the northern half of the Yalahau region (Olmsted unpublished). The research presented here is part of the first large-scale qualification and quantification of the vegetation of the region, as represented in the El Edén Ecological Reserve.

Based upon research conducted in conjunction with this study, the vegetation of the El

¹ Support for this study was provided by 1999 Graduate Student Award from The Torrey Botanical Society and UCMEXUS.

² Many individuals were instrumental in the completion of this research. I thank Tom Bannister, Jeffrey Ross, Wayne Law, Antonio Andrade, Rene Palestina, Helen Violi, Adele Conover and Alberto Lema for their assistance with field collections. The support and assistance of Andrew Sanders and the staff at the UCR Herbarium is greatly appreciated. I am also grateful to Dr. Jim Solomon and Ronald Liesner at the Missouri Botanical Garden for their assistance with plant identifications on a visit there. Dr. Germán Carnevali, Paulino Sima and Rafael Durán at the herbarium at the Center for Scientific Investigations of Yucatán (YUC) were also very helpful with identifications and discussion on the floristics of the Yucatán Peninsula. I also thank Andrew Sanders and Arturo Gómez-Pompa and two reviewers for their valuable comments to improve this manuscript. This research represents partial fulfillment of my doctoral research as a student at the University of California, Riverside.

Received for publication June 8, 2003, and in revised form September 17, 2004.



FIG. 1. Location of the El Edén Ecological Reserve.

Edén Reserve can be divided into five major types:

1. Mature medium-statured semideciduous forest (*selva mediana*) defined here as forest more than 50 years old with emergents to 15 m and canopy at ca. 10–12 m. While there is a well-defined understory of shrubs and herbs, it is fairly open. Important tree species include *Manilkara zapota*, *Metopium brownei*, *Lysiloma latisiliquum*, *Thrinax radiata*, *Bursera simaruba*, *Sebastiania adenophora* and *Vitex gaumeri* and occasional large individuals of *Brosimum alicastrum*, *Ficus pertusa* and *Acacia dolichostachya*. Found in the understory are the shrubs *Psychotria nervosa*, *P. pubescens*, *Randia aculeata*, *Piper psilorrhachis*, *P. yucatanensis* and *Bromelia plumieri*. There is also a distinct herb layer that includes *Stenandrium subcordatum*, the grasses *Olyra latifolia* and *Lasiacis ruscifolia*, the sedge *Scleria lithosperma* and the fern *Anemia adiantifolia*.
2. Secondary/successional forest, defined here as variously-aged stands of forest mostly with a canopy to 8 m and a closed understory that is impassable). Important tree species include *Metopium brownei*, *Swartzia cubensis*, *Lysiloma latisiliquum*, *Bursera simaruba*, *Vitex gaumeri*, *Lonchocarpus rugosus*, *L. xuul*, *Nectandra coriacea*, *Jatropha gaumeri* and *Piscidia piscipula*. The understory consists of shrubs and small trees including *Acacia cedilloi*, *A. collinsii*, *Croton* spp., *Callicarpa acuminata* and *Randia aculeata*. There are also a number of vines and lianas including *Smilax* spp., *Pisonia aculeata*, *Bauhinia jenningsii*, *Cynanchum schlechtendalii*, and members of the Convolvulaceae and Cucurbitaceae.

Some areas appear to be in a state of arrested succession and are dominated by the fern *Pteridium caudatum*. In addition, areas that are repeatedly cleared, such as fire roads, roadsides, experimental plots and building areas, are dominated by shrubs such as *Viguiera dentata*, *Stachytarpheta mineacea*, *S. jamaicensis* and weedy herbs such as *Corchorus siliquosus*, *Melochia pyramidata*, *Salvia misella*, *Desmodium incanum*, *Sida* spp., *Porophyllum punctatum* and *Rhynchelytrum repens*.

3. Seasonally inundated forest (*tintal*), defined as variously aged stands of forest subject to 4–6 months of inundation per year. The structure is patchy with thickets of trees and shrubs crowded on rock outcrops interspersed with open areas of sedges and occasional trees. Important trees include *Haematoxylon campechianum*, *Eugenia winzerlingii*, *Erythroxylum confusum*, and *Byrsonima bucidifolia*. Important shrubs include *Jacquinia macrocarpa* ssp. *macrocarpa* and *Randia aculeata*. The epiphyte flora of the seasonally inundated forest is rich and includes many species (number of species found in parentheses) of Orchidaceae (12) Bromeliaceae (9) and Cactaceae (3). *Anthurium schlechtendalii* is another common epiphyte. Open areas are dominated by the sedge *Rhynchospora nervosa* and include other herbs such as *Cuphea gaumeri*, *Spermacoce verticillata*, *Heliotropium ternatum* and *Evolvulus alsinoides*.
4. Savanna, broadly defined to include areas dominated by the sedges *Cladium jamaicense*, *Eleocharis* spp. and the palm *Acoelorrhaphe wrightii*. There are also extensive stands of *Typha domingensis* and *Phragmites australis*. Other common plants of the savannas include the herbs *Nymphoides indica*, *Sagittaria lancifolia*, *Bacopa procumbens*, *Lippia nodiflora*, *Lippia stoechadifolia*, *Hymenocallis littoralis* and *Pluchea symphytiifolia* and the shrubs *Solanum donianum* and *Ouratea lucens*. Scattered individuals of the calabash tree *Crescentia cujete* are found as well; 5) Aquatic communities; there are only a few open, permanently filled bodies of water in the reserve. Common aquatics include *Nymphaea ampla*, *Polygonum hydrophiloides*, *Ludwigia octovalvis* and *Utricularia gibba*.

The climate of the Yalahau region is wetter than the northwestern part of the peninsula with an annual rainfall between 1,400 to 2,000 mm

and average temperatures from 23 °C in January to 28 °C in May (Back 1985). The high rainfall has contributed to the development of a series of elongated karstic depressions that follow a trending fault zone known as the Holbox Fracture Zone (Ward et al. 1985, Tulazyck 1993). The area is characterized by a pronounced dry season beginning in December and ending in late May, with a second short dry season in August. The Yucatán Peninsula is a limestone platform formed by shallow marine deposition throughout the Cretaceous (Tulazyck 1993). Soils in the peninsula are generally thin and rocky and made up of limestone derivatives (e.g. kaolinite and montmorillonite). Soils of the area are generally classified as lithosols and rendzinas with little to no horizon formation (Flores & Espejel-Carvajal 1994).

Methods. Collecting trips to the study site were made at different times of the year from August 1996 to August 2000. These collection trips coincided with another study of the community composition and floristics of the vegetation of the reserve (Schultz 2001, 2003).

More than 1500 specimens form the basis for this study and include both the collections of the author and those of other researchers. Taxonomically problematic species were sent to experts for identification including A. McDonald (Convolvulaceae), B. L. Turner (Asteraceae), J. and C. Reeder (Poaceae), C. Taylor (Rubiaceae), G. Yatskievych (Pteridophyta), G. Carnevalí (Orchidaceae). Additional assistance was given by A. C. Sanders, R. Liesner, J. Solomon, R. Durán, J. L. Tapia, J. Castillo, J. S. Flores and R. Palestina. A complete set of voucher specimens has been deposited at the herbarium at the University of California, Riverside (UCR), with partial sets also deposited at the Center for Scientific Studies, Yucatán (YUC) and the Autonomous University of Yucatán (UADY) in Mexico.

Nomenclature generally follows Standley, Steyermark and Williams (1946–1977), but recent monographs, including the Flora Mesoamericana publications (Davidse et al. 1994, 1995) and website (<http://www.mobot.org/MOBOT/fm/welcome.html>) were also consulted and followed.

Results and Discussion. The flora of El Edén consists of 99 families, 306 genera and 404 species. Forty-two percent of the species are in 10 families: Fabaceae (45 species), Asteraceae (25), Euphorbiaceae (16), Rubiaceae (15), Orchida-

ceae (14), Verbenaceae (13) Bromeliaceae (11), Cyperaceae (11), Sapindaceae (10) and Convolvulaceae (10). The remaining 58% (239) are in the other 89 families, with 38 families represented by only one species.

Pteridophytes account for 2% of the flora (8 species out 404). Gymnosperms are represented by one species. Monocots account for 17% (68/404) and dicots for 81% (327/404) of the flora. Exotics only count for 3.5% of the flora and plants (mostly weedy herbs) with pantropical distribution account for 6.3% (Schultz, *in press*). Yucatán Peninsula endemics account for 9.5% (39 sp).

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Annotated Checklist of Species

The vascular plant taxa have been arranged according to the following categories: vascular cryptogams, gymnosperms, dicots and monocots. Within each category, taxa are arranged in alphabetical order. Nomenclature generally follows Standley, Steyermark and Williams (1946–1977), but recent monographs, including the *Flora Mesoamericana* publications (Davidse, Sousa and Chater 1994, 1995) and website (<http://www.mobot.org/MOBOT/fm/welcome.html>) were also consulted. Each entry includes the following information sequence: scientific name; pertinent synonym, enclosed in brackets; growth form (annual herb, perennial herb, shrub, tree, aquatic herb); frequency relative to the study area and plant community (see introduction above) in which the species occurs. Exotic and endemic species are also identified. Frequencies are relative to the study area, using the following categories: Abundant (more than 20 populations); common (15–20 populations), occasional (10–15 populations), uncommon (5–10 populations), rare (scarce, fewer than five populations).

POLYPODIOPHYTA

Davalliaceae

Nephrolepis multiflora (Roxb.) F. M. Jarrett ex C. V. Morton. Epiphyte; uncommon in secondary and mature forest. Exotic.

Dennstaedtiaceae

Pteridium caudatum (L.) Maxon. Shrub; locally abundant in recently burned areas of early successional forest and savanna.

Polypodiaceae

Microgramma nitida (J. Sm.) A.R. Sm.. Climbing and/or creeping fern; common in all vegetation types.

Phlebodium decumanum (Willd.) J. Sm. Epiphyte; uncommon in secondary forest.

Pteridaceae

Acrostichum danaeifolium Langsd. & Fisch. Shrub; localized distribution in perennially wet areas in savanna and around cenotes and lagoons.

Schizaeaceae

Anemia adiantifolia (L.) Sw. Herb; occasional in mature and secondary forest.

Tectariaceae

Tectaria heracleifolia (Willd.) Underw. Herb; uncommon in secondary forest.

Thelypteridaceae

Thelypteris kunthii (Desv.) C.V. Morton. Epiphyte; rare. Only found on walls of cenotes (including Cenote Ayim) and wells.

CYCADOPHYTA

Zamiaceae

Zamia polymorpha D.W. Stev., A. Moretti & Vázquez. Shrub; rare in mature forest. Endemic.

MAGNOLIOPHYTA-MAGNOLIOPSIDA

Acanthaceae

Blechnum pyramidatum (Lam.) Urb. [*Blechnum brownei* Juss.]. Perennial herb; common in open, disturbed sites.

Bravaisia berlandieriana (Nees) T. F. Daniel [*B. tubiflora* Hemsl.]. Shrub or small tree; occasional in mature and secondary forest and savanna; abundant and thicket-forming in seasonally inundated forest.

Carlwrightia myriantha (Standl.) Standl. Perennial herb; common in mature and secondary forest. Endemic.

Stenandrium subcordatum Standl. Perennial herb; uncommon in mature forest; rare in secondary forest. Endemic.

Amaranthaceae

Achyranthes aspera L. Perennial herb; common in disturbed vegetation. Exotic.

Amaranthus hybridus L. Annual herb; common in disturbed areas.

Iresine diffusa Humb. & Bonpl. ex Willd. [*I. celosia* L.] Herb; common in disturbed areas.

Anacardiaceae

Metopium brownei (Jacq.) Urb. Tree; abundant in mature and secondary forest and common in seasonally inundated forest.

Spondias mombin L. Tree; occasional in mature and secondary forest.

Annonaceae

Annona glabra L. Tree; uncommon in seasonally inundated forest, savanna and wet places in mature forest.

Annona muricata L. Tree; single individual planted in orchard at Rancho El Edén.

Malmea depressa (Baill.) R.E. Fr. Tree; uncommon in mature and secondary forest.
Sapranthus campechianus (HBK) Standl. Shrub/tree; uncommon in mature and secondary forest.

Apiaceae

Centella asiatica (L.) Urb. Semi-aquatic perennial herb; abundant in savanna/wetlands.

Apocynaceae

Catharanthus roseus (L.) G. Don. Herb; persistent in abandoned garden of Rancho El Edén. Exotic.
Echites umbellata Jacq. Liana; common in secondary forest.
Mandevilla subsagittata (Ruiz & Pav.) Woodson. Liana; common in secondary forest.
Pentalinon andrieuxii (Müll. Arg.) Hansen & Wunderlin. [*Urechites andrieuxii* Müll. Arg.]. Liana; common in secondary forest.
Plumeria obtusa L. Tree; occasional in mature and secondary forest.
Thevetia gaumeri Hemsl. Tree; common in secondary forest.
Thevetia peruviana (Pers.) K. Schum. Tree; occasional in secondary forest.

Araliaceae

Dendropanax arboreus (L.) Decne. & Planch. Tree; occasional in mature and secondary forest.

Asclepiadaceae

Asclepias curassavica L. Perennial herb; uncommon in open, disturbed sites.
Cynanchum schlehtendalii (Decne.) Standl. & Steyerm. [*Metastelma schlehtendalii* (Decne.) Standl. & Steyerm.] Perennial vine; very common in early successional vegetation and along road sides.
Gonolobus sp. Perennial vine; in secondary forest.
Matelea belizensis (Lundell & Standl.) Woodson. Perennial vine; common in secondary forest. Endemic.
Sarcostemma bilobum Hook. & Arn. Perennial vine; uncommon in older stands of secondary forest.

Asteraceae

Acmella filipes (Greenm.) R. K. Jansen var. *filipes*. Annual herb; common in open, disturbed sites. Endemic.
Acmella oppositifolia (Lam.) R. K. Jansen var. *oppositifolia*. Herb; common in open, disturbed sites.
Acmella radicans (Jacq.) R. K. Jansen var. *radicans*. Herb; common in open, disturbed sites.
Ageratum gaumeri B. L. Rob. Herb; common in open, disturbed sites; also found in the wetlands. Endemic.
Archibaccharis sp. Shrub; in secondary forest.
Calea jamaicensis (L.) L. Shrub; rare in open, disturbed sites around Rancho El Edén.
Cirsium mexicanum DC. Herb; rare in open, disturbed sites.
Chromolaena odorata (L.) R. M. King & H. Rob. [*Eupatorium odoratum* L.] Shrub; common in open, disturbed sites.
Erechtites hieracifolius (L.) Raf. ex DC. Herb; common in open, disturbed sites. Exotic.
Fleischmannia guatemalensis R. M. King & H. Rob. Herb; abundant in open, disturbed sites, especially along roadsides.

Fleischmannia pycnocephala (Less.) R. M. King & H. Rob. Herb; common in open, disturbed sites.
Isocarpha oppositifolia (L.) Cass. Herb; uncommon in open, disturbed sites.
Koanophyllon albicaule (Sch. Bip. ex Klatt) R. M. King & H. Rob. [*Eupatorium albicaule* Sch. Bip. ex Klatt.]. Shrub; in clearings in the mature and secondary forest.
Mikania micrantha Kunth. Vine; common in mature and secondary forest.
Neurolaena lobata (L.) Cass. Herb; in open, disturbed sites.
Parthenium hysterophorus L. Herb; abundant along roadsides.
Pluchea carolinensis (Jacq.) G. Don. Shrub; uncommon along edges of savanna.
Pluchea odorata (L.) Cass. [*Pluchea purpurascens* of Britton & Millsp., not DC. 1836]. Herb; abundant in wetlands/savanna.
Porophyllum punctatum (Mill.) S. F. Blake. Subshrub; abundant along roadsides and in cleared areas.
Pseudogynoxys chenopodioides (Kunth) Cabrera. Vine; persistent in old garden at Rancho El Edén. Exotic.
Verbesina gigantea Jacq. Large herb; along roadsides and other open, disturbed sites.
Vernonia canescens Kunth. Shrub; common in early successional areas.
Viguiera dentata (Cav.) Spreng. Shrub; locally abundant in open, disturbed sites.
Wedelia scabra (Cav.) B. L. Turner. Perennial herb; common in open, disturbed sites.
Wedelia trilobata (L.) Hitchc. Creeping perennial herb; common in open, disturbed sites.

Bignoniaceae

Crescentia cujete L. Tree; common in savanna.
Cydista potosina (K. Schum. & Loes.) Loes. Liana; common in secondary forest and mature forest.
Stizophyllum riparium (Kunth) Sandwith. Liana; occasional in secondary forest and mature forest.
Tabebuia chrysantha (Jacq.) G. Nicholson. Tree; occasional in secondary forest.

Bixaceae

Bixa orellana L. var. *urucurana* (Willd.) Kuntze ex Pilg. Shrub; one individual found in old garden of Rancho El Edén.

Bombacaceae

Ceiba pentandra (L.) Gaertn. Tree; rare in mature forest (also planted in experimental plots).
Pseudobombax ellipticum (Kunth) Dugand. Tree; several individuals in abandoned gardens at Rancho El Edén.

Boraginaceae

Bourreria pulchra (Millsp.) Millsp. Tree; common in mature and secondary forest. Endemic.
Cordia dodecandra A. DC. Tree; planted along road to greenhouse.
Heliotropium angiospermum Murray. Subshrub; common in savanna.
Heliotropium ternatum Vahl. Subshrub; common in open, disturbed sites.

Burmanniaceae

Gymnosiphon aff. *divaricatus* (Benth.) Benth. & Hook. f. Saprophytic herb; uncommon but present in all forest types.

Burseraceae

- Bursera simaruba* (L.) Sarg. Tree; abundant in mature and secondary forest.
Protium copal (Schltdl. & Cham.) Engl. Tree; uncommon in secondary forest.

Cactaceae

- Epiphyllum strictum* (Lem.) Britton & Rose. Climbing succulent; common in seasonally inundated forest; occasional in other forest types.
Nopalea cochenillifera (L.) Salm Dyck. Shrub; cultivated at Rancho El Edén.
Selenicereus donkelaari (Salm-Dyck) Britton & Rose. Climbing succulent; common in seasonally inundated forest and savanna; occasional in mature and secondary forest. Endemic.
Selenicereus testudo (Karw. ex Zucc.) Buxb. Climbing succulent; common in seasonally inundated forest and savanna.

Caricaceae

- Carica papaya* L. Small tree; common along roadsides and open, disturbed sites.

Celastraceae

- Crossopetalum gaumeri* (Loes.) Lundell [*Rhacoma gaumeri* (Loes.) Standl.]. Small shrub; common in understory of seasonally inundated forest.
Crossopetalum puberulum (Lundell) Lundell. Small shrub; occasional in understory of seasonally inundated forest.
Crossopetalum rhacoma Crantz. Small shrub; occasional in understory of seasonally inundated forest.

Clusiaceae

- Clusia flava* Jacq. Tree; sometimes epiphytic; occasional in seasonally inundated forest and mature and secondary forest.

Convolvulaceae

- Evolvulus alsinoides* (L.) L. Annual vine; common in open areas of wetlands, seasonally inundated forest and along roadsides.
Ipomoea criniticalyx S. Moore. Vine; common in open, disturbed sites.
Ipomoea indica (Burm.) Merr. Vine; occasional along roadsides.
Ipomoea sagittata Poir. Vine; common in wetlands and savanna.
Ipomoea tuxtlensis House. Vine; common in open, disturbed sites.
Jacquemontia pentantha (Jacq.) G. Don. Vine; occasional in all vegetation types.
Jacquemontia verticillata (L.) Urb. Vine; common in secondary vegetation.
Merremia umbellata (L.) Hallier f. Vine; common in open, disturbed sites.
Turbina corymbosa (L.) Raf. Vine; common in open, disturbed sites.

Cucurbitaceae

- Cayaponia racemosa* (Mill.) Cogn. Perennial vine; common in open, disturbed sites
Cionosicyos excisus (Griseb.) C. Jeffrey. Perennial vine; common in open, disturbed sites
Melothria pendula L. Annual vine; common in open, disturbed sites

Ebenaceae

- Diospyros cuneata* Standl. Tree; abundant in mature and secondary forest.
Diospyros verae-crucis (Standl.) Standl. Tree; abundant in mature and secondary forest

Erythroxylaceae

- Erythroxylum confusum* Britton. Tree; abundant in seasonally inundated forest.
Erythroxylum rotundifolium Lunan. Tree; occasional in seasonally inundated forest, mature and secondary forest.

Euphorbiaceae

- Acalypha pseudalopecuroides* Pax. Annual herb; common in open, disturbed sites.
Astrocasia tremula (Griseb.) G. L. Webster. Tree; uncommon in forest.
Cnidocolus souzae McVaugh. Shrub; common in early successional areas and disturbed sites. Endemic.
Croton arboreus Millsp. Tree; common in seasonally inundated forest.
Croton glabellus L. Tree; common in secondary forest.
Croton glandulosepalus Millsp. Shrub; occasional in secondary forest.
Croton reflexifolius Kunth. Tree; abundant in secondary forest.
Croton aff. *cortesianus* Kunth. Shrub; rare in secondary forest.
Drypetes lateriflora (Sw.) Krug & Urb. Tree; common in secondary and mature forest.
Euphorbia hirta L. Annual herb; common in open, disturbed sites.
Euphorbia hypericifolia L. [*Chamaesyce hypericifolia* (L.) Millsp.]. Annual herb; common in open, disturbed sites.
Gymnanthes lucida Sw. Tree; occasional in secondary and mature forest.
Jatropha curcas L. Tree; common in secondary forest.
Jatropha gaumeri Greenm. Tree; common in secondary forest. Endemic.
Pedilanthus sp. Rare succulent shrub in mature forest.
Phyllanthus amarus Schumach. & Thonn. Herb; common in open, disturbed sites.
Sebastiania adenophora Pax & K. Hoffm. Tree; common in secondary forest. Endemic.

Fabaceae

- Acacia cedilloi* L. Rico. Small tree/shrub; common in secondary forest. Endemic.
Acacia collinsii Saff. Small tree/shrub; common in secondary forest, especially along roads and in disturbed sites.
Acacia cornigera (L.) Willd. Small tree/shrub; occasional in secondary forest.
Acacia dolichostachya S. F. Blake. Tree; occasional in mature forest. Endemic.
Acacia pennatula (Schltdl. & Cham.) Benth. Tree; uncommon in secondary forest.
Albizia tomentosa (Micheli) Standl. Tree; common in secondary forest.
Ateleia gummifera (Bertero ex DC.) D. Dietr. [*Ateleia cubensis* Griseb.] Tree; occasional in secondary forest and in seasonally inundated forest.
Bauhinia divaricata L. Tree; occasional in secondary forest.
Bauhinia jenningsii P. Wilson. Climbing shrub; common in secondary forest.

- Caesalpinia gaumeri* Greenm. Tree; common in secondary and mature forest.
- Caesalpinia platyloba* S. Watson. Tree; occasional in secondary forest.
- Caesalpinia violacea* (Mill.) Standl. Tree; uncommon in secondary forest.
- Caesalpinia yucatanensis* Greenm. Tree; common in secondary forest. Endemic.
- Canavalia villosa* Benth. Liana; locally abundant in open, disturbed sites.
- Centrosema pubescens* Benth. Perennial vine; common in open, disturbed sites areas.
- Centrosema virginianum* (L.) Benth. Perennial vine; common in open, disturbed sites.
- Chamaecrista glandulosa* (L.) Greene var. *flavicomma* (Kunth) Irwin & Barneby. Shrub; common in secondary forest and occasional in seasonally inundated forest.
- Coursetia caribaea* (Jacq.) Lavin var. *caribaea*. Subshrub; common in open, disturbed sites.
- Crotalaria pumila* Ortega. Annual herb; common in open, disturbed sites.
- Dalbergia glabra* (Mill.) Standl. Small tree; common in secondary forest; occasional in seasonally inundated forest.
- Desmodium incanum* DC. Herb; common in open, disturbed sites.
- Diphysa carthagenensis* Jacq. Shrub; common in secondary forest.
- Erythrina standleyana* Krukoff. Tree; occasional in secondary forest.
- Galactia striata* (Jacq.) Urb. Perennial vine; common in open, disturbed sites.
- Haematoxylum campechianum* L. Tree; abundant in seasonally inundated forest; occasional in other forest types.
- Havardia albicans* (Kunth) Britton & Rose. Tree; common in all forest types. Endemic.
- Indigofera trita* L. f. Trailing herb; uncommon in open, disturbed sites.
- Lonchocarpus guatemalensis* Benth. Tree; common in secondary forest.
- Lonchocarpus rugosus* Benth. Tree; common in secondary forest.
- Lonchocarpus xuul* Lundell. Tree; common in secondary forest.
- Lonchocarpus yucatanensis* Pittier. Tree; common in secondary forest. Endemic.
- Lysiloma latisiliquum* (L.) Benth. Tree; abundant in mature and secondary forest.
- Mimosa bahamensis* Benth. Tree; occasional in secondary forest and in seasonally inundated forest.
- Mimosa pudica* L. Perennial herb; common in open, disturbed sites. Exotic.
- Phaseolus lunatus* L. Annual vine; common in open, disturbed sites.
- Piscidia piscipula* (L.) Sarg. Tree; common in secondary forest.
- Pithecellobium platylobum* (Bertero ex DC.) Urb. Small tree; uncommon in mature forest.
- Platymiscium yucatanum* Standl. Tree; common in mature forest. Endemic.
- Rhynchosia longiracemosa* M. Martens & Galeotti. Vine; common in open, disturbed sites.
- Rhynchosia minima* (L.) DC. Vine; common in open, disturbed sites. Introduced.
- Senna occidentalis* (L.) Link. Shrub; uncommon in secondary forest.
- Swartzia cubensis* (Britton & P. Wilson) Standl. Tree; common in secondary forest.
- Tamarindus indica* L. Tree; persisting in abandoned orchard at Rancho El Edén. Exotic (cultivated).
- Vigna candida* (Vell.) Maréchal, Mascherpa & Stainier. Climbing herb; in open open, disturbed sites.
- Zygia cognata* (Schltdl.) Britton & Rose [*Pithecellobium stevensonii* (Standl.) Standl. & Steyerem.]. Tree; occasional in mature and secondary forest.
- Zygia conzattii* (Standl.) Britton & Rose. [*Pithecellobium recordii* (Britton & Rose) Standl.] Small tree; occasional in secondary forest.
- Flacourtiaceae**
- Casearia corymbosa* Kunth. Tree; uncommon in mature forest.
- Casearia sylvestris* Sw. Tree; uncommon in secondary forest.
- Laetia thammia* L. Tree; common in mature and secondary forest.
- Samyda yucatanensis* Standl. Small tree; occasional in secondary forest. Endemic.
- Xylosma flexuosa* (Kunth) Hemsl. Shrub; common in seasonally inundated forest.
- Zuelania guidonia* (Sw.) Britton & Millsp. Tree; common in mature and secondary forest.
- Gentianaceae**
- Lisianthus* sp. Herb.
- Hippocrateaceae**
- Hippocratea celastroides* Kunth. Tree; common in seasonally inundated forest and secondary forest.
- Hippocratea excelsa* Kunth. [*Hemiangium excelsum* A. C. Smith]. Tree; occasional in secondary forest.
- Lamiaceae**
- Hyptis pectinata* (L.) Poit. Herb; common in open, disturbed sites and along roadsides.
- Leonurus japonicus* Houtt. Herb; only observed in abandoned garden of Rancho El Edén. Exotic.
- Ocimum micranthum* Willd. Herb; common in open, disturbed sites and along roadsides.
- Salvia misella* Kunth. Herb; common in open, disturbed sites and along roadsides.
- Lauraceae**
- Cassytha filiformis* L. Parasitic vine; common in savanna on *Cladium jamaicense* and small shrubs.
- Nectandra coriacea* (Sw.) Griseb. Tree; abundant in mature and secondary forest.
- Lentibulariaceae**
- Utricularia gibba* L. Aquatic herb; common in water bodies.
- Loganiaceae**
- Mitreola petiolata* (J. F. Gmel.) Torr. & A. Gray. [*Cyanoctonum mitreola* (L.) Britton.]. Herb; occasional in wet places.
- Spigelia anthelmia* L. Herb; uncommon in open, disturbed sites.
- Loranthaceae**
- Psittacanthus calyculatus* (DC.) G. Don. Hemiparasitic shrub; common in seasonally inundated forest and secondary forest.
- Psittacanthus mayanus* Standl. & Steyerem. Hemipar-

asitic shrub; occasional in secondary forest. Voucher found growing on *Byrsonima bucidifolia*.

Struthanthus cassythoides Millsp. ex Standl. Hemiparasitic vine; occasional in mature and secondary forest. Voucher found growing on *Gymnopodium floribundum*.

Lythraceae

Cuphea gaumeri Koehne. Herb; abundant in open areas of seasonally inundated forest and savanna. Endemic.

Malpighiaceae

Bunchosia lindeniana A. Juss. Tree; common in mature forest.

Bunchosia swartziana Griseb. var. *yucatanensis* Nied. Tree; common in secondary forest.

Byrsonima bucidaefolia Standl. Tree; abundant in seasonally inundated forest; occasional in other forest types. Endemic.

Heteropterys brachiata (L.) DC. Liana; uncommon in secondary forest.

Malpighia glabra L. [*Malpighia puniceifolia* L.] Tree or shrub; occasional in secondary and mature forest.

Malvaceae

Abutilon permolle (Willd.) Sweet. Herb; abundant in frequently open, disturbed sites.

Anoda acerifolia Cav. Herb; abundant in frequently open, disturbed sites.

Hampea trilobata Standl. Small tree; occasional in mature and secondary forest. Endemic.

Malvaviscus arboreus Cav. var. *arboreus*. Small tree; occasional in secondary forest.

Sida acuta Burm. f. Weak perennial herb; common along roadsides.

Sida rhombifolia L. Subshrub; common along roadsides.

Meliaceae

Cedrela odorata L. [*Cedrela mexicana* M. Roem.] Tree; uncommon in mature forest (also planted in experimental plots).

Trichilia hirta L. Tree; uncommon in mature forest.

Trichilia minutiflora Standl. Tree; uncommon in secondary and mature forest. Endemic.

Menispermaceae

Cissampelos pareira L. Vine; occasional in secondary forest.

Hyperbaena mexicana Miers. Tree; abundant in mature forest.

Menyanthaceae

Nymphoides indica (L.) Kuntze. Aquatic herb; common in water bodies.

Moraceae

Brosimum alicastrum Sw. Tree; locally abundant in mature forest.

Cecropia peltata L. Tree; occasional in secondary forest.

Maclura tinctoria (L.) D. Don ex Steud. [*Chlorophora tinctoria* (L.) Gaud.]. Tree; occasional in mature forest.

Ficus cotinifolia Kunth. Tree (sometimes epiphyte/strangler); occasional in all forest types.

Ficus maxima Mill. Tree (sometimes epiphyte/stran-

gler); occasional in seasonally inundated forest and mature forest.

Ficus ovalis (Liebm.) Miq. Tree; abundant in mature and secondary forest.

Ficus pertusa L.f. Tree; occasional in mature and secondary forest.

Trophis racemosa (L.) Urb. Tree; occasional in secondary forest.

Myricaceae

Myrica cerifera L. Shrub; locally abundant in seasonally inundated forest.

Myrsinaceae

Ardisia escallonioides Schltld. & Cham. Tree; occasional in seasonally inundated forest and secondary forest.

Parathesis cubana (A.DC.) Molinet & M. Gómez. Tree; occasional in seasonally inundated forest.

Myrtaceae

Calyptanthes millspaughii Urb. Tree; occasional in seasonally inundated forest.

Eugenia acapulcensis Steud. Tree; common in mature and secondary forest.

Eugenia axillaris (Sw.) Willd. Tree; abundant in seasonally inundated forest.

Eugenia buxifolia (Sw.) Willd. [*E. mayana* Standl.] Small tree; abundant in seasonally inundated forest.

Eugenia capuli (Schltld. & Cham.) Hook. & Arn. Small tree; common in seasonally inundated forest; occasional in other forest types.

Eugenia winzerlingii Standl. Tree; abundant in seasonally inundated forest. Endemic.

Eugenia yucatanensis Standl. Tree; common in secondary forest. Endemic.

Myrcianthes fragrans (Sw.) McVaugh Tree; occasional in seasonally inundated forest and secondary forest.

Psidium sartorianum (O. Berg) Nied. Tree; abundant in seasonally inundated forest and secondary forest.

Nyctaginaceae

Guapira linearibracteata (Heimerl) Lundell [*Torrubia linearibracteata* (Heimerl) Standl.] Small tree; occasional in secondary forest.

Neea psychotrioides Donn. Sm. Tree; common in mature and secondary forest.

Pisonia aculeata L. Climbing shrub; occasional in secondary forest.

Nymphaeaceae

Nymphaea ampla (Salisb.) DC. Aquatic herb. Common in permanent water bodies.

Ochnaceae

Ouratea lucens (Kunth) Engl. Shrub; occasional in seasonally inundated forest and savanna.

Olacaceae

Schoepfia schreberi J.F. Gmel. Shrub; common in mature forest.

Onagraceae

Ludwigia octovalvis (Jacq.) P. H. Raven. Decumbent herb; banks of water bodies.

Papaveraceae

Argemone mexicana L. Herb; uncommon in open, disturbed sites.

Passifloraceae

Passiflora ciliata Aiton.. Perennial vine; common in secondary forest.

Phytolaccaceae

Phytolacca icosandra L. Herb; uncommon in open, disturbed sites.

Rivina humilis L. Perennial herb; uncommon in open, disturbed sites.

Piperaceae

Piper auritum Kunth. Shrub; in garden at Rancho El Edén.

Piper psilorhachis C. DC. Small shrub; common in mature and secondary forest.

Piper yucatanense C. DC. Small shrub; common in mature and secondary forest.

Polygalaceae

Polygala jamaicensis Chodat. Tree; occasional in secondary forest.

Polygala grandiflora Walter var. *angustifolia* Torr. & A. Gray. Herb; occasional in open areas of seasonally inundated forest.

Securidaca diversifolia (L.) S. F. Blake. Liana; occasional in secondary forest.

Polygonaceae

Coccoloba acapulcensis Standl. Tree; occasional in secondary forest.

Coccoloba cozumelensis Hemsl. Tree; common in the secondary forest, occasional in seasonally inundated forest. Endemic.

Coccoloba diversifolia Jacq. Tree; common in all forest types.

Coccoloba reflexiflora Standl. Tree; common in secondary forest. Endemic.

Coccoloba spicata Lundell. Tree; occasional in early secondary forest. Endemic.

Gymnopodium floribundum Rolfe. Tree; common in all forest types.

Neomillspaughia emarginata (H. Gross) S. F. Blake. Tree; uncommon in mature forest. Endemic.

Polygonum hydropiperoides Michx. Perennial herb, often creeping; banks of water bodies.

Portulacaceae

Portulaca oleracea L. Herb; common in open, disturbed sites. Exotic.

Portulaca pilosa L. Herb; common in open, disturbed sites.

Ranunculaceae

Clematis dioica L. Liana; uncommon in mature forest.

Rhamnaceae

Colubrina greggii S. Watson ssp. *yucatanensis* M. C. Johnst. Shrub; common in the secondary and mature forests. Endemic.

Gouania lupuloides (L.) Urb. Liana; uncommon in mature and secondary forest.

Krugiodendron ferreum (Vahl) Urb. Tree; common in mature and secondary forest.

Ziziphus yucatanensis Standl. Shrub; occasional in seasonally inundated forest. Endemic.

Rubiaceae

Chiococca alba (L.) Hitchc. Small tree; abundant in secondary forest.

Exostema caribaeum (Jacq.) Roem. & Schult. Shrub; uncommon in secondary forest.

Exostema mexicanum A. Gray. Tree; rare in mature forest.

Guettarda combsii Urb. Tree; common in mature and secondary forest.

Guettarda elliptica Sw. Tree; common in mature forest.

Guettarda gaumeri Standl. Tree; common in mature forest. Endemic.

Hamelia patens Jacq. Shrub; common in secondary forest.

Hintonia octomera (Hemsl.) Bullock. Liana; uncommon in secondary forest. Endemic.

Machaonia lindeniana Baill. Shrub; common in secondary forest. Endemic.

Morinda royoc L. Small shrub; occasional in seasonally inundated forest.

Psychotria costivenia Griseb. var. *costivenia*. Shrub; uncommon in mature forest.

Psychotria nervosa Sw. Shrub; abundant in mature and secondary forest.

Psychotria pubescens Sw. Shrub; abundant in mature and secondary forest.

Randia aculeata L. Shrub; abundant in understory of secondary forest.

Spermacoce verticillata L. Perennial herb; common in seasonally inundated forest and drier areas of savanna.

Rutaceae

Casimiroa tetrameria Millsp. Tree; common in secondary forest.

Citrus aurantifolia (Christm.) Swingle. Tree; persisting in abandoned orchard at Rancho El Edén. Exotic.

Esenbeckia berlandieri Baill. ex Hemsl. ssp. *berlandieri*. Tree; common in secondary forest.

Esenbeckia pentaphylla (Macfad.) Griseb. Tree; common in secondary forest.

Zanthoxylum caribaeum Lam. Tree; common in both secondary and mature forest.

Sapindaceae

Allophylus cominia (L.) Sw. Tree; common in mature and secondary forest.

Cupania glabra Sw. Tree; occasional in mature forest.

Exothea diphylla (Standl.) Lundell [*Talisia diphylla* Standl.]. Tree; common in secondary and mature forest. Endemic.

Paullinia cururu L. Liana; common in secondary forest.

Paullinia fuscescens Kunth. Liana; common in secondary forest.

Paullinia sessiliflora Radkl. Liana; common in secondary forest.

Sapindus saponaria L. Tree; uncommon in secondary forest.

Serjania yucatanensis Standl. Liana; common in secondary forest. Endemic.

Talisia oliviformis (Kunth) Radlk. Tree; uncommon in mature forest.

Thouinia paucidentata Radlk. Tree; occasional in mature forest. Endemic.

Sapotaceae

Chrysophyllum cainito L. Tree; common in mature and secondary forest.

Chrysophyllum mexicanum Brandegee ex Standl. Tree; common in mature and secondary forest.

Manilkara zapota (L.) P. Royen. Tree; abundant in all forest types.

Pouteria campechiana (Kunth) Baehni. Tree; uncommon in mature forest.

Pouteria reticulata (Engler) Eyma ssp. *reticulata* [*Pouteria unilocularis* (J. D. Smith) Baehni]. Tree; occasional in mature forest.

Sideroxylon celastrinum (Kunth.) T. D. Penn. Shrub; common in seasonally inundated forest

Sideroxylon obtusifolium (Humb. ex Roem. & Schult.) T. D. Penn. ssp. *buxifolium* (Roem. & Schult.) T. D. Penn. Tree; in mature and secondary forest.

Sideroxylon persimile (Hemsl.) Penn. ssp. *persimile* [*Bumelia persimilis* Hemsl.] Tree; common in mature and secondary forest.

Sideroxylon salicifolium (L.) Lam. Tree; abundant in mature and secondary forest.

Scrophulariaceae

Angelonia angustifolia Benth. Herb; uncommon in disturbed, open areas.

Bacopa monnieri (L.) Wettst. Perennial herb; common in savanna.

Buchnera pusilla Kunth. Herb; uncommon in savanna. *Mecardonia procumbens* (Mill.) Small. Small herb; common in open, disturbed sites.

Russelia floribunda Kunth. Shrub; common in disturbed areas.

Russelia sarmentosa Jacq. Shrub; common in disturbed areas.

Stemodia durantifolia (L.) Sw. Herb; uncommon in disturbed, open areas.

Simaroubaceae

Alvaradoa amorphoides Liebm. Tree; common along roadsides.

Picramnia antidesma Sw. Shrub; occasional in mature and secondary forest.

Solanaceae

Capsicum annuum L. var. *glabriusculum* (Dunal) Heiser & Pickersgill. Shrub; uncommon in open, disturbed sites

Lycianthes sp. Shrub; occasional along roadsides.

Solanum donianum Walp. Shrub; abundant in savanna; occasional in seasonally inundated forest.

Solanum erianthum D. Don. Shrub; occasional in disturbed areas. Exotic.

Solanum americanum Mill. Annual herb; occasional in open, disturbed sites. Exotic.

Solanum torvum Sw. Shrub; uncommon in open, disturbed sites.

Sterculiaceae

Guazuma ulmifolia Lam. Tree; occasional in mature and secondary forest.

Helicteres baruensis Jacq. Tree; uncommon in mature forest.

Melochia pyramidata L. Shrub; abundant in open, disturbed sites.

Waltheria indica L. Perennial herb; abundant in open, disturbed sites.

Theophrastaceae

Jacquinia macrocarpa Cav. ssp. *macrocarpa* [*J. au-*

rantiaca Ait.] Shrub; common in seasonally inundated forest and savanna; occasional in other forest types.

Thymelaeaceae

Daphnopsis americana (Mill.) J.R. Johnst. Small tree; occasional in secondary forest.

Tiliaceae

Corchorus siliquosus L. Perennial herb; common in open, disturbed sites. Exotic.

Heliocarpus mexicanus (Turcz.) Sprague. Small tree; occasional in secondary forest.

Luehea candida (DC.) Mart. Tree; occasional in secondary forest.

Triumfetta semitriloba Jacq. Small tree; occasional in secondary forest.

Ulmaceae

Trema micrantha (L.) Blume. Tree; uncommon in secondary forest.

Urticaceae

Pilea microphylla (L.) Liebm. Annual herb; occasional in disturbed, open areas.

Verbenaceae

Callicarpa acuminata Kunth. Shrub/small tree; common secondary forest.

Citharexylum hexangulare Greenm. Tree; common in secondary forest.

Citharexylum schottii Greenm. Tree; common in secondary forest.

Duranta repens L. Tree; common in secondary forest.

Lantana camara L. Shrub; common in disturbed areas.

Lippia nodiflora (L.) Michx. Creeping perennial herb; common in open areas of seasonally inundated forest and in savanna.

Lippia stoehadifolia (L.) Kunth. Creeping perennial herb; common in open areas of seasonally inundated forest and in savanna.

Petrea volubilis L. Liana; uncommon in secondary forest.

Priva lappulacea (L.) Pers. Herb; common in open, disturbed areas.

Rehdera trinervis (S. F. Blake) Moldenke. Tree; common in secondary forest.

Stachytarpheta jamaicensis (L.) Vahl. Shrub; common in open, disturbed sites.

Stachytarpheta miniacea Moldenke. Shrub; common in secondary forest.

Vitex gaumeri Greenm. Tree; abundant in mature and secondary forest.

Vitaceae

Cissus gossypifolia Standl. Liana; uncommon in secondary forest.

Cissus rhombifolia Vahl. Liana; uncommon in secondary forest.

Cissus verticillata (L.) Nicolson & C.E. Jarvis. [*C. si-*
cyoides L.] Liana; common in secondary forest.

Vitis tiliifolia Humbl. & Bonpl. ex Roem. & Schult. Liana; uncommon in disturbed areas.

Zygophyllaceae

Tribulus cistoides L. Herb; common in disturbed open areas and along roadsides. Exotic.

MAGNOLIOPHYTA-LILIOPSISIDA

Agavaceae

Agave angustifolia Haw. Succulent; occasional in secondary forest.

Alismataceae

Sagittaria lancifolia L. Perennial herb; locally abundant in wetlands.

Amaryllidaceae

Hymenocallis littoralis (Jacq.) Salisb. Perennial herb; locally abundant in wetlands.

Araceae

Anthurium schlechtendalii Kunth ssp. *schlechtendalii*. Epiphyte; common in seasonally inundated forest, occasional in other forest types.

Philodendron hederaceum (Jacq.) Schott var. *hederaceum*. Climbing epiphyte; occasional in mature forest.

Syngonium podophyllum Schott. Climbing epiphyte; occasional in mature forest.

Arecaceae

Acoelorrhaphe wrightii (Griseb. & H. Wendl.) H. Wendl. ex Becc. [*Paurotis wrightii* (Griseb. & H. Wendl.) Britt.]. Tree; abundant in seasonally inundated and savanna.

Chamaedorea seifrizii Burret. Shrub; occasional in mature and secondary forest. Endemic.

Sabal mexicana Mart. Tree; occasional in mature and secondary forest.

Sabal yapa C. Wright ex Becc. Tree; occasional in mature and secondary forest.

Thrinax radiata Lodd. ex Schult. & Schult. f. Tree; locally abundant in mature and secondary forest.

Bromeliaceae

Aechmea bracteata (Sw.) Griseb. Perennial epiphyte; abundant in all forest types.

Bromelia pinguin L. Coarse perennial herb; occasional in mature and secondary forest.

Bromelia plumieri (E. Morren) L.B. Sm. [*B. karatas* L.] Coarse perennial herb; occasional in mature and secondary forest.

Catopsis berteroniana (Schult. & Schult. f.) Mez. Perennial epiphyte; rare in seasonally inundated forest.

Tillandsia balbisiana Schult. f. Epiphyte; uncommon in seasonally inundated forest and savanna.

Tillandsia brachycaulos Schltld. Perennial epiphyte; common in seasonally inundated forest and secondary forest.

Tillandsia bulbosa Hooker. Perennial epiphyte; uncommon in seasonally inundated forest.

Tillandsia dasyliriifolia Baker. Perennial epiphyte; abundant in all forest types.

Tillandsia fasciculata Sw. Perennial epiphyte; abundant in all forest types.

Tillandsia pseudobaileyi C. S. Gardner. Perennial epiphyte; rare in seasonally inundated forest and savanna.

Tillandsia streptophylla Schweidw. ex C. Morren. Perennial epiphyte; uncommon in seasonally inundated forest.

Cannaceae

Canna indica L. Perennial herb; uncommon in disturbed areas around greenhouse.

Commelinaceae

Commelina erecta L. [*Commelina elegans* Kunth]. Perennial herb; common in open disturbed sites.

Tradescantia spathacea Sw. [*Rhoeo discolor* (L'Hér.) Hance. ex Walp.; *R. spathacea* (Sw.) Stearn]. Perennial herb; found on walls of Cenote Ayim (also planted around station).

Cyperaceae

Cladium jamaicense Crantz. Perennial herb; abundant in savanna and seasonally inundated forest.

Cyperus ochraceus Vahl. Herb; occasional in savanna.

Eleocharis cellulosa Torr. Herb; locally abundant in savanna.

Eleocharis geniculata (L.) Roem. & Schult. [*E. caribaea* (Rottb.) S.F. Blake]. Perennial herb; occasional in savanna.

Eleocharis interstincta (Vahl) Roem. & Schult. Herb; occasional in savanna.

Eleocharis mutata (L.) Roem. & Schult. Perennial herb; occasional in savanna.

Fuirena campotricha C. Wright. Perennial herb; common in secondary forest.

Rhynchospora holoschoenoides (Rich) Herter. Perennial herb; common in savanna. *Rhynchospora cyperoides* (Sw.) Mart. Herb; common in savanna.

Rhynchospora nervosa (Vahl) Boeck. ssp. *ciliata* [*Dichromena ciliata* Vahl] Perennial herb; abundant in seasonally inundated forest.

Scleria lithosperma (L.) Sw. Perennial herb; common in savanna.

Dioscoreaceae

Dioscorea spiculiflora Hemsl. Perennial vine; uncommon in mature forest.

Iridaceae

Cipura campanulata Ravenna. Bulbous-based perennial; occasional around edges of water bodies and in savanna.

Lemnaceae

Lemna aequinoctialis Welw. Aquatic herb; uncommon in permanent water bodies.

Marantaceae

Maranta gibba Sm. Perennial herb; locally abundant in north savanna. Exotic.

Orchidaceae

Brassavola venosa Lindl. [*Brassavola nodosa* (L.) Lindl.]. Perennial epiphyte; occasional in seasonally inundated forest.

Catasetum integerrimum Hook. Perennial epiphyte; uncommon in seasonally inundated forest and savanna.

Encyclia alata (Bateman) Schltr. Perennial epiphyte; common in seasonally inundated forest and secondary forest.

Epidendrum chlorocorymbos Schltr. Perennial epiphyte; occasional in seasonally inundated forest and secondary forest.

Epidendrum stamfordianum Bateman. Perennial epiphyte; occasional in seasonally inundated forest and secondary forest.

Lophiaris lindenii (Brogniart) Braem. Perennial epiphyte; common in seasonally inundated forest and secondary forest.

Myrmecophila christinae Carnevali & Gómez-Juárez

var. *ibarrae* [*Schomburgkia tibicinus* Bateman]. Perennial epiphyte; common in seasonally inundated forest and savanna. Endemic.

Notylia orbicularis A. Rich. & Galeotti ssp. *orbicularis*. Perennial epiphyte; occasional in seasonally inundated forest.

Notylia sp.

Polystachya foliosa (Lindl.) Rcbh. f. Perennial epiphyte; uncommon in seasonally inundated forest.

Prosthechea boothiana (Lindl.) W. E. Higgins ssp. *boothiana* [*Epidendrum boothiana* (Lindl.) Dressler] Perennial epiphyte; common in seasonally inundated forest; occasional in secondary forest.

Rhynchoaelia digbyana (Lindl.) Schltr. Perennial epiphyte; abundant in seasonally inundated forest and savanna.

Trichocentrum ascendens (Lindl.) M. W. Chase & N. H. Williams [*Oncidium ascendens* Lindl.] Perennial epiphyte; occasional in all forest types.

Vanilla insignis Ames. Climbing epiphyte; rare in mature forest.

Poaceae

Echinochloa walteri (Pursh) A. Heller. Herb; uncommon in disturbed areas.

Eragrostis elliotii S. Wats. Herb; in disturbed areas.

Lasiacis divaricata (L.) Hitchc. Perennial herb; occasional in mature and secondary forest.

Lasiacis ruscifolia (Kunth) Hitchc. Perennial herb; occasional in mature and secondary forest.

Olyra latifolia L. Perennial herb; occasional in mature and secondary forest.

Panicum bartlettii Swallen. Herb; occasional in open, disturbed sites along roadsides.

Paspalum clavuliferum C. Wright. Herb; uncommon along roadsides.

Phragmites australis (Cav.) Trin. ex Steud. [*Phragmites communis* Trin.]. Perennial herb; locally abundant in savanna. *Rhynchelytrum repens* (Willd.) C. E. Hubb. (*R. roseum* (Nees) Stapf & C.E. Hubb.) Perennial herb; abundant in open, disturbed sites. Exotic.

Potamogetonaceae

Potamogeton illinoensis Morong. Aquatic; uncommon.

Smilacaceae

Smilax mollis Humb. & Bonpl. ex Willd. Vine; common in secondary forest.

Smilax spinosa Mill. var. *spinosa*. Vine; common in secondary forest. *Smilax lundellii* Killip & C. V. Morton. Vine; common in secondary forest.

Typhaceae

Typha domingensis Pers. [*T. angustifolia* of Britt. & Millsp., not L.]. Large aquatic perennial herb. Abundant in wetlands/savanna.