

Rapid Ecological Assessment

El Pilar

Archaeological Reserve

April 1998

A study conducted at the request of:
BRASS/El Pilar

Study conducted by:
Belize Environmental Consultancies Ltd.
P.O.Box 208, Belmopan, Belize.
Contact person: Jan Meerman
<tfs@pobox.com>

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At the request of:
Anabel Ford,
BRASS/El Pilar

Introduction

The Rapid Ecological Assessment (REA) was called for to establish a set of biological baseline data which could be used for further studies into the interactions between the environment and both ancient (Classic Maya) and contemporary landuse. Or as stated by Anabel Ford:

“The ecological structure of the Maya forest is a relic of the dynamic relationship in which humans played an integral part. This relationship extends back more than four millennia to the initial agricultural pioneers of the Maya forest region, the ancestors of the ancient Maya civilization, and the heritage of contemporary Maya farmers. The large contiguous stands of forest are a testimony to the efficacy of ancient Maya practices. While the Classic Maya collapse affected the human populations, plants and animals survived only now to be threatened with extinction. Therein lies the ecological lesson that must be perceived to build a sound basis for conservation in the future.”

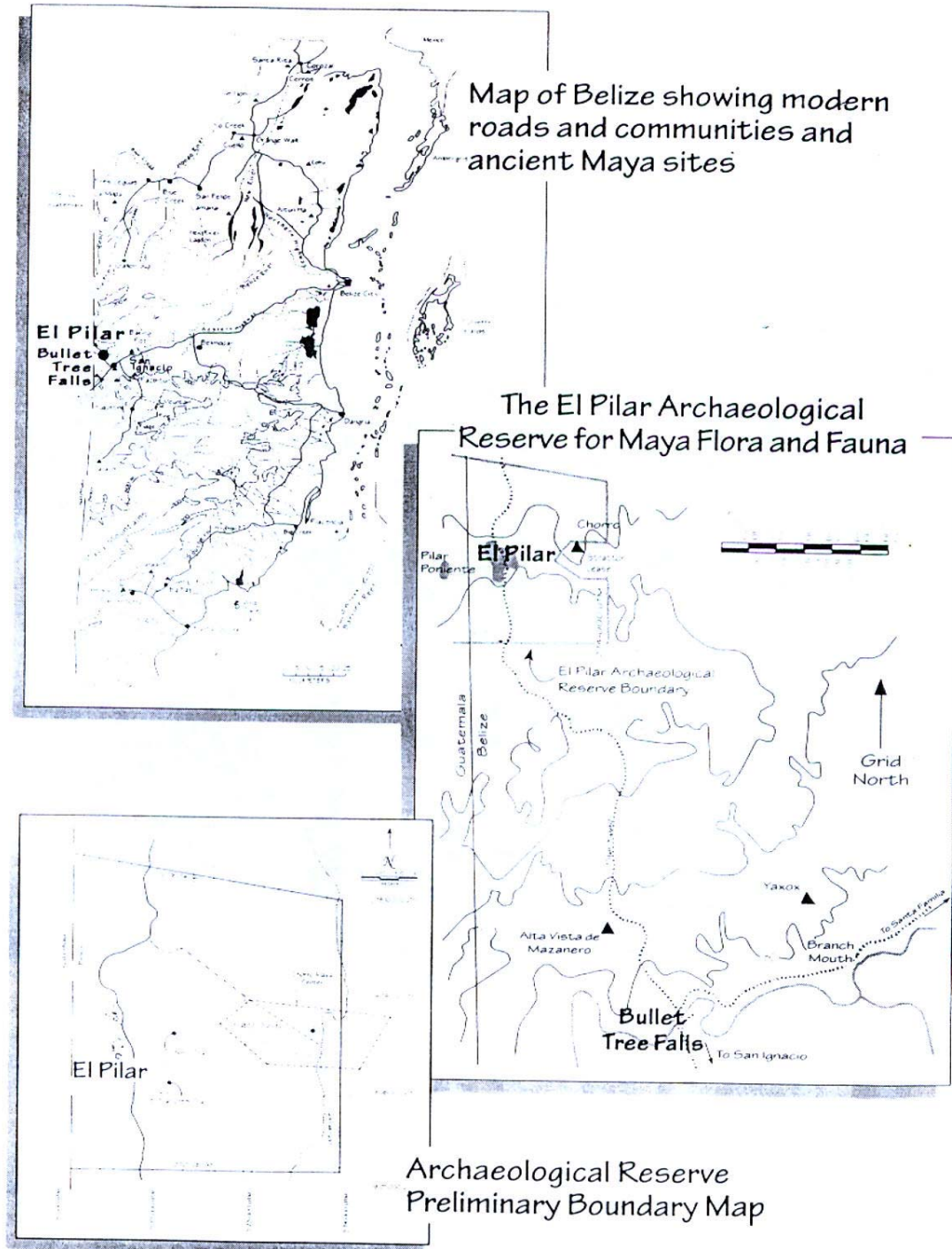
The REA started in July 1997 with the gathering of available information, literature, maps etc. This initial research was followed by several field visits which were undertaken during the period August 1997 - April 1998. These visits served both as reconnaissance visits to establish vegetation transects and as Flora and Fauna data collecting trips. Data collecting took place both during day and night. Various sampling methods were being utilized as will be described in the 2nd section of this report.

Acknowledgments

This research was funded by BRASS/El Pilar under a grant from the Ford Foundation. The research was conducted under the BRASS/El Pilar Archaeological permit supplied by the Department of Archeology and under the Scientific Collection/Research permits CD/60/3/97 (01) and CD/60/3/98 (01) issued by the Conservation Division of the Forest Department. Both departments are thanked for their assistance. Lighthawk International donated flights over the El Pilar area. Anabel Ford and the El Pilar caretakers are all thanked for their cooperation.

**Map 1. The location of the EL PILAR ARCHAEOLOGICAL RESERVE
(Courtesy of BRASS/EI Pilar)**

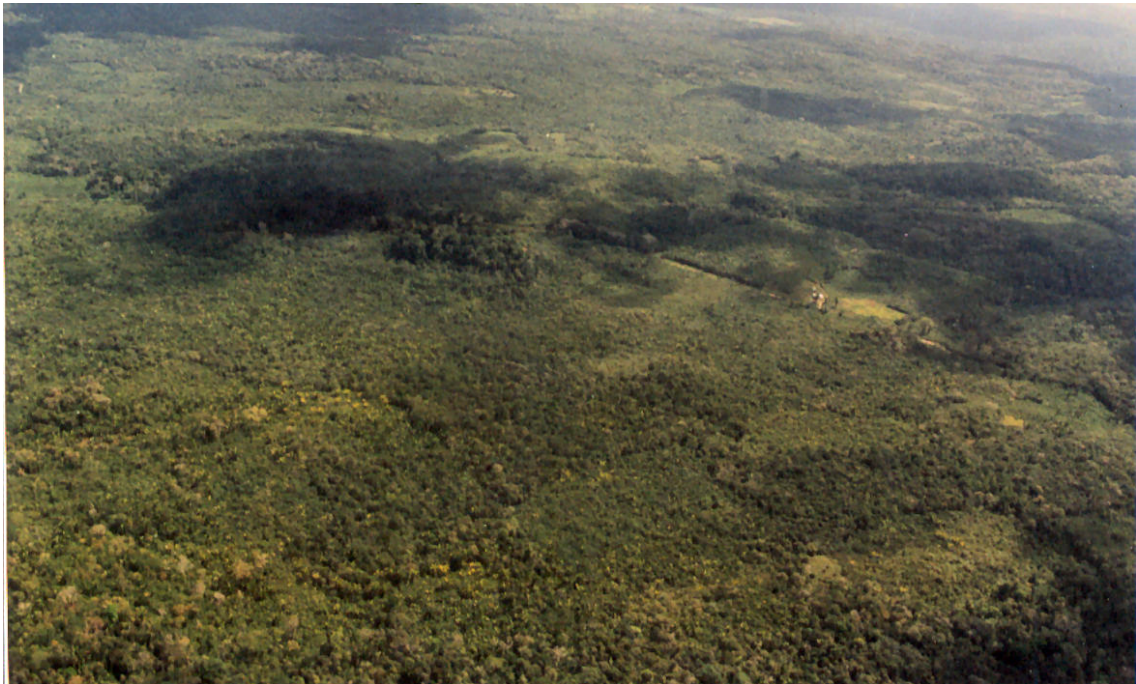
Map 1. The location of the EL PILAR ARCHAEOLOGICAL RESERVE
(Courtesy of BRASS/EI Pilar)



1. PHYSICAL DESCRIPTION OF EL PILAR ARCHAEOLOGICAL RESERVE.

Location

The El Pilar Archaeological Reserve is about 800 hectares (2,000 acres) in size and is located 12 km (8 ml) north of San Ignacio and abuts the Guatemalan border. The maximum elevation is \pm 240 m (790 ft). The ancient Maya site of El Pilar (including Pilar Poniente on the Guatemalan side) has more than 25 identified plazas in an area of approximately 38 hectares. About 2 km to the east there is the smaller Maya site of Chorro. The El Pilar area can be reached by road from the village of Bullet Tree, 8 km (5 miles) to the south (Map 1).



Picture 1. El Pilar as seen from the air (March 17, 1997). Clearly visible is the road, the caretakers clearing, the high forest at the El Pilar Maya site and the patchwork of secondary growth surrounding it all.

The landscape of the reserve is one of rolling hills with occasional steeper sections. After the decline of the ancient Maya settlement, tall broad-leaved forest regenerated in the area but most of this forest has in the past decades been cleared as part of the “Milpa” agricultural system (or “Slash and Burn”) and as a result, very little of this tall forest can now be found within the reserve boundaries. The most common vegetation type now is very dense, scrubby, secondary growth in various stages of regeneration (Guamil). The only tall trees in the area are now

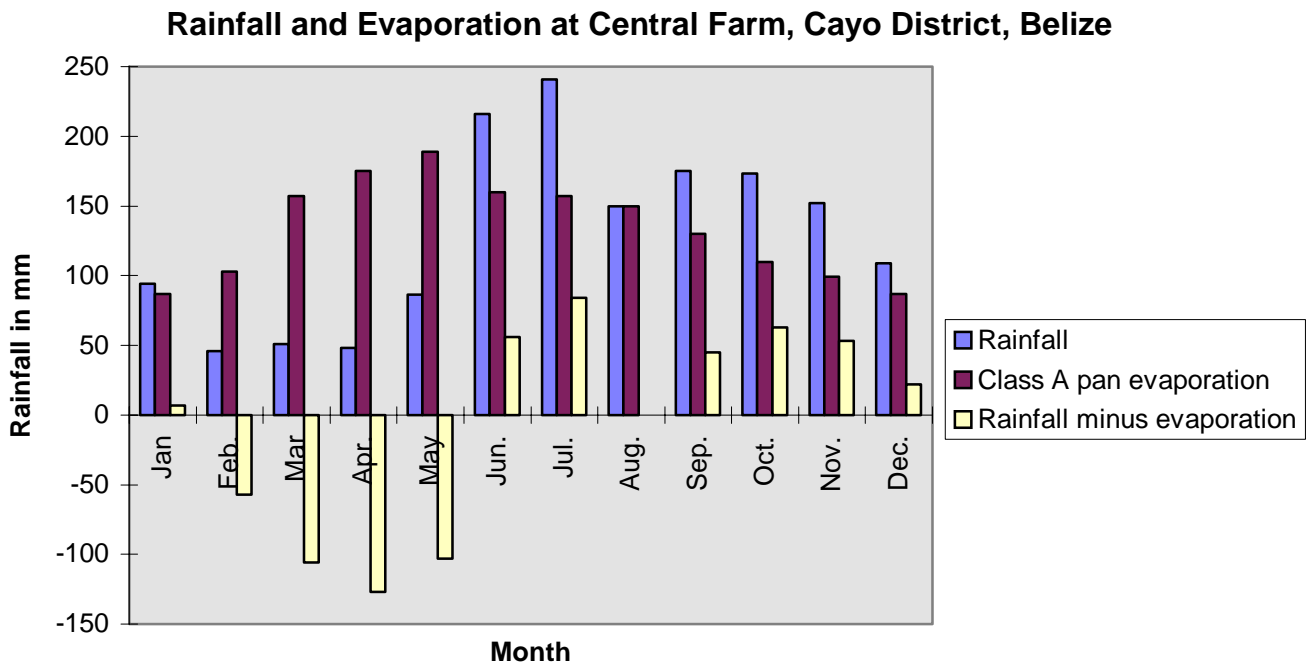
restricted to the actual sites of El Pilar and Chorro and isolated pockets throughout the rest of the reserve.

Climate

Mean monthly minimal temperatures for Belize range from 16-17° C in winter to 24-25°C in summer, while mean monthly maximum range from 28° C in winter to 32-33° C in summer (Hartshorn et al, 1984). No temperature data were available for the study area.

The nearest site from which meteorological data are available, is Central Farm in the Belize River Valley in the Cayo District. Mean annual rainfall (over 22 years) for Central Farm was 1541 mm. Driest months were February-April with an average of 48 mm per month. June and July were the wettest months with more than 200 mm of rain (King et al, 1989).

TABLE 1



The average annual class A pan evaporation for Central Farm is 1604 mm (King et al, 1992). In table 1, the mean monthly deficit in rainfall is given, showing the shortage in rainfall during the period February-May. This rainfall shortage has obvious consequences for the ecology of the area.

The class A pan evaporation is a standard figure based on parameters like temperature, wind and vapor pressure of water in the atmosphere. If the mean average rainfall is compared with the evaporation per month, it looks as if there is only a deficiency from February through May. But the 216 mm of June represents only an average while extremes as high as 400 mm or as low as 100 mm occur. During the drier Junes, crops can still suffer from evapo-transpiration. Even when the rainfall during the summer months is higher than in February-May, the risk of water deficiency is absolutely present during the summer months.

Over a 14 years period at Central Farm a daily mean of 6.0 hr. of sunshine was measured. April has the highest sunshine figure with a daily mean of 8 hr., while November has the lowest sunshine figure with a daily mean of 4,8 hr. (King et al, 1989).

Although the average wind-speed in the Cayo district is considerable lower than in Belize City and other coastal areas and does not cause any damage to buildings, it is of great importance for the potential evaporation of water by plants and soil. In the period March-June the average wind speed is highest, in combination with high daily sunshine figures it results in the high average class A pan evaporation figures for that same period.

Hurricanes which can occur from 1st June to 1st December, can cause considerable damage to buildings, crops and forests. The area was affected by an unnamed hurricane in 1934, hurricanes Anna and Hattie in 1961 and hurricane Greta in 1978 (LIC, 1996).

Geology

The parent material is early Tertiary limestone overlying Cretaceous limestone. The site of El Pilar is situated near an escarpment. This escarpment is very obvious for visitors coming from San Ignacio in the Belize River Valley. Between the village of Bullet Tree and El Pilar there is a rapid rise in elevation from ± 60 m to over 300 m. The main site of El Pilar is located at ± 240 m.

Hydrology.

Because of the limestone bedrock, the amount of streams and rivers is limited. There are some small seepage wells which feed two small perennial streams (El Manantal in the west and El Pilar Creek in the east). The drainage of these creeks is directed towards the north curving to the east before the Yalbac escarpment and ultimately draining into the Belize River. No other surface water occurs in the area.

Soils and land systems

Wright et al. 1959 recognized the following soil types for the El Pilar region (see map 2):

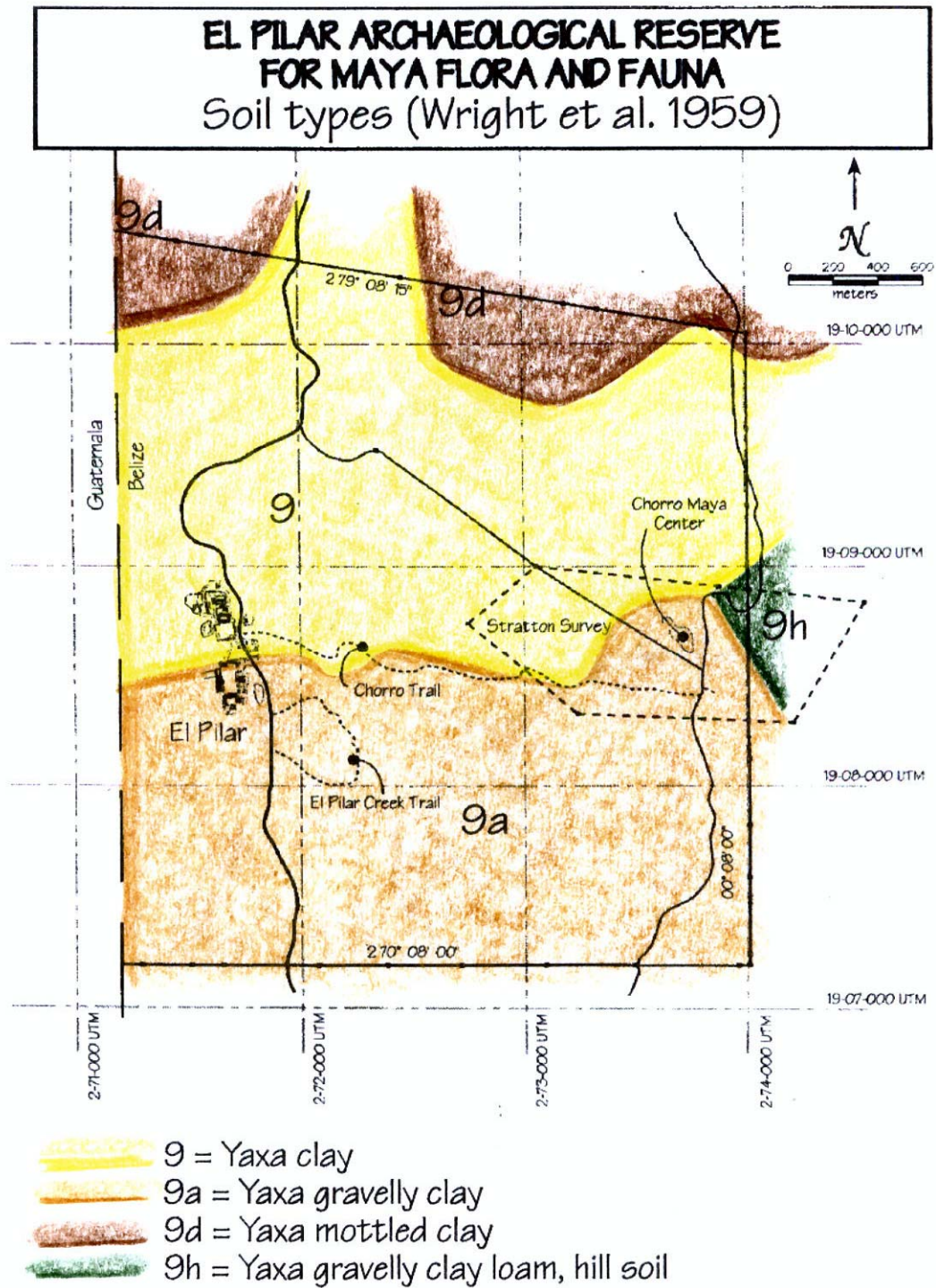
9 Yaxa clay: characterized by slow drainage but there is usually no ground water table associated. Fairly suitable for agriculture. Reported from the central area of the reserve.

9a Yaxa gravely clay: Occurs on ridges and knolls of gravel. Yaxa shallow clay takes a long time to regain a cover of bush than other Yaxa soils and bracken often invades for the first two or three years (See picture 2.). This soil has a problem with drought. Reported from the southern half of the reserve.

9d Yaxa mottled clay: This soil occurs between the swamps and the better drained Yaxa clay. During the rainy season the land is often flooded which presents a problem for agriculture. Reported from along the northern boundary of the reserve.

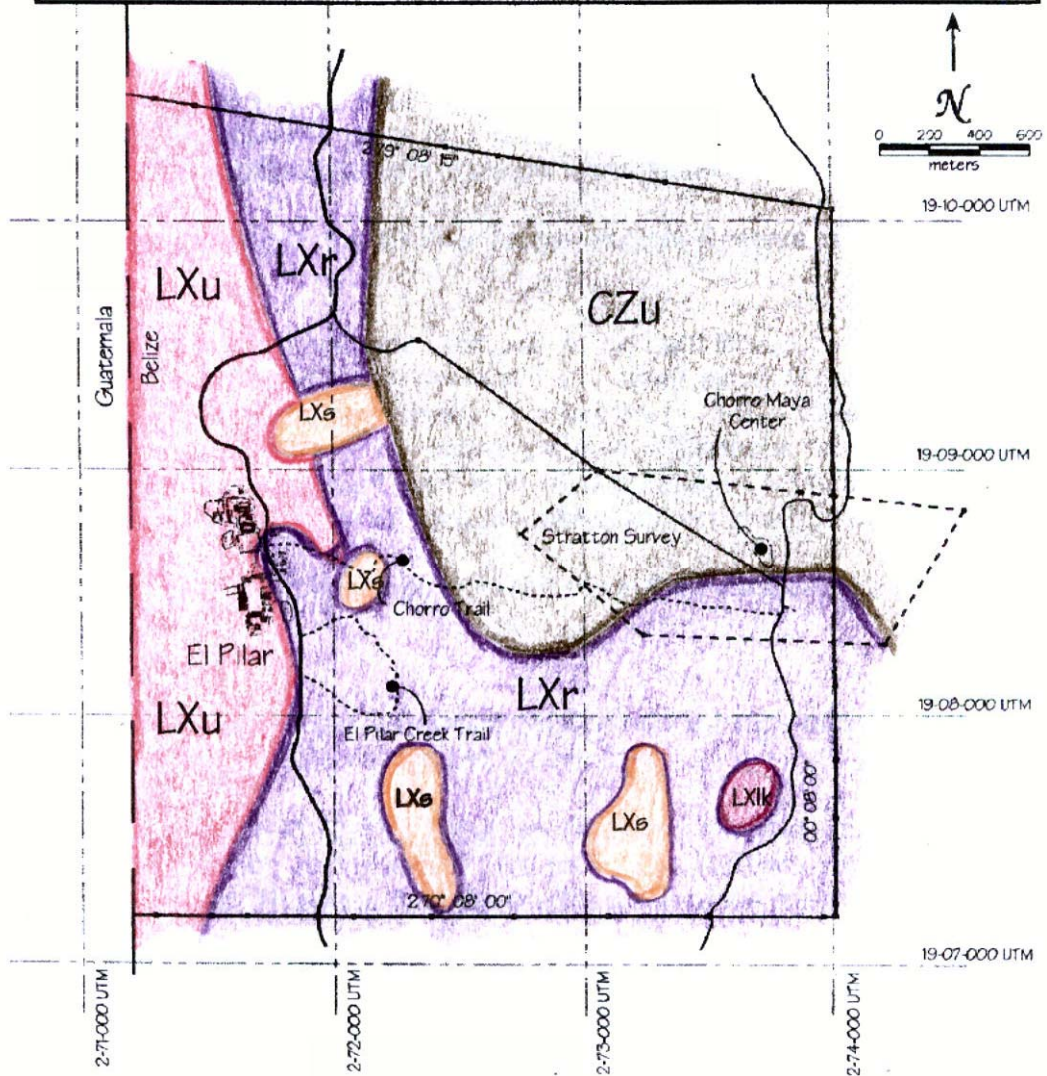
9h Yaxa gravely clay loam, hill soil: The relief is rolling with steep slopes at the escarpments. The soil is shallow and gravely and should be left in forest since drought would make permanent agriculture difficult. Reported from the east of Chorro.

Map 2.



Map 3.

**EL PILAR ARCHAEOLOGICAL RESERVE
FOR MAYA FLORA AND FAUNA**
Land systems (King et al. 1992)



-  CZu = Undulating round hole plain
- LX = Pilar Camp Hills  s = Steep slope
-  k = Low Karst
-  r = rolling
-  u = undulating

More recently Baillie et al (1993) introduced a revised soil classification for Belize. This soil classification is a three-tiered hierarchical system of suite-subsuite-series. Soil series were not established in that study. In essence, Baillie et al. (1993) lumped all the above Wright et al. (1959) soiltypes into one: the Yaxa suite, and more specifically for the El Pilar area the subsuite: Yalbac.

King et al. (1992) developed a land system for northern Belize. Within this land system. the El Pilar area is subdivided into two main landsystems (see map 3):

CZ = Round Hole Plain, which is a “plains” land system on hard limestone, which has a very low drainage density. Within the El Pilar Archaeological Reserve only the subunit u = undulating plain, occurs. Agricultural value is 3 on a scale of 5 (3 = Chances for financial success moderate with the probability subject to skilled management).

The whole north eastern quarter of the El Pilar Archaeological Reserve is within the Round Hole Plain landsystem.

LX = Pilar Camp Hills, which is a karst type land system on hard limestone with low drainage density. Several subunits are found within the area: s = steep slope (Agricultural value 5 = Chances for financial success extremely small); lk = low karst (3-5 = Chances for financial success moderate to extremely small); r = rolling plain (4 = Chances for financial success marginal even with skilled management and high inputs); and u = undulating plain (3 = Chances for financial success moderate with the probability subject to skilled management).

Approximately 2/3 of the El Pilar Archaeological Reserve is in the Pilar Camp Hills landsystem.

Flora

Both Wright et al. (1959) and Iremonger & Brokaw (1996) produced vegetation maps that cover the El Pilar region. Wright et al. (1959) recognized (see map 4):

2a = “Deciduous seasonal forest 70-100 ft high on limestone (Sapote - Sillion forest). With mahogany, spice, mylady, ramon and give-and-take palm. The soils are well drained gravelly brownish-grey clays on slopes.” Reported from the southern half of the reserve.

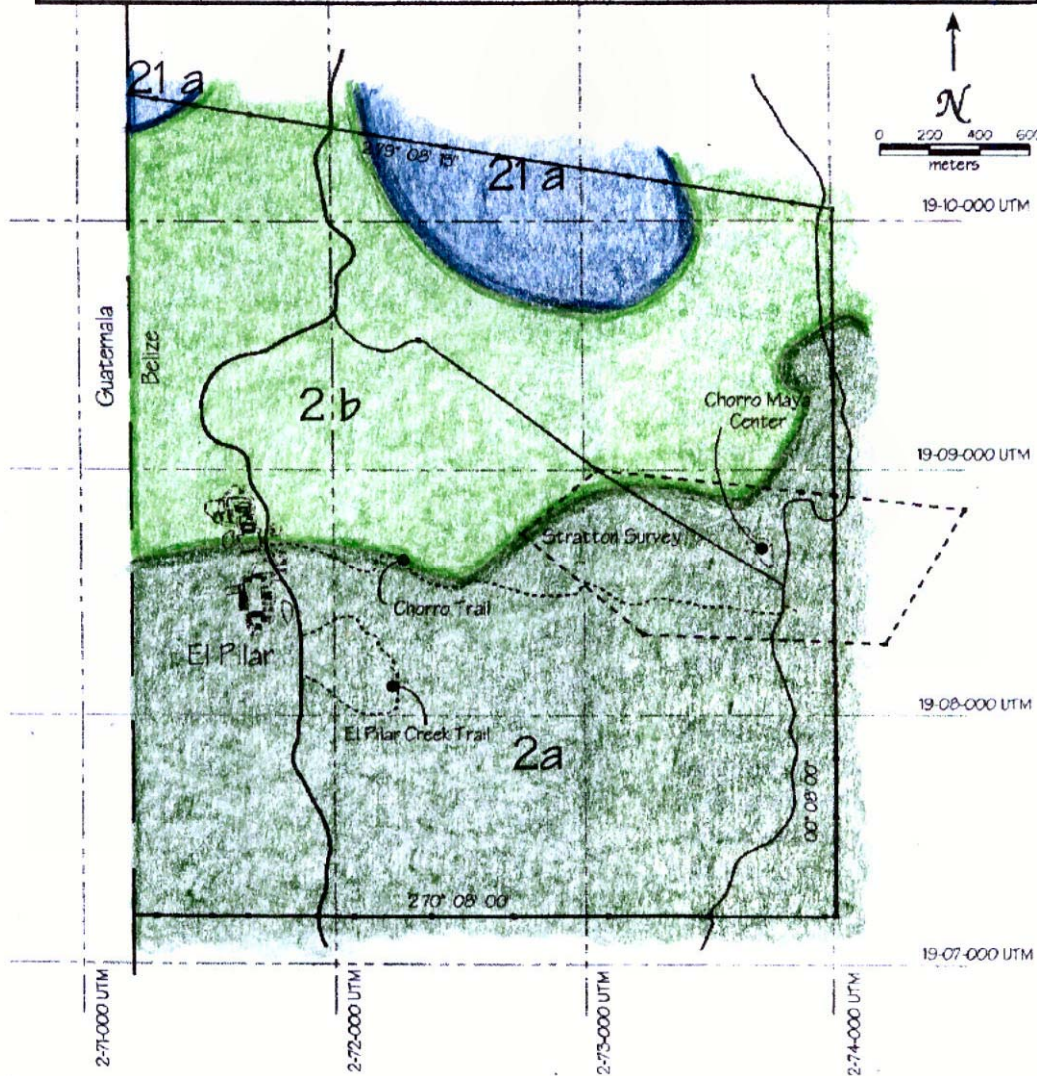
2b = “Deciduous seasonal forest 70-100 ft high on limestone (Sapote - Ramon - Spice forest). With mahogany, turtlebone, cabbage bark, give-and-take palm and thatch palm. The soils are fairly deep grey-brown clays.” Reported from the northern and central region of the reserve.




21a = “High marsh forest (Botan - Chechem forest). With abundant pucte and basket-tie-tie and frequent sapodilla and grape. All the high forests on limestone in the north of the colony tend towards this type in badly drained areas. The soils are grey brown clays or sandy clays. The canopy is broken with a distinctive shrub layer, whilst chechem, botan and pucte emerge to a height of 30-60 ft.” Reported from along the northern boundary of the reserve.

Iremonger & Brokaw (1996), for the larger part only recognized agricultural landuse and vegetation type # 48 (Disturbed scrub or Guamil) for the El Pilar Archaeological Reserve. Partly, in the north-east vegetation type #7 was still considered to be present within the area.

Map 4.

**EL PILAR ARCHAEOLOGICAL RESERVE
FOR MAYA FLORA AND FAUNA**
Vegetation types (Wright et al. 1959)



-  21a = High marsh forest (Botan - Chechem forest)
-  2b = Deciduous seasonal forest 70-100 ft high on Limestone (Sapote - Ramon- Spice forest)
-  2a = Deciduous seasonal forest 70-100 ft high on limestone (Sapote - Sillion forest)

7: "Lowland moist evergreen seasonal broadleaf forest over limestone: Northwestern Variant. This variant is characterized by forest 20 - 30 m tall. Common trees are: *Alseis yucatenensis*,



Ampelocera hottlei,
Aspidosperma cruenta,
Brosimum alicastrum, *Bursera simaruba*, *Drypetes browni*,
D.laterifolia, *Hirtella americana*, *Manilkara zapota*,
Metopium brownei, *Orbignya cohune*, *Pouteria reticulata*,
Pouteria amygdalina, *Pouteria sp.*, *Pseudolmedia sp.*,
Protium copal, *Pseudobombax ellipticum*, *Sabal morrisiana*,
Schoepfia schreberi, *Spondias mombin*, *Stemmadenia donnell-smithii* and *Trichilia minutiflora*. *Chrysophila argenta* is common in the understory and midstory. Soils are well drained grey or brown clays, variably stony."

48: "Disturbed scrub. In this case as a result of anthropogenic influence as when land is cleared and left fallow."

Picture 2. El Pilar as seen from the air. In the foreground the El Pilar Maya sitte. Spanish Lookout can be seen in the background. Note the treeless patches invaded by Bracken.

2. Results Rapid Ecological Assessment El Pilar Archeological Reserve

Flora

The study of Wright et al (1959) recognized 3 different original vegetation types (see section 1. "Physical Description"). With widespread deforestation taken place, it is now difficult to test the validity of the these described types for the project area. However, based on the experience that most of Wright et al's. (1959) description were usually very accurate, these descriptions could be seen as what once had been. The vegetation types recognized by Iremonger & Brokaw (1996) are more relevant to the current situation, since they report mostly agricultural use and regenerating scrub for the project area.

As part of the REA an effort was made to give a more detailed characterization of the vegetation types of the El Pilar Archeological Reserve. To achieve this, 5 general vegetation surveys were made. The purpose of these general surveys was:

- 1) to record as many plant species from the area as possible, and
- 2) to search for suitable location for vegetation transects.

One initial survey was carried out on August 13, 1997 in the Chorro area, both on and around the ruins as well as the Guamil area just west of the stream. The second and third vegetation surveys were carried out on August 22, 1997 and on September 3, 1997, on and immediately around the main El Pilar ruins, the fourth survey was carried out on August 22, 1997 all along the "Water Trail" and the final, fifth survey was carried out on April 18, 1998 in a patch of high forest in the north western section of the reserve. Also, 2 overflights (March 17, 1997 and March 3, 1998) were made over the general area (see pictures 1, 2).

Following the first 4 general vegetation surveys and first overflight, 3 vegetation transects were made. The first two were taken on 19 December 1997 (Chorro and Border), while the third one was carried out on 23 December 1997 (Water Trail).

A total of 7 data sets is now available, all from the above described original surveys. A total of 205 taxa belonging to 71 families have been identified. Among these are 17 species of Orchid. Many identifications are to genus only since species identification is often impossible when only sterile material is available for identification. No specimens were collected as no time and funds were available for this purpose. The preparation and subsequent storage and identification of herbarium specimens is a costly process, often taking several years.

The methodology used for the vegetation transects has been adapted from the methodology used by the Forest Planning and Management Project in Belize (Shawe, 1997). This methodology involved the opening of a 200 meter long (and in this study, straight) line through the vegetation under study. Care was taken not to remove any of the trees along the transect. The cut line only served to facilitate access. The actual transect consisted of a 4 m wide band along the cut line (2 m to the left, 2 m to the right). For practical purposes, the 200 m long transect was divided into 20 separate, 10 m long segments. In these segments, all trees with a diameter at breast height (dbh) of more than 5 cm (as a rule 10 cm dbh is taken but taking the secondary nature of the forest, this smaller size class was selected) are counted, dbh measured and where possible identified. Also per 10 m segment, notes were taken on: soil type, slope, canopy height and canopy cover. The original data are presented in the appendix.

With the data thus obtained, several biodiversity indices were calculated for each transect: these indices included a) the number of species (N_0), b) the number of abundant species (N_1), c) the number of very abundant species (N_2), d) the Shannon's diversity index (H') in which a higher figure indicates a higher diversity, e) the level of evenness (E_5) which looks at the number of individuals per species and in which a high evenness (=1) indicates a high diversity and un-even communities receive a figure < 1. and finally f) the rarefaction at sample size of 50 trees which is the number of species had the sample size been 50. All these biodiversity data are useful when comparing different sites. In conjunction with these biodiversity indices, the dominant tree species (> 10% of total) was noted.

Also per transect a number of structural data was abstracted such as a) the number of stems >5cm dbh, b) the average stem dbh, c) the total number of trees with a dbh >5cm, d) the number of multistemmed trees, e) the number of dead trees and f) the space per living tree in m^2 . These data also give some indication on the dynamics of the transect (large dbh and no dead trees: static; many thin stemmed and dead trees: dynamic).

Results

General

As stated earlier, most of the vegetation of the El Pilar Archaeological Reserve has in recent times been altered by human influence. As a result, the Wright et al. (1959) description bears mostly historic significance although traces of the vegetation types described can still be found. The description by Iremonger & Brokaw (1996) is more contemporary and accurate but little detailed except for the description of the vegetation type # 7: "Lowland moist evergreen seasonal broadleaf forest over limestone". Which also turned out to be a very applicable description of the sections of high forest still present within the reserve. Even though considerable variation exists within this type (the "Cohune Ridge" from the "Border" transect is very distinct from a section of high forest slightly further north which was sampled on April 18, 1998).

From a floristic point of view it is interesting to note that the peaks of the higher ancient Maya structures now bear a distinct vegetation type. As a result of the exposed and well drained nature of these artificial structures, the vegetation on these mounds is very drought resistant and floristically the vegetation type now resembles Iremonger & Brokaw's (1996) vegetation type #17: Broadleaf hill forest over limestone in steep terrain. Typical plants for these mounds include: *Anthurium schlechtendalii* (Cola de Faisan), *Forchhammeria trifoliata*, *Gaussia maya*, *Begonia sericoneura*, *Clusia sp.*, *Dorstenia contrajerva*, *Metopium brownei* (Black Poisonwood) and *Peperomia sp.* Orchids and Epiphytic Bromeliads are common.

Seasonality is a distinctive aspect of the flora of El Pilar. As stated in the climate section, there is a distinct water deficiency during the months of February through May. As a result only plant species adapted to such a water shortage will be found. Also many tree species react by shedding their leaves during at least part of the dry season. Although the general aspect of the forest (especially the more mature, high forest) remains that of "evergreen" there is a distinct deciduous component and the canopy is much more open especially during April-May than it is during the rainy season. Also during the latter half of the dry season, the forest floor is covered in a thick layer of fallen leaves. There is a general trend among many deciduous trees (such as: *Ceiba pentandra*, *Cedrela odorata*, *Swietenia macrophylla*, *Cassia grandis*, *Schizolobium*

parahybum, *Enterolobium cyclocarpum*, *Vitex gaumeri*) to flower and/or fruit during the dry season.

The most remarkable plant found within the reserve was the invasive orchid *Oeceoclades maculata*. Originally an African species which was first reported from Belize from the Green Hills Butterfly Farm Property in the Cayo district. This species also turned out to be present throughout the El Pilar Archaeological Reserve.

Vegetation transects

The following table (table 2.) presents the most important data obtained from the 3 different vegetation transects. The original data are presented in it's original form in the appendix of this document.

Table 2. For explanation see text

| | Chorro | Water Trail | Border |
|--|--|--------------------|--|
| Number of species N₀ | 35 | 47 | 32 |
| Abundant species N₁ | 26 | 34 | 17 |
| Very abundant species N₂ | 24 | 32 | 17 |
| Shannon's diversity index H' | 3.24 | 3.52 | 2.82 |
| Evenness E₅ | 0.95 | 0.94 | 0.60 |
| Rarefraction at sample size of 50 trees | 25 species | 28 species | 20 species |
| Number of stems > 5 cm dbh | 109 | 190 | 127 |
| Average stem dbh | 13.6 cm | 11.7 cm | 14.9 cm |
| Number of trees | 99 | 171 | 115 (146 incl. Corozo trees) |
| Number of multistemmed trees | 6 | 13 | 8 |
| Number of dead trees | 3 | 17 | 0 |
| Space per living tree in m² | 8.3 m ² | 5.2 m ² | 5.5 m ² |
| Dominant species (> 10% of total) | <i>Stemmadenia donnell-smithii</i> : Cojoton | None | <i>Attalea cohune</i> : Corozo, <i>Ampelocera hottlei</i> : Luin |

Explanation per transect:

Chorro: Site with mosaic of older secondary growth and very young Guamil (since many thin stemmed shrubs occurred, this resulted in an apparently large average space per living tree). Characterized by medium richness, diversity and dynamics and a high evenness.

Water trail: Site with extensive secondary growth but also with remnants of original vegetation. High evenness. Most species rich and diverse transect. The small average stem dbh and high number of thin-stemmed trees and dead trees indicate high dynamics.

Border: "Cohune ridge" consisting of "old" (judged by average stem size and species composition) secondary growth with low dynamics. Much of the transect is "bajo" with seasonally wet soils. This physical condition is probably the main factor causing the low

richness and diversity indicated by the low evenness, low rarefaction and low Shannon's diversity index.

To be able to compare the biodiversity of these three plots with other Belizean sites, these data should at some stage be compared with data from permanent sampling plots elsewhere in Belize. The Forest Management and Planning Project (FPMP) of the Forest Department established several of such permanent sampling plots throughout Belize but unfortunately the FPMP has come to an end and the data are currently not available for comparison.

Fauna

Most of the fauna was sampled by means of opportunistic observations, generally during the vegetation surveys. Only the Lepidoptera were sampled in a more systematic manner (see the insect section). Results are presented per order.

Insects

Of all the insects only two orders were sampled (Lepidoptera and Odonata). From these, certain Lepidoptera families (Papilionidae, Pieridae and Nymphalidae) received special attention. Rationale for this biased sampling effort was the belief that diurnal Lepidoptera are excellent ecological and biodiversity indicators. In this aspect it is interesting to note that during the September 28 - October 3, 1997, Maya Forest Biodiversity Monitoring Workshop (organized by CONAP - MAB/TED - SI/MAB - WCS - CCB/Stanford), Lepidoptera were chosen as one of the most suitable groups of organisms for biological monitoring purposes in the region. This decision was made when 40 biologists from Mexico, Guatemala, Belize and the USA met to discuss mutual monitoring efforts in the Belize, Peten, Quintana Roo, Campeche and Chiapas region.

Data collecting methods included:

- 1) Study of records already present in the Belize Tropical Forest Studies database (Diurnal Lepidoptera).
- 2) Visual observations and identification along or near the initial vegetation transects (Diurnal Lepidoptera and Odonata).
- 3) Netting with a standard butterfly net with identification after capture along or near the initial vegetation transects (Diurnal Lepidoptera and Odonata).
- 4) Trapping with standard butterfly traps baited with rotting fruit) along or near the initial vegetation transects (Diurnal, fruit-feeding Lepidoptera)
- 5) Attracting to a 12V, 15W UV fluorescent tube fitted near a white sheet located at the Parking Place (Nocturnal Lepidoptera).

Due to the nature and purpose of the assessment, no long term transects were initiated.

A total of 9 different data sets were collected. Six were obtained in the period between March 9, 1997 and April 18, 1998 through original research efforts, and three older (Period July 3, 1994 to March 23, 1996) datasets came from the Belize Tropical Forests Studies Database (which includes El Pilar data from the Chaa Creek Natural History Collection).

Together, these 9 data sets contain data of 8 Lepidoptera families and 2 Odonata suborders. And a total of 142 species have been identified:

Lepidoptera: 8 Hesperidae species, 5 Lycaenidae species, 69 Nymphalidae species, 7 Papilionidae species, 12 Pieridae species, 3 Riodinidae species, 18 Sphingidae species and 7 Saturniidae species.

Odonata: 8 Zygoptera (Damselflies) and 5 Anisoptera (Dragonflies).

The results of the assessment are presented in the appendix: "Insect species list" in which all data are arranged by collecting date and habitat.

The Lepidoptera fauna of El Pilar exhibits a moderate biodiversity and a biogeographical affinity that shows a transition from a typical Northern Belize fauna (with few Heliconiinae and Ithomiinae) to a typical West-Central Belize fauna (with medium numbers of Melitaeinae and Heliconiinae). The most interesting species recorded is the Nymphalid *Siproeta superba* which from within Belize is known from only a few records (Meerman, 1998).

As per habitat, the El Pilar site revealed the highest number of diurnal Lepidoptera species (73), followed by Chorro (68 species) and the Water trail (55 species). The main road was with 37 species very species poor but surprisingly, the two high forest habitats combined proved to be the poorest (20 species). The latter is not an artefact of sampling intensity since all sites were sampled with equal intensity.

Not surprisingly, a large number of species typical for open and disturbed habitats was recorded (*Danaus gilippus*, *Danaus plexippus*, *Agraulis vanillae*, *Dione juno*, *Dryas iulia*, *Dryadula phaetusa*, *Euptoieta hegesia*, *Heliconius charitonius*, *Chlosyne janais*, *Thessalia theona*, *Anartia fatima*, *Anartia jatrophae*, *Catonophela mexicana*, *Dynamine mylitta*, *Hamadryas feronia*, *Hamadryas februa*, *Historis odius*, *Junonia genoveva*, *Mestra amymone*, *Siproeta stelenes*, *Cissia hermes*, *Battus polydamas*, *Eurema daira*, *Eurema nise*, *Eurema proterpia*, *Phoebis agarithe*, *Phoebis argante*, *Phoebis philea* and *Calephelis* spp.). Yet, there appears enough high and relatively undisturbed forest left for a few species typical of this habitat (*Caligo uranus*, *Archaeoprepona meander*, *Nessaea aglaure*, *Tigridia acesa*, *Cissia glaucina* and *Taygetis nympha*).

The Odonata fauna also reflects the habitats available. The two *Hetaerina* species are typical components of flowing water, especially small streams. The Anisoptera (Dragonflies) species recorded are typical for any open, disturbed habitat. No rare or unusual species were recorded. The Helicopter damselfly: *Pseudostigma accedens* is a typical dry season component. This species breeds in "phytothelmata" which are small pockets of water hollow trees etc. During the dry season, these phytothelmata dry up. The species has adapted its lifecycle according to the seasons and the larva matures early in the dry season becoming an adult before its small "pond" dries up. As soon as the rains start and the phytothelmata fill up again, the adults start laying their eggs.

There is a distinct seasonal aspect noticeable in the composition of the diurnal Lepidoptera fauna (see Insect species list). As a rule, the total number of butterfly individuals decreases during the dry season. The number of Swallowtail butterflies (Papilionidae) however, increases sharply towards the end of the dry season and the start of the rainy season. Many nocturnal Lepidoptera such as the Hawkmoths (Sphingidae) and Emperor Moths (Saturniidae) have a distinct peak during the start of the rainy season (Meerman, 1998).

Vertebrates

A total of 7 different data sets are now available (See appendix: "Bird species list" and "Fauna species list"). Six of which are from original research. These data sets include information on:

Fishes:

Only one species of fish, the Poeciliid *Hetaerandia bimaculata* was observed in the small stream flowing through the reserve (water trail). These small fishes were even observed in the spring at the beginning of the Water trail. Given the size and volume of the stream through El Pilar few additional fish species can be expected. One of the most likely candidates being one or more of the Synbranchid Mud-Eels.

Amphibians:

Amphibians were sampled during the nocturnal survey. The number of Amphibians recorded from El Pilar is very low (5 species: *Bufo valiceps*, *Agalychnis callidryas*, *Hyla loquax*, *Smilisca baudinii*, *Rana vaillanti*). This low number is an artifact of the fact that sampling took place well after the actual start of the rainy season. Most amphibians breed at the very start of the rainy season and it is often difficult to find them afterwards. All species recorded are common in similar habitats throughout Belize.

Reptiles:

Most reptiles (especially the snakes) lead highly obscured lives and as a result, are very difficult to observe. The 14 species noted (10 lizards (*Coleonyx elegans*, *Sphaerodactylus glaucus*, *Basiliscus vittatus*, *Corytophanes cristatus*, *Sceloporus taepensis*, *Lepidophyma flavimaculatum*, *Anolis limifrons*, *Anolis lemurinus*, *Anolis uniformis* and *Ameiva undulata*) and 4 snakes: (*Drymobius margaritiferus*, *Sibon sartori*, *Sibon nebulata* and *Bothrops asper*) have therefore to be considered the tip of the iceberg. None of the species recorded is unusual in the west-central part of Belize.

Birds:

Bird data were collected during all field work sessions (including nocturnal). Most records involve actual observations and subsequent identification but a number of records (especially nocturnal) are based on vocal identification.

Six different data sets were collected. Five were obtained through original research efforts, and one was abstracted from the Journal of H. L. Jones (pers. comm.). In total, 149 different bird were noted in or immediately around El Pilar (see in the appendix: "Bird species list"). This relatively low number has to be attributed to the absence of any resident birders in the area. Also, El Pilar is a checkerboard of secondary growth without any real different habitats (such as Lakes, Ponds, Rivers, Savanna etc.). Taking this into account the number of recorded bird species for El Pilar can be expected to increase to around 200 but unlikely much beyond that.

There is a distinct seasonal aspect in the composition of the bird-fauna. During the winter months, the local bird fauna is supplemented with immigrants from North America (See Birds species list). Also many resident birds breed during the second half of the dry season, and as a result of increased territorial and courtship behavior during this period, they become briefly more obvious.

The most unusual bird record of the area (but outside the reserve) is probably the record of 2 Plain Wrens (*Thryothus modestus*) which were repeatedly heard and seen by Jones and Meadows about 6-7 m high in vines beside the road about 5 km south from the El Pilar ruins. This was an unexpected find, as it was thought that this species was confined to the Mountain Pine Ridge.

Another bird of special interest is the Keel-billed Motmot (*Electron Carinatum*). This unusual bird was not noted for El Pilar, but was heard on April 19, 1998 in a sinkhole 4 km south of the El Pilar Archaeological Reserve boundary. Keel-billed Motmot's usually nest in cliffs and although no major sinkholes or similar geological features exist within El Pilar, it would be worth looking for this bird around the streams.

Jones also noted that he observed approximately 56 species in one feeding flock at El Pilar Ruins, not counting birds flying overhead or seen elsewhere at the ruins. This is perhaps the most species he has ever seen in one flock in any given area.

While most of the recorded birds are typical for edges, scrub forest and secondary growth, there are still at least 8 species present that are typical for the forest interior (Great Curassow, Scaled Pigeon, Smoky-brown Woodpecker, Buff-throated Foliage-gleaner, Dot-winged Antwren, Thrushlike Mourner, White-breasted Wood-Wren, Wood Thrush). This number increases when the birds are included that were reported by Jones but from which it is not strictly certain whether they were observed in or just outside the Archeological Reserve (Collared Forest-Falcon, Mealy Parrot, Tody Motmot, Plain Xenops, Mexican (Black-faced) Anttrush, Northern Bentbill, Stub-tailed Spadebill, Tropical Gnatcatcher, Tawny-crowned Greenlet, Lesser Greenlet, Black-throated Shrike-Tanager).

No particularly rare or unusual species were recorded from within the reserve boundaries. Both the Plain Wren and the Keel-billed Motmot were recorded from just outside the reserve.

Mammals:

Mammal data were collected during all field work sessions (including nocturnal) and additional species were reported by El Pilar caretakers. The records involve actual observations but are mostly based on track records. An acoustic Bat study was carried out in El Pilar by B. Miller (Wildlife Conservation Society) during the 1997 season (Miller, 1998) and the results of this study are incorporated in the current survey, 28 different mammal species belonging to 17 different families were recorded. This number is still low and can be expected to increase drastically with continued research, especially when this research would focus on bats and the smaller rodents.

The Mammal fauna seems to be depressed as a result of heavy hunting pressure (many spent shotgun shells found) and habitat alteration. Also because of this, most mammals are very shy and difficult to observe. Only certain species such as the Coati and the Tayra seem relatively unafraid.

As a result of this intensive hunting, there is a depressed prey base and as a result there are very few reports of large cats (Jaguar, Puma) from the area. Nevertheless, there is a recent report of a Jaguar seen inside the boundaries of the Archeological Reserve plus a report of another Jaguar killed near Pilar Poniente on the Guatemalan side of the border (A. Ford, pers. comm., April 1998).

Most interestingly, there appear to be several groups of Mexican Black Howler Monkeys living just outside or even in the Archeological Reserve. During field work on December 19, 1997, at least 2 different groups were heard on the Guatemalan side while a third group was heard just NE of Chorro. In 1996, a group of Howler Monkeys was heard in the high forest North of the main El Pilar ruins (J. Meerman).

Conclusions

As a result of the current REA some patterns are beginning to emerge. First of all, it is very obvious that most of the vegetation within the reserve is secondary growth or “Guamil”. And as the example of the “Border” vegetation transect shows, even much of the higher forest left within the reserve shows signs of relatively recent disturbance.

As a result, the fauna of the area is characterized by species adapted to dynamic, disturbed habitats. Both the Bird list and the diurnal Lepidoptera list demonstrate this very well. Most of such species are common and widespread, not just in Belize but throughout the region. Yet both among the birds and the diurnal Lepidoptera are some species that are indicative for high/mature forest. As a matter of fact, both these groups of organisms contain good indicator species as for the age and structure of the forest.

Based on both floristic and Lepidoptera data, there appear to be two important biodiversity “hot spots” within the El Pilar Archeological Reserve. Based on the results of the vegetation transects, the area around the creek at the base of the Water Trail appears to have the most diverse flora. The same appears true for the creek area at Chorro which, although severely impacted by Milpa agriculture, still supports a relatively high number of plant species. Based on Lepidoptera data, the main El Pilar archeological site appears the most diverse, followed at some distance by the Chorro area.

These findings have direct implications for the future management of the El Pilar Archaeological Reserve. Assuming that it would prove possible to control Milpa farming within the reserve, the successful natural regeneration of the forest has reasonable chances of success. There is still sufficient diversity within the observed bio-diversity “refugia” (being the actual Maya sites plus the creek valleys), to allow the general recolonization of the area with forest plants and animals. Continued monitoring of the now established transects should be able to demonstrate these changes in the structure of biodiversity of the El Pilar Archaeological Reserve.

Management measures to achieve successful regeneration include:

- Protection from fires
- Protection from clearings for Milpa farming
- Protection from hunting
- Special protective measures for the above mentioned “refugia”

Tree planting as a method to speed up regeneration can be applied near tourist area's, Maya forest garden and other areas under special management. Tree planting elsewhere is not cost effective and it would be best to let natural regeneration run it's course.

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List of appendixes

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**Rapid Ecological Assessment
El Pilar Archaeological Reserve
FLORA species list**

* = Introduced species

| | | Chorro area (13-Aug-97) | Chorro ruins (13-Aug-97) | Main Ruins (22-Aug-97, 3-Sep-97) | Water Trail (22-Aug-97) | Cohune Ridge (19- Dec-97) | High Forest (18-Apr-98) |
|--------------------------------------|--|----------------------------|-----------------------------|--|----------------------------|---------------------------------|----------------------------|
| ACANTHACEAE | | | | | | | |
| <i>Aphelandra deppeana</i> | | x | | x | x | | |
| <i>Blechnum brownei</i> | | x | | x | x | | |
| <i>Lutheridium donnell-smithii</i> | Mountain cow bush | | x | x | x | | |
| <i>Odontonema sp.</i> | | x | x | x | x | | |
| ADIANTACEAE | | | | | | | |
| <i>Adiantum sp.</i> | | x | | x | x | | |
| AGAVACEAE | | | | | | | |
| <i>Dracaena americana</i> | Candle wood | x | | x | x | | x |
| ANACARDIACEAE | | | | | | | |
| * <i>Mangifera indica</i> | Mango | x | | | x | | |
| <i>Astronium graveolens</i> | Glassy Wood, Palo Mulatto, Jobillo, Culinzís, Kulimche, Xcolin | x | | x | x | | x |
| <i>Metopium brownei</i> | Black Poisonwood, Chechem negro, Box chechem | x | | x | x | | |
| <i>Spondias mombin</i> | Hogplum, Ciruela amarilla, Jobo Jocote jobo, Kinim, Kanabal, Puk | x | x | x | x | | x |
| ANNONACEAE | | | | | | | |
| <i>Unidentified</i> | | | x | | | | |
| <i>Unidentified</i> | | | | | | x | |
| <i>Unidentified</i> | | | | | x | | |
| * <i>Annona reticulata</i> | | x | | | | | |
| <i>Annona scleroderma</i> | | x | | x | x | | |
| <i>Cymbopetalum penduliflorum</i> | Candelerero, Muc | x | | | x | | |
| <i>Malmea depressa</i> | | | | x | | | |
| APOCYNACEAE | | | | | | | |
| <i>Aspidosperma megalocarpon</i> | | | x | x | x | x | x |
| <i>Stemmadenia donnell-smithii</i> | Cojotón, Cojón de caballo, Huevo de perro, Chaklakín | | x | x | | x | |
| <i>Thevetia ahouai</i> | Cojón de mico, Cojón de perro, Akits | x | | | x | x | x |
| ARACEAE | | | | | | | |
| * <i>Colocasia esculenta</i> | | | | x | x | | |
| <i>Anthurium pentaphyllum</i> | | | | x | x | | |
| <i>Anthurium schlechtendalii</i> | | | x | x | | | |
| <i>Monstera sp.</i> | | | | | x | | |
| <i>Philodendron radiatum</i> | | | | | x | | |
| <i>Philodendron sp.</i> | | x | | | x | | |
| <i>Syngonium angustatum</i> (?) | | | | | x | | |
| ARALIACEAE | | | | | | | |
| <i>Dendropanax arboreus</i> | White Gombolimbo, Mano de leon, Sac chacah | | | x | x | | x |
| ARECACEAE | | | | | | | |
| * <i>Cocos nucifera</i> | Coconut | x | | | x | | |
| <i>Acrocomia aculeata</i> | Suppa, Grugru, Coyol, Istuk | x | | | x | | |
| <i>Attalea cohune</i> | Cohune, Corozo, Manaca, Chunciey, Tutz | x | x | x | x | | x |
| <i>Bactris mexicana</i> | Pokonoboy | | x | | | x | x |
| <i>Chamaeodorea ernesti-augustii</i> | | | | x | x | | |

Rapid Ecological Assessment
EI Pilar Archaeological Reserve
FLORA species list

* = Introduced species

| | | Chorro area (13-Aug-97) | Chorro ruins (13-Aug-97) | Main Ruins (22-Aug-97, 3-Sep-97) | Water Trail (22-Aug-97) | Cohune Ridge (19- Dec-97) | High Forest (18-Apr-98) |
|---------------------------------|--|----------------------------|-----------------------------|--|----------------------------|---------------------------------|----------------------------|
| <i>Chamaedorea pinnatifrons</i> | Pacaya | | | x | x | | x |
| <i>Cryosophila stauracantha</i> | Give-and-take, Silver thatch, Escoba, Kuun, Akuum | | | x | x | x | x |
| <i>Desmonchus orthacanthos</i> | Bayal | | | x | x | x | x |
| <i>Gaussia maya</i> | | | | x | x | | |
| <i>Sabal mauritiiformis</i> | Botan, Guanu, Bayleaf | x | | x | x | x | x |
| ARISTOLOCHIACEAE | | | | | | | |
| <i>Aristolochia maxima</i> | Guaco | | | | | | x |
| ASCLEPIDACEAE | | | | | | | |
| <i>Asclepia curassavica</i> | | x | | x | x | | |
| ASTERACEAE | | | | | | | |
| <i>Bidens pilosa</i> | | x | | | | | |
| <i>Bidens squarrosa</i> | | x | | | | | |
| <i>Critonia morifolia</i> | Palo verde, Xaax como che | | x | x | x | | x |
| <i>Koanophyllon albicaulis</i> | Palo negro | | x | | x | | |
| Unidentified | | x | | | | | |
| Unidentified | | | x | | | | |
| Unidentified | | | | | x | | |
| BEGONIACEAE | | | | | | | |
| <i>Begonia sericoneura</i> | | | | x | | | |
| BIGNONIACEAE | | | | | | | |
| <i>Bignoniaceous vines</i> | Xbilinkuk | | | x | | | x |
| <i>Parmetiera aculeata</i> | Cow okra, Cuajilote, Kat | | x | | | | |
| Unidentified | Vine | | | | x | x | |
| BOMBACACEAE | | | | | | | |
| <i>Ceiba pentandra</i> | Ceiba, Cotton tree, Kapok, Yaxché, Inup | x | | x | x | | x |
| <i>Ochroma pyramidale</i> | | | | | | | x |
| <i>Pseudobombax ellipticum</i> | White Mapola, Senoritas, Santa barbara, Kuyche, Chulte | | | | x | | |
| <i>Quararibea funebris</i> | Batidor | | | | | x | x |
| BORAGINACEAE | | | | | | | |
| <i>Bourreria oxyphyllaria</i> | Wild craboo, Roble blanco, Cacuche | x | | x | x | | |
| <i>Cordia gerascanthus</i> | | | | | | x | |
| <i>Cordia sp.</i> | | | | | | | x |
| <i>Heliotropium sp.</i> | | x | | x | x | | |
| <i>Tournefortia gnaphalodes</i> | | x | | x | x | | |
| BROMELIACEAE | | | | | | | |
| * <i>Ananas comosus</i> | Pineapple, Piña | x | | | x | | |
| <i>Achmaea bracteata</i> | | x | | | | | |
| <i>Androlepis skinneri</i> | | | | x | x | | |
| <i>Bromelia pinguin</i> | Piñuela, Ix-tot | x | x | | x | x | |
| <i>Tillandsia schiedeana</i> | | | | | x | | |
| BURSERACEAE | | | | | | | |
| <i>Bursera simaruba</i> | Red Gombolimbo, Birch, Tourist tree, Indio desnudo, Sirvella simarona, Chacah, Hukup, Kakah | x | x | x | x | x | x |

Rapid Ecological Assessment El Pilar Archaeological Reserve FLORA species list

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|-----------------------------------|---|----------------------------|-----------------------------|--|----------------------------|---------------------------------|----------------------------|
| <i>Protium sp.</i> | Copal, Pom, Pomte | | x | x | x | | x |
| <i>Protium sp. 2</i> | Copal | | x | | x | | |
| <i>Unidentified</i> | | | | | x | | |
| CACTACEAE | | | | | | | |
| <i>Epiphyllum sp.</i> | | | | x | x | | |
| <i>Rhipsalis baccifera</i> | | | | x | x | | |
| <i>Selenicereus sp.</i> | | | | x | x | | |
| CAPPARACEAE | | | | | | | |
| <i>Forchhammeria trifoliata</i> | | | x | x | | | x |
| CECROPIACEAE | | | | | | | |
| <i>Cecropia peltata</i> | Trumpet, Guarumo, Ixcoch, Cho otz | x | | x | x | | x |
| CLUSIACEAE | | | | | | | |
| <i>Calophyllum brasiliense</i> | Santa Maria | x | | | x | | x |
| <i>Clusia sp.</i> | | | | x | | | |
| COMBRETACEAE | | | | | | | |
| <i>Bucida buceras</i> | Bullet Tree, Pucte | | | | | | x |
| COMMELINACEAE | | | | | | | |
| <i>Tradescantia discolor</i> | Chatsum | | | x | x | | |
| CONVOLULACEAE | | | | | | | |
| <i>Ipomoea sp.</i> | | x | | x | x | | |
| CUCURBITACEAE | | | | | | | |
| <i>Melothria sp.</i> | | x | | | x | | |
| <i>Momordica charantia</i> | | x | | x | x | | |
| <i>Psiguria triphylla</i> | | | | x | | | |
| CYCADACEAE | | | | | | | |
| <i>Zamia polymorpha</i> | | x | | x | x | | x |
| DIOSCOREACEAE | | | | | | | |
| <i>Dioscorea sp.</i> | | x | | x | x | | |
| EUPHORBIACEAE | | | | | | | |
| <i>Acalypha sp.</i> | | | x | | | | |
| <i>Alchornea latifolia</i> | | | | | x | | x |
| <i>Cnidocolus sp.</i> | Chaya | x | | x | x | | |
| <i>Dalechampia sp. 1</i> | | x | | x | x | | |
| <i>Dalechampia sp. 2</i> | | x | | x | x | | |
| <i>Drypetes brownii</i> | | | | | x | | |
| <i>Plukenetia angustifolia</i> | | x | | | | | |
| <i>Unidentified</i> | Redwood | x | | | | | |
| FABACEAE: CAESALPINIOIDEAE | | | | | | | |
| <i>Cassia grandis</i> | Bokut, Stinking toe | x | | | | | |
| <i>Bauhinia herrerae</i> | Kibix | | | | | x | x |
| <i>Schizolobium parahybum</i> | Quamwood | | | | | x | x |
| <i>Senna stenocarpa</i> | | x | | | | | |
| FABACEAE: MIMOSOIDEAE | | | | | | | |
| <i>Acacia sp.</i> | Cockspur, Bullhorn Acacia, Ant thorn, Liscanal, Pico de Gurrion, Zubin, Huascalan | x | | x | x | | x |
| <i>Enterolobium cyclocarpum</i> | Guanacaste, Tubroos | x | | | x | | |
| <i>Inga sp.</i> | | x | | | x | | |

**Rapid Ecological Assessment
El Pilar Archaeological Reserve
FLORA species list**

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| | | Chorro area (13-Aug-97) | Chorro ruins (13-Aug-97) | Main Ruins (22-Aug-97, 3-Sep-97) | Water Trail (22-Aug-97) | Cohune Ridge (19- Dec-97) | High Forest (18-Apr-98) |
|----------------------------------|--|----------------------------|-----------------------------|--|----------------------------|---------------------------------|----------------------------|
| <i>Mimosa hondurana</i> | Linda hermosa, Tearcoat, Haulback | x | | | x | | |
| <i>Mimosa pudica</i> | Dormilona | x | | x | x | | |
| <i>Pithecellobium sp.</i> | | x | | x | x | | |
| <i>Unidentified</i> | False Prickly yellow | | x | | | | |
| <i>Unidentified</i> | | | x | | | | |
| <i>Unidentified</i> | | | | | | x | |
| <i>Unidentified</i> | | | | | x | | |
| <i>Zygia sp.</i> | Turtlebone | x | | | | | |
| FABACEAE: PAPILIONOIDEAE | | | | | | | |
| <i>Desmodium sp.</i> | | x | | x | x | | |
| <i>Erythrina folkersi</i> | Coral tree, Tiger tree, Pito, | x | | x | x | | |
| <i>Lonchocarpus castilloi</i> | Black cabbage bark, Manchich | x | | | x | | x |
| <i>Lonchocarpus sp.</i> | | x | | | x | | |
| <i>Machaerium sp.</i> | | | | | x | | x |
| <i>Pterocarpus rohrii</i> | | | | x | x | | |
| <i>Unidentified</i> | | | | | x | | |
| <i>Unidentified</i> | | x | x | | | | x |
| LORANTHACEAE | | | | | | | |
| <i>Psittacanthus calyculatus</i> | | x | | | | | |
| <i>Unidentified</i> | | x | | | x | | |
| MALPIGHIACEAE | | | | | | | |
| <i>Byrsonima crassifolia</i> | Craboo, Nanche, Nancen, Chi | x | | | x | | |
| MALVACEAE | | | | | | | |
| <i>Hampea trilobata</i> | | x | x | x | x | | x |
| <i>Sida sp.</i> | Chichibe | x | | x | x | | |
| <i>Unidentified</i> | | x | | | | | |
| MARANTACEAE | | | | | | | |
| <i>Maranta arundinaceae</i> | | x | | | | | |
| MELASTOMACEAE | | | | | | | |
| <i>Miconia sp.</i> | | | | | x | | x |
| <i>sp.</i> | | | | | | | x |
| MELIACEAE | | | | | | | |
| <i>Cedrela odorata</i> | Cedar, Cedro, Culche | x | x | x | x | | |
| <i>Swietenia macrophylla</i> | Mahogany, Caoba | | | | | | x |
| <i>Trichilia havanensis</i> | Limoncillo | | x | x | x | | |
| <i>Trichilia sp.</i> | | | | | x | | |
| MORACEAE | | | | | | | |
| <i>Brosimum alicastrum</i> | Red Breadnut, Ramón rosa, Ox, Ujushté | | x | x | x | | x |
| <i>Brosimum sp.?</i> | Ramon negro | | | | x | | |
| <i>Dorstenia contrajerva</i> | | | x | x | x | | |
| <i>Ficus insipida</i> | Hijo | | | | | | x |
| <i>Ficus maxima</i> | Hijo | | x | x | x | | x |
| <i>Ficus sp.</i> | Hijo | | | | x | | |
| <i>Ficus sp.</i> | Matapalo | | | | | x | x |
| <i>Ficus sp.</i> | Matapalo | | | | x | | x |
| <i>Pseudolmedia sp.</i> | Cherry, Manax | | | x | | | x |

**Rapid Ecological Assessment
El Pilar Archaeological Reserve
FLORA species list**

* = Introduced species

Unidentified

Chorro area
(13-Aug-97)

Chorro ruins
(13-Aug-97)

x

Main Ruins
(22-Aug-97,
3-Sep-97)

Water Trail
(22-Aug-97)

x

Cohune
Ridge (19-
Dec-97)

High Forest
(18-Apr-98)

**Rapid Ecological Assessment
El Pilar Archaeological Reserve
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|---|----------------------------|---|--|----------------------------|---------------------------------|----------------------------|
| MUSACEAE | | | | | | |
| * <i>Musa sp.</i> | x | | | x | | |
| <i>Canna indica</i> | x | | | x | | |
| MYRTACEAE | | | | | | |
| * <i>Psidium guajava</i> | x | | | x | | |
| | | Guava, Guayaba, Pichi, Putah, Coloc, Heliche | | | | |
| <i>Eugenia sp.</i> | | | x | x | x | x |
| <i>Pimenta dioica</i> | | Allspice, Pimenta gorda, Ixnacacuc | x | x | | x |
| NYCTAGINACEAE | | | | | | |
| <i>Pisonia (aculeata ?)</i> | x | Uña de gato | x | | | |
| OCHNACEAE | | | | | | |
| <i>Ouratea lucens</i> | | | | | | x |
| ONOGRACEAE | | | | | | |
| <i>Ludwigia octovalvis</i> | x | | | | | |
| ORCHIDACEAE | | | | | | |
| <i>Catasetum integerrimum</i> | x | x | x | x | | |
| <i>Encyclia cochleata</i> | | | x | x | | x |
| <i>Epidendrum rigidum</i> | | | | x | | |
| <i>Maxilaria sp. A.</i> | | | | x | | |
| <i>Maxilaria sp. B.</i> | | | | x | | |
| <i>Maxilaria uncatata</i> | | | x | x | | |
| <i>Mormolyca ringens</i> | | | | x | | |
| * <i>Oeceoclades maculata</i> | | | | x | | x |
| <i>Oncidium altissima</i> | | x | x | x | | x |
| <i>Oncidium ascendens</i> | | | | x | | |
| <i>Oncidium lindenii</i> | | | x | | | |
| <i>Sobralia decora</i> | | | | x | | |
| <i>Unidentified sp. A. Large leaved</i> | | | | x | | |
| <i>Unidentified sp. B. flowering</i> | | | | x | | |
| <i>Trigonidium egertonianum</i> | | | | x | | |
| <i>Vanilla planifrons</i> | | | x | x | | |
| PASSIFLORACEAE | | | | | | |
| <i>Passiflora biflora</i> | x | x | x | x | | x |
| <i>Passiflora cobanensis</i> | | | | x | | |
| <i>Passiflora foetida var. hastata</i> | x | | | x | | |
| <i>Passiflora guatemalensis</i> | | x | x | | | x |
| <i>Passiflora rovirosae</i> | x | | | x | | |
| <i>Passiflora serratifolia</i> | x | x | x | x | | x |
| PHYTOLACACEAE | | | | | | |
| <i>Petiveria alliaceae</i> | | | x | | | |
| <i>Rivinia humilis</i> | | | x | | | |
| PIPERACEAE | | | | | | |
| <i>Peperomia sp. A. small leaves</i> | | | x | | | |
| <i>Peperomia sp. B. large leaves</i> | | | | x | | |
| <i>Piper (psilorhachis?)</i> | x | | x | x | | |
| <i>Piper auritum</i> | x | | x | x | | |
| | | Cowfoot, Bullhoof, Obel, Xmacolan | | | | |
| <i>Piper sp.</i> | | | x | x | | x |
| <i>Piper spp.</i> | x | x | | x | | x |

Rapid Ecological Assessment El Pilar Archaeological Reserve FLORA species list

* = Introduced species

| | | Chorro area (13-Aug-97) | Chorro ruins (13-Aug-97) | Main Ruins (22-Aug-97, 3-Sep-97) | Water Trail (22-Aug-97) | Cohune Ridge (19- Dec-97) | High Forest (18-Apr-98) |
|----------------------|--------------------------------|--|-----------------------------|--|----------------------------|---------------------------------|----------------------------|
| POACEAE | | | | | | | |
| | <i>Unidentified</i> | thin bamboo | x | | | | x |
| POLYGONACEAE | | | | | | | |
| | <i>Coccoloba acapulcensis</i> | | x | | | | x |
| | <i>Coccoloba belizensis</i> | | | | | x | x |
| | <i>Coccoloba sp.</i> | | | | x | | |
| RHAMNACEAE | | | | | | | |
| | <i>Gouania sp.</i> | x | | x | x | | |
| RUBIACEAE | | | | | | | |
| | <i>Alseis yucatenensis</i> | Wild mammee, Tabaquilo, Cacao-che, Zon, Haas'che. | x | x | x | x | x |
| | <i>Exostemma mexicanum</i> | | | | x | | |
| | <i>Guettarda combsii</i> | Sac tastab | x | | x | | x |
| | <i>Hamelia patens</i> | Firebush, Red head, Corallilo, Sanalo-todo, Xcanan, Chactoc, Chacmah | x | x | x | | |
| | <i>Morinda royoc</i> | | x | | x | | |
| | <i>Psychotria spp.</i> | | x | x | x | | x |
| | <i>Simara salvadorensis</i> | John Crow Redwood, Saltemuche | | x | | | x |
| RUTACEAE | | | | | | | |
| | * <i>Citrus sp.</i> | | x | | x | | |
| | <i>Zanthoxylum sp.</i> | Sinan che | | | | | x |
| | <i>Zanthoxylum spp.</i> | Prickly yellow | x | x | x | x | x |
| SAPINDACEAE | | | | | | | |
| | <i>Allophylus cominia</i> | | x | x | | | x |
| | <i>Cupania belizensis</i> | Bastard grande Betty, Copal colorado, Chac pom | x | | x | | x |
| | <i>Cupania sp.</i> | | | x | | | |
| | <i>Paullinia sp.</i> | | x | | x | | |
| | <i>Sapindus saponaria</i> | Soap seed, Jabón che, Guiril, Zubul | | | x | | |
| | <i>Serjania spp.</i> | | x | | x | | |
| SAPOTACEAE | | | | | | | |
| | <i>Chrysophyllum mexicanum</i> | Damsel, Wild star apple, Caimito, Zikayá, Sikilya, Chiceh | x | | x | | x |
| | <i>Manilkara chicle</i> | Chiquibul | | | x | | x |
| | <i>Manilkara zapota</i> | Chicosapote | | | x | | |
| | <i>Pouteria spp.</i> | Sapotillo | | x | x | x | x |
| SIMAROUBACEAE | | | | | | | |
| | <i>Simarouba glauca</i> | Negrito, Dysentry bark, Aceituno, Pa sac, Xpazakil | | | x | x | x |
| SMILACACEAE | | | | | | | |
| | <i>Smilax spp.</i> | | x | | x | | |
| SOLANACEAE | | | | | | | |
| | <i>Cestrum sp.</i> | | | | x | | |
| | <i>Solanum nudum</i> | | | | x | | |
| | <i>Solanum spp.</i> | | x | | x | | |

Rapid Ecological Assessment
El Pilar Archaeological Reserve
FLORA species list

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| | | Chorro area (13-Aug-97) | Chorro ruins (13-Aug-97) | Main Ruins (22-Aug-97, 3-Sep-97) | Water Trail (22-Aug-97) | Cohune Ridge (19- Dec-97) | High Forest (18-Apr-98) |
|-----------------------------------|--|----------------------------|-----------------------------|--|----------------------------|---------------------------------|----------------------------|
| STERCULIACEAE | | | | | | | |
| <i>Guazuma ulmifolia</i> | Bay cedar, Caulote, Pixoy, Tapaculo, Guácimo | x | x | x | x | x | x |
| THEOPHRASTACEAE | | | | | | | |
| <i>Deherainia smaragdina</i> | | | x | x | x | | |
| TILIACEAE | | | | | | | |
| <i>Heliocarpus sp.</i> | Broadleaf Moho | | | | x | | |
| <i>Trichospermum grewiifolium</i> | Moho | | | | x | | x |
| ULMACEAE | | | | | | | |
| <i>Ampelocera hottlei</i> | Luin | | | | | x | x |
| URTICACEAE | | | | | | | |
| <i>Unidentified</i> | | x | x | | | | |
| VERBENACEAE | | | | | | | |
| <i>Petrea (volubilis?)</i> | | x | | | x | | |
| <i>Priva lappulacea</i> | Pega-pega | x | | | x | | |
| <i>Rehdera penninervia</i> | Hingi-hingi | | | | | x | x |
| <i>Stachytarpheta sp.</i> | | x | | x | x | | |
| <i>Vitex gaumeri</i> | Fiddlewood, Monkey fiddle, Arbol murcielago, Yaxnik | x | x | x | x | x | x |
| VITACEAE | | | | | | | |
| <i>Vitis tiliifolia</i> | Water tie-tie, Bejuco de agua | x | | x | x | x | x |
| ZINGIBERACEAE | | | | | | | |
| <i>*Hedychium coronarium</i> | | | | | x | | |
| <i>Costus congestus</i> | | x | | x | x | | |
| <i>Renealmia aromatica</i> | | x | | | x | | |
| Unidentified | | | | | | | |
| <i>Unidentified</i> | Cuchara | | | | x | | |
| <i>Unidentified</i> | Guineo (vine) | | | | | | |
| <i>Unidentified</i> | Puntero | | x | | | x | |
| <i>Unidentified</i> | Quebra hacha | | | | x | | |
| <i>Unidentified</i> | Ramon | | | | | x | |
| <i>Unidentified</i> | Xkili tus | | | | | | |
| <i>Unidentified</i> | Xocmal (opposite leaves) | | | | | | |
| | | 103 spp. | 53 spp. | 107 spp. | 162 spp. | 30 spp. | 75 spp. |

Rapid Ecological Assessment, El Pilar Archaeological Reserve INSECT Species list

(1) = El Pilar Site, (2) = High Forest
(3) = El Chorro, (4) = El Pilar road
(5) = Water trail
number per species indicated

| | DRY SEASON | | | | RAINY SEASON | | | | |
|---|--------------------------|-------------|--------------------------|-------------------------|--------------------|-------------|-----------|----------|-----------|
| | 23-Mar-96, (database) | 18-Apr-98 | 10-Jun-95, (database) | 3-Jul-95, (database) | 13-Aug-97 | 22-Aug-97 | 23-Aug-97 | 3-Sep-97 | 19-Dec-97 |
| LEPIDOPTERA - HESPERIDAE - SKIPPERS | | | | | | | | | |
| <i>Heliopetes</i> sp. | | | | | 1 (3) | | | | |
| <i>Hesperidae</i> 1 | | | | | 1 (3) | | | | |
| <i>Hesperidae</i> 2 | | | | | 1 (3) | | | | |
| <i>Hesperidae</i> 3 | | | | | 1 (3) | | | | |
| <i>Hesperidae</i> 4 | | | | | 1 (3) | | | | |
| <i>Cecropterus aunus</i> | | | | | | 1 (5) | | | |
| <i>Cabares paterculus</i> | | | | | | 1 (5) | | | |
| <i>Aethilla lavochrea</i> | | | | | | 1 (5) | | | |
| LEPIDOPTERA - LYCAENIDAE - BLUES AND HAIRSTREAKS | | | | | | | | | |
| <i>Arawacus sito</i> | | | | | | 1 (5) | | | |
| <i>Eumaeus toxea</i> | | 4(1), 6 (2) | | | 3(3), 3(2) | 3(5), 2(1) | 3 (5) | 2 (1) | |
| <i>Evenus regalis</i> | | | | | | 1 (5) | | | |
| <i>Everes comyntas</i> | | | | | 10 (3) | | | | |
| <i>Thecla dolium</i> | | | | | | 1 (5) | | | |
| LEPIDOPTERA - NYMPHALIDAE - BRUSH FOOTED BUTTERFLIES | | | | | | | | | |
| <i>Doxocopa laure</i> | | | | | | | | 1 (1) | |
| <i>Caligo memnon</i> | | | | | 2 (2) | | | | |
| <i>Caligo uranus</i> | | | | | 1 (2) | | | | |
| <i>Opsiphanes cassina</i> | | | | | 1(3), 1(2) | 2 (5) | | 2 (1) | |
| <i>Archaeoprepona meander</i> | | 1 (2) | | 1 (?) | | | | | |
| <i>Archaeoprepona amphimachus</i> | | 1 (2) | | | | | | | 1 (3) |
| <i>Archaeoprepona demophon</i> | | | | 1 (?) | 1 (3) | 1 (5) | | 1 (1) | |
| <i>Archaeoprepona demophoon</i> | | | | | | 1 (5) | | | 1 (3) |
| <i>Consul electra</i> | | | | | | | | | 1 (3) |
| <i>Siderone marthesia</i> | | | | | | 1(5), 1(1) | | | |
| <i>Prepona omphale</i> | | | | 1 (?) | | | | | |
| <i>Danaus gilippus</i> | | | 2 (4) | | 2(3), 5(4) | 2(5), 1(1) | | 1 (1) | |
| <i>Danaus plexippus</i> | 2 (4) | 1 (3) | | | 1 (4) | 1 (5) | | 1 (1) | |
| <i>Lycorea cleobaea</i> | | | | | 1(3), 1(4) | | | 1 (1) | |
| <i>Agraulis vanillae</i> | | | | | 2(3), 5(4) | 1 (5) | | | |
| <i>Dione junio</i> | | | | | 30(3), 10(4) | 5(5), 1(1) | | 2 (1) | |
| <i>Dryas iulia</i> | | | 2 (4) | | 10(3), 10(4), 2(2) | 3(5), 2(1) | | 2 (1) | |
| <i>Dryadula phaetusa</i> | | | | | | | | | 1 (3) |
| <i>Eueides aliphera</i> | | | | | 3 (3) | | | 1 (1) | |
| <i>Eueides isabella</i> | | | | | 5(3), 1(4), 1(2) | 2(5), 5(1) | | 1 (1) | |
| <i>Euptoieta hegesia</i> | | | | | 2 (3) | | | 1 (1) | |
| <i>Heliconius charitonius</i> | | 1 (3) | | | 4 (3) | 5(5), 1(1) | | 1 (1) | |
| <i>Heliconius erato</i> | | | | | 4 (3) | 6(5), 1(1) | | 4 (1) | |
| <i>Heliconius ismenius</i> | | 1 (1) | | | 1 (3) | 1 (1) | | 2 (1) | |
| <i>Pteronymia cotyitto</i> | | | | | | 1 (1) | 1 (5) | | 1 (2) |
| <i>Mechanitis</i> sp. | | | | | | 1 (5) | | | |
| <i>Anthanassa tulcis</i> | | | | | | 2 (5) | | | |
| <i>Castilia myia</i> | | | | | | | | 1 (1) | |
| <i>Chlosyne gaudeales</i> | | | | | 1 (3) | 20(5), 5(1) | 1 (5) | 2 (1) | |
| <i>Chlosyne janais</i> | | | | | 2 (3) | 15(5), 5(1) | | 3 (1) | |
| <i>Chlosyne erodyle</i> | | | | | | 1 (5) | | 2 (1) | |
| <i>Thessalia theona</i> | | | | | 10 (3) | | | 3 (1) | |
| <i>Morpho peleides</i> | | 3 (2) | | | 2(3), 4(4), 1(2) | 1 (5) | 2 (5) | 1 (1) | 2 (2) |
| <i>Eunica alcmena</i> | | | | 2 (?) | | | | | |
| <i>Myscelia ethusa</i> | | | 2 (4) | | | | | | |

Rapid Ecological Assessment, El Pilar Archaeological Reserve INSECT Species list

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| | DRY SEASON | | | | RAINY SEASON | | | | |
|--|--------------------------|------------|--------------------------|-------------------------|--------------------|--------------|-----------|----------|------------|
| | 23-Mar-96, (database) | 18-Apr-98 | 10-Jun-95, (database) | 3-Jul-95, (database) | 13-Aug-97 | 22-Aug-97 | 23-Aug-97 | 3-Sep-97 | 19-Dec-97 |
| <i>Nessaea aglaure</i> | | 1 (2) | | 1 (?) | | | | | 1 (3) |
| <i>Tigridia acesa</i> | | | | 2 (?) | | | | | |
| <i>Anartia fatima</i> | | 2 (4) | | | 3 (3) | 10(5), 4(1) | | 4 (1) | |
| <i>Anartia jatrophae</i> | | | | | | 25(5), 15(1) | | 25 (1) | |
| <i>Adelpha ixia</i> | | | | | | | | 1 (1) | |
| <i>Adelpha massilia</i> | | | | | | 1 (5) | | | |
| <i>Biblis hyperia</i> | | | | | 1 (3) | | | | |
| <i>Catonophele mexicana</i> | | | | | 2 (3) | 1 (1) | 2 (5) | 2 (1) | 3 (3) |
| <i>Catonophele numilia</i> | | | | | | | | 1 (1) | |
| <i>Dynamine mylitta</i> | | | | | 25(3), 10(4), 5(2) | 5(5), 5(1) | | | |
| <i>Dynamine thalassina</i> | | | | | 1 (3) | | | | |
| <i>Hamadryas feronia</i> | | | | | | 1 (1) | | 5 (1) | |
| <i>Hamadryas februa</i> | | | 5 (4) | | 3 (3) | | | 1 (1) | 1(3), 1(2) |
| <i>Hamadryas ipthime</i> | | | | | 1 (3) | | | | |
| <i>Historis odius</i> | | | | | 1 (3) | 2(5), 1(1) | | | 1 (3) |
| <i>Junonia genoveva</i> | | | 1 (4) | | 5 (3) | 2 (5) | | | |
| <i>Marpesia chiron</i> | | | | | 5(3), 10(4) | 5(5), 15(1) | | 8 (1) | |
| <i>Marpesia petreus</i> | | | | | 1 (3) | 1 (1) | | | 1 (3) |
| <i>Mestra amymone</i> | | | | | 20(3), 10(4), 5(2) | 5(5), 15(1) | | | |
| <i>Myscelia cyaniris</i> | | | | | 1 (3) | | | | |
| <i>Colubura dirce</i> | | | | | | | | 1 (1) | |
| <i>Pyrrhogyra otolais</i> | | | | | 2 (3) | 1(5), 1(1) | | 1 (1) | |
| <i>Siproeta stelenes</i> | | | | | 1 (3) | 2 (5) | 1 (5) | | |
| <i>Siproeta superba</i> | | | | | | | | 1 (1) | |
| <i>Temenis laothoe</i> | | | | | | 2 (5) | | | |
| <i>Cissia glaucina</i> | | | | 1 (?) | | | | | |
| <i>Cissia hermes</i> | | | | | 5 (3) | 4 (5) | | | |
| <i>Cissia libyoidea</i> | | | | | 1 (3) | 1 (5) | | 1 (1) | |
| <i>Cissia metaleuca</i> | | | | | | | | 1 (1) | |
| <i>Cissia usitata</i> | | | | | | | 1 (5) | | 2 (3) |
| <i>Cissia similis</i> | | | | | | | 1 (5) | | 1 (3) |
| <i>Cissia ocirrhoe</i> | | | | | 1 (3) | | | | 1 (3) |
| <i>Taygetis andromeda</i> | | | | | | | 1 (5) | | |
| <i>Taygetis nympa</i> | | | | | | | 1 (5) | | |
| LEPIDOPTERA - PAPILIONIDAE - SWALLOWTAILS | | | | | | | | | |
| <i>Protographium epidaus</i> | 1(4) | | 10 (4) | | | | | | |
| <i>Protographium philolaus</i> | 5 (4) | 3 (3) | 100 (4) | | | | | | |
| <i>Heraclides thoas</i> | | | 1 (4) | | 3(3), 6(4) | 2 (5) | | | |
| <i>Heraclides anchisiades</i> | | | | | | | 1 (5) | 1 (1) | |
| <i>Battus laodamas</i> | 1 (4) | | | | | | | | |
| <i>Battus polydamas</i> | 1 (4) | | 1 (4) | | | | | | |
| <i>Parides iphidamas</i> | | | | | 3(3), 1(2) | 1(5), 1(1) | | | |
| LEPIDOPTERA - PIERIDAE - WHITES AND SULFURS | | | | | | | | | |
| <i>Anteos chlorinde</i> | 3 (4) | | | | | | | | |
| <i>Anteos maerula</i> | 3 (4) | | | | | | | | |
| <i>Aphrissa statira</i> | | | | | 50 (4) | | | 8 (1) | |
| <i>Eurema albula</i> | | 1 (2) | | | | | | | |
| <i>Eurema दौरa</i> | | | | | 1 (3) | 5 (5) | | | |
| <i>Eurema nise</i> | | 2(4), 2(3) | 10 (4) | | 3 (3) | 10(5), 2(1) | | | |
| <i>Eurema proterpia</i> | | | | | 1 (3) | 1 (1) | | | |
| <i>Phoebis agarithe</i> | | 3 (3) | 100 (4) | | 2(3), 15(4) | 4(5), 1(1) | | | |

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| | DRY SEASON | | | | RAINY SEASON | | | | |
|--|--------------------------|-----------|--------------------------|-------------------------|---------------|-------------|-----------|----------|-----------|
| | 23-Mar-96, (database) | 18-Apr-98 | 10-Jun-95, (database) | 3-Jul-95, (database) | 13-Aug-97 | 22-Aug-97 | 23-Aug-97 | 3-Sep-97 | 19-Dec-97 |
| <i>Phoebis argante</i> | | | | 1 (2) | | | | 2 (1) | 1 (3) |
| <i>Phoebis philea</i> | | | | | | 1 (1) | | | |
| <i>Appias drusilla</i> | | 2 (3) | | | 15(3), 150(4) | 15(5), 5(1) | | 5 (1) | 1 (3) |
| <i>Pieriballia viardi</i> | | 1 (3) | | | 8 (3) | 6 (5) | | 14 (1) | |
| LEPIDOPTERA - RIODINIDAE - METALMARKS | | | | | | | | | |
| <i>Calephelis spp.</i> | | | | | 4 (4) | 4(5), 3(1) | | | |
| <i>Lymnas pixe</i> | | | | | 3(3), 3(4) | 4 (1) | | 4 (1) | |
| <i>Mesosemia lamachus</i> | | | | | | 1 (1) | | | |
| LEPIDOPTERA - SPHINGIDAE - HAWKMOTHS | | | | | | | | | |
| <i>Callionima nomius</i> | | | | | | | | 2 (1) | |
| <i>Callionima falcifera</i> | | | | | | | | 2 (1) | |
| <i>Callionima inuus</i> | | | | | | | | 6 (1) | |
| <i>Callionima parce</i> | | | | | | | | 1 (1) | |
| <i>Xylophanes ceratomioides</i> | | | | | | | | 2 (1) | |
| <i>Cautethia spuria</i> | | | | | | | | 1 (1) | |
| <i>Pseudosphinx tetrio</i> | | | | | | | | 1 (1) | |
| <i>Xylophanes pluto</i> | | | | | | | | 3 (1) | |
| <i>Perigonia lusca</i> | | | | | | | | 1 (1) | |
| <i>Eumorpha satellita</i> | | | | | | | | 1 (1) | |
| <i>Manduca lanuginosa</i> | | | | | | | | 1 (1) | |
| <i>Manduca muscosa</i> | | | | | | | | 5 (1) | |
| <i>Manduca occulta</i> | | | | | | | | 1 (1) | |
| <i>Adhemarius gannascus</i> | | | | | | | | 9 (1) | |
| <i>Protambulyx strigilis</i> | | | | | | | | 4 (1) | |
| <i>Cocytius antaeus</i> | | | | | | | | 1 (1) | |
| <i>Cocytius duponchel</i> | | | | | | | | 1 (1) | |
| <i>Cocytius cluentius</i> | | | | | | | | 1 (1) | |
| LEPIDOPTERA - SATURNIIDAE - EMPEROR MOTHS | | | | | | | | | |
| <i>Dysdaemonia boreas</i> | | | | | | | | 1 (1) | |
| <i>Eacles masoni</i> | | | | | | | | 2 (1) | |
| <i>Sysspphinx quadrilineata</i> | | | | | | | | 2 (1) | |
| <i>Sysspphinx mexicana</i> | | | | | | | | 2 (1) | |
| <i>Automeris moloneyi</i> | | | | | | | | 1 (1) | |
| <i>Automeris zozine</i> | | | | | | | | 1 (1) | |
| <i>Copaxa rufinans</i> | | | | | | | | 1 (1) | |
| ODONATA - ZYGOPTERA - DAMSELFLIES | | | | | | | | | |
| <i>Archilestes grandis</i> | | | | | 13 (3) | | | | |
| <i>Argia frequentula</i> | | | | | 2 (3) | | | | |
| <i>Argia oculata</i> | | | | | 1 (3) | | | | |
| <i>Argia ulmeca</i> | | | | | 1 (3) | | | | |
| <i>Hetaerina occisa</i> | | | | | 1 (3) | | | | |
| <i>Hetaerina titia</i> | | | | | 1 (3) | | | | |
| <i>Telebasis salva</i> | | | | | 20 (3) | | | | |
| <i>Pseudostigma accedens</i> | | 2(2) | | | | | | | |
| ODONATA - ANISOPTERA - DRAGONFLIES | | | | | | | | | |
| <i>Dythemis multipunctata</i> | | | | | 1 (3) | | | | |
| <i>Orthemis ferruginea</i> | | | | | 4 (3) | | | | |
| <i>Orthemis levis</i> | | | | | 2 (3) | | | | |
| <i>Pantala flavescens</i> | | | | | | | 3 (4) | | |
| <i>Tramea sp.</i> | | | | | | | 5 (4) | | |

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| | 18-Apr-98 | 13-Aug-97 | 22-Aug-97 | 23-Aug-97 | 3-Sep-97 | 19-Dec-97 | |
| FISHES - POECILIIDAE - LIVE BEARERS | | | | | | | |
| <i>Hetaerandia bimaculata</i> | | | | 5 | | | |
| AMPHIBIANS - BUFONIDAE - TOADS | | | | | | | |
| <i>Bufo valiceps</i> , Gulf Coast Toad | | 2 | | | | | |
| AMPHIBIA - RANIDAE - FROGS | | | | | | | |
| <i>Rana vaillanti</i> Rainforest Frog | | | | 5 | | | |
| AMPHIBIANS - HYLIDAE - TREE FROGS | | | | | | | |
| <i>Agalychnis callidryas</i> Red-eyed Tree Frog | | | 5 | | | | |
| <i>Hyla loquax</i> Red-footed Tree Frog | | | 5 | | | | |
| <i>Smilisca baudinii</i> Mexican Tree Frog | | 3 | 5 | | | | |
| REPTILES - EUBLEPHARIDAE - BANDED GECKOS | | | | | | | |
| <i>Coleonyx elegans</i> Banded Gecko | | | 5 | | | | |
| REPTILES - GEKKONIDAE - GECKOS | | | | | | | |
| <i>Sphaerodactylus glaucus</i> Escorpion | | | 5 | | | | |
| REPTILES - CORYTOPHANIDAE - BASILISKS | | | | | | | |
| <i>Basiliscus vittatus</i> Banded basilisk, Maklakka, Cock lizard | 3 | 2 | | | | | |
| <i>Corytophanes cristatus</i> Old Man Lizard | | | 5 | | | | |
| REPTILES - PHRYNOSOMATIDAE - SPINY LIZARDS | | | | | | | |
| <i>Sceloporus taepensis</i> | 3 | 3 | | 5 | | | |
| REPTILES - POLYCHROTIDAE - ANOLES | | | | | | | |
| <i>Anolis lemurinus</i> | 2 | 2 | | | | | |
| <i>Anolis limifrons</i> Slender anole | | 2 | | | | | |
| <i>Anolis uniformis</i> Ground anole | | 2 | | | | | |
| REPTILES - TEIIDAE - TEIDS | | | | | | | |
| <i>Ameiva undulata</i> Barred whiptail, Salamandra | 2 | 2 | | | | 2 | |
| REPTILES - XANTUSIIDAE - NIGHT LIZARDS | | | | | | | |
| <i>Lepidophyma flavimaculatum</i> Night lizard | | 4 | | | 1 | | |
| REPTILES - COLUBRIDAE - COLUBRID SNAKES | | | | | | | |
| <i>Drymobius margaritiferus</i> Speckled Racer | | | 1 | | | | |
| <i>Sibon nebulata</i> Snail-eating Snake | | | 5 | | | | |
| <i>Sibon sartori</i> Snail-eating Snake | | | | | | Miller (1998). | |
| REPTILES - VIPERIDAE - VIPERS AND PITVIPERS | | | | | | | |
| <i>Bothrops asper</i> Barba amarilla | 2 | | | | | | |

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| MAMMALS - DASYPODIDAE - ARMANDILLOS | | | | | | | |
| <i>Dasyopus novemcinctus</i> | | | | | | | |
| Nine-banded Armandillo, Ouetch | | | | | | | |
| | | 3 (T) | | | | | |
| MAMMALS - EMBALLONURIDAE - SHEATH TAILED BATS | | | | | | | |
| <i>Saccopteryx bilineata</i> | | | | | | Miller (1998). | |
| White-lined Sac-winged Bat | | | | | | Miller (1998). | |
| ? <i>Diclidurus alba</i> | | | | | | Miller (1998). | |
| ? Northern Ghost Bat | | | | | | | |
| MAMMALS - MORMOOPIDAE - LEAF CHINNED, MUSTACHED AND NAKED BACKED BATS | | | | | | | |
| <i>Pteronotus davyi fulvus</i> | | | | | | Miller (1998). | |
| Davy's Naked-backed Bat | | | | | | Miller (1998). | |
| <i>Pteronotus parnellii</i> | | | | | | Miller (1998). | |
| Parnell's Mustached Bat | | | | | | Miller (1998). | |
| <i>Pteronotus personatus psilotis</i> | | | | | | Miller (1998). | |
| Wagner's Mustached Bat | | | | | | | |
| MAMMALS - PHYLLOSTOMIDAE - LEAF NOSED BATS | | | | | | | |
| <i>Carollia perspicillata azteca</i> | | | | | | Miller (1998). | |
| Short-tailed Fruit Bat | | | | | | | |
| MAMMALS - VESPERTILIONIDAE - VESPERTILIONID BATS | | | | | | | |
| <i>Myotis elegans</i> | | | | | | Miller (1998). | |
| Little Brown Bat | | | | | | Miller (1998). | |
| <i>Eptesicus furinalis gaumeri</i> | | | | | | Miller (1998). | |
| Argentine Brown Bat | | | | | | Miller (1998). | |
| <i>Rhogeessa aeneus</i> | | | | | | Miller (1998). | |
| Central American Yellow Bat | | | | | | Miller (1998). | |
| <i>Lasiurus ega</i> | | | | | | Miller (1998). | |
| Southern Yellow Bat | | | | | | | |
| MAMMALS - MOLOSSIDAE - FREE TAILED OR MASTIFF BATS | | | | | | | |
| <i>Nyctinomops laticaudata</i> | | | | | | Miller (1998). | |
| Mastiff Bat | | | | | | Miller (1998). | |
| <i>Molossus ater</i> | | | | | | Miller (1998). | |
| Mastiff Bat | | | | | | Miller (1998). | |
| <i>Molossus molossus</i> | | | | | | Miller (1998). | |
| Mastiff Bat | | | | | | | |
| MAMMALS - CEBIDAE - MONKEYS | | | | | | | |
| <i>Alouatta pigra</i> | | | | | | Mexican Black Howler Monkey, Baboon, Sarguate | |
| | | | | | | 2,3 | |
| MAMMALS - CANIDAE - DOG FAMILY | | | | | | | |
| <i>Urocyon cinereoargenteus</i> | | | | | | Gray Fox, Gato del monte | |
| | | | | | | 4 | |
| MAMMALS - PROCYONIDAE - RACCOON FAMILY | | | | | | | |
| <i>Nasua nasua</i> | | | | | | White-nosed Coati, Pisote | |
| | | | 4 | | | 5 | |
| <i>Potos flavus</i> | | | | | | Kinkajou, Nightwalker, Mico de noche, Martucha | |
| | | | | | | 1 | |
| MAMMALS - MUSTELIDAE - WEASEL FAMILY | | | | | | | |
| <i>Gallictis vittata</i> | | | | | | Tayra, Bushdog | |
| | | | | | | 2 | |
| MAMMALS - FELIDAE - CAT FAMILY | | | | | | | |
| <i>Panthera onca</i> | | | | | | Jaguar, Tigre | |
| | | | | | | Reported | |
| <i>Felis pardalis</i> | | | | | | Ocelot, Tigrillo | |
| | | | | | | 2, 3 (T) | |
| MAMMALS - TAPIRIDAE - TAPIRS | | | | | | | |
| <i>Tapirus bairdi</i> | | | | | | Baird's Tapir, Danto | |
| | | | | | | Reported, rare | |
| MAMMALS - CERVIDAE - DEER | | | | | | | |
| <i>Mazama americana</i> | | | | | | Red Brocket Deer, Antelope, Cabrito | |
| | | | | | | 2 | |
| <i>Odocoileus virginianus</i> | | | | | | White-tailed Deer, Venado | |
| | | | | | | Reported, rare | |
| MAMMALS - SCIURIDAE - SQUIRRELS | | | | | | | |
| <i>Sciurus yucatanensis</i> | | | | | | Yucatan Squirrel, Ardilla | |
| | | | | | | 3 | |
| MAMMALS - GEOMYIDAE - POCKET GOPHERS | | | | | | | |
| <i>Orthogeomys hispidus</i> | | | | | | Hispid pocket Gopher, Ground mole, Taltusa | |
| | | | | | | 3 | |
| MAMMALS - MURIDAE - MURID RODENTS | | | | | | | |
| <i>Otodylomys phyllotis</i> | | | | | | Big-eared Climbing-rat | |
| | | | | | | 1 | |
| MAMMALS - DASYPROCTIDAE - PACAS | | | | | | | |
| <i>Agouti paca</i> | | | | | | Paca, Gibnut, Tepesquintle | |
| | | | | | | 2 (T) | |

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| TINAMOUS - TINAMIDAE | | | | | | | | |
| | <i>Crypturellus soui</i> | Little Tinamou, Bawley R | | 2 | | | | |
| HERONS - ARDEIDAE | | | | | | | | |
| | <i>Nycticorax nycticorax</i> | Black-crowned Night-Heron WR | | | | 1 | | |
| NEW WORLD VULTURES - CATHARTIDAE | | | | | | | | |
| | <i>Coragyps atratus</i> | Black Vulture, John Crow, Sope WR | | 3 | 5 | 1 | | |
| | <i>Cathartes aura</i> | Turkey Vulture, Doctor John Crow, Sope WR | | 3 | 5 | 1 | | |
| | <i>Sarcoramphus papa</i> | King Vulture, King John Crow, Sope real R | | 2 | | | 4 | |
| KITES, HAWKS, EAGLES AND ALLIES - ACCIPITRIDAE | | | | | | | | |
| | <i>Leptodon cayanensis</i> | Gray-headed Kite R | | | | | 4 | |
| | <i>Buteo magnirostris</i> | Roadside Hawk, Chicken Hawk R | 2 | | | 1 | 4 | |
| | <i>Spizaetus tyrannus</i> | Black Hawk-Eagle R | | | | | 1 | 2 |
| | <i>Buteo nitidus</i> | Gray Hawk R | | | | | | 2 |
| FALCONS AND ALLIES - FALCONIDAE | | | | | | | | |
| | <i>Herpetotheres cachinnans</i> | Laughing Falcon, Guaco R | | | | 1 | 4 | 2 |
| | <i>Micrastur semitorquatus</i> | Colared Forest Falcon R | 2 | | | | 4 | |
| | <i>Falco ruficularis</i> | Bat Falcon, Lion hawk R | | | | 1 | | |
| CHACHALACAS, GUANS AND CURASSOWS -CRACIDAE | | | | | | | | |
| | <i>Ortalis vetula</i> | Plain Chachalaca, Cocrico, Chachalaca R | 3 | 3 | 5 | 1 | 4 | |
| | <i>Crax rubra</i> | Great Curassow, Faisan, Pahouil R | | | | | | R |
| RAILS, GALLINULES AND ALLIES - RALLIDAE | | | | | | | | |
| | <i>Laterallus ruber</i> | Ruddy Crane R | | | | | 4 | |
| | <i>Aramides cajanea</i> | Gray-necked Wood-Rail, Top-na-chick, Gallinola R | | | 5 | | | |
| PIGEONS AND DOVES - COLUMBIDAE | | | | | | | | |
| | <i>Columbina talpacoti</i> | Ruddy Ground-Dove, Turtle dove R | | 3 | | | | |
| | <i>Claravis pretiosa</i> | Blue Ground-Dove R | 3 | 3 | 5 | 1 | | |
| | <i>Leptotila verreauxi</i> | White-tipped Dove R | 2 | | | | 4 | |
| | <i>Columba nigrirostris</i> | Short-billed Pigeon R | | 2 | | | | |
| | <i>Columba speciosa</i> | Scaled Pigeon R | | | | 1 | | |
| | <i>Columba cayennensis</i> | Pale-vented Pigeon R | | | | | 4 | |
| | <i>Columba flavirostris</i> | Red-billed Pigeon R | | | | 1 | 4 | 2 |
| NEW WORLD PARROTS - PSITTACIDAE | | | | | | | | |
| | <i>Aratinga astec</i> | Aztec Parakeet, Olive throated Parakeet, Keetie R | | 3 | | 1 | 4 | |
| | <i>Pionus senilis</i> | White-crowned Parrot R | | | | 1 | 4 | |
| | <i>Amazona albifrons</i> | White-fronted Parrot R | | | 5 | | | |
| | <i>Amazona autumnalis</i> | Red-lored Parrot R | | | | 1 | 4 | |
| | <i>Amazona farinosa</i> | Mealy Parrot R | | | | | 4 | |
| CUCKOOS - CUCULIDAE | | | | | | | | |
| | <i>Piaya cayana</i> | Squirrel Cuckoo, Pe-quam R | | | | 1 | 4 | |
| | <i>Crotophaga sulcirostris</i> | Groove-billed Ani, Cowboy Blackbird, Chel R | 3 | | | 1 | 4 | |
| TYPICAL OWLS - STRIGIDAE | | | | | | | | |
| | <i>Glaucidium brasilianum</i> | Ferruginous Pygmy-Owl R | | 5 | | | | |
| | <i>Strix virgata</i> | Mottled Owl R | | 1 | | | | |
| NIGHTHAWKS AND NIGHTJARS - CAPRIMULGIDAE | | | | | | | | |
| | <i>Nyctidromus albicollis</i> | Pauraque, Who-you, Xpuhuy R | | 1 | | | | |

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| HUMMINGBIRDS - TROCHILIDAE | | | | | | | |
| <i>Pygornis longuemareus</i> | Little Hermit R | 2 | 5 | | 1 | 4 | |
| <i>Amazilia tzacatl</i> | Rufous-tailed Hummingbird R | 2 | 3 | 5 | 1 | 4 | |
| <i>Chlorostilbon canivetti</i> | Canivet's Emerald, Fork-tailed Emerald R | 1 | | 5 | | 1 | |
| <i>Amazilia candida</i> | White-bellied Emerald R | | | | | 1 | |
| <i>Campylopterus curvipennis</i> | Wedge-tailed Sabrewing R | | | | | 1 | |
| TROGONS - TROGONIDAE | | | | | | | |
| <i>Trogon melanocephalus</i> | Black-headed Trogon, Ramatutu, Pecho amarillo R | 2 | 2 | 5 | 1 | 4 | |
| <i>Trogon violaceus</i> | Violaceous Trogon, Peche amarillo R | | | | 1 | 4 | |
| MOTMOTS - MOMOTIDAE | | | | | | | |
| <i>Hylomanes momotula</i> | Tody Motmot R | | | | | 4 | |
| <i>Momotus momota</i> | Blue-crowned Motmot, Good Cook R | 2 | | 5 | 1 | 4 | |
| KINGFISHERS - ALCEDINIDAE | | | | | | | |
| <i>Chloroceryle americana</i> | Green Kingfisher R | | | 5 | | | |
| PUFFBIRDS - BUCCONIDAE | | | | | | | |
| <i>Notharchus macrorhynchos</i> | White-necked Puffbird R | | | | | | 2 |
| JACAMARS - GALBULIDAE | | | | | | | |
| <i>Galbula ruficauda</i> | Rufous-tailed Jacamar R | | | | 1 | 4 | |
| TOUCANS - RAMPHASTIDAE | | | | | | | |
| <i>Ramphastos sulfuratus</i> | Keel-billed Toucan, Billbird, Pito real R | | | 5 | 1 | 4 | 2 |
| <i>Pteroglossus torquatus</i> | Collared Aracari, Phyllis, Medio Pito R | | 2 | 5 | 1 | 4 | |
| <i>Aulacorhynchus prasinus</i> | Emerald Toucanet R | | | | | | 2 |
| PICULETS AND WOODPECKERS - PICIDAE | | | | | | | |
| <i>Centurus aurifrons</i> | Golden-fronted Woodpecker, Carpenter, Che'ko' R | 1 | | | 1 | 4 | |
| <i>Veliniornis fumigatus</i> | Smoky-brown Woodpecker R | | | | | 1 | |
| <i>Piculus rubiginosus</i> | Golden-olive Woodpecker R | | | | 1 | 4 | |
| <i>Dryocopus lineatus</i> | Lineated Woodpecker, Colonte' R | 2 | | | 1 | 4 | |
| <i>Campephilus guatemalensis</i> | Pale-billed Woodpecker R | | | | | 4 | |
| OVENBIRDS - FURNARIIDAE | | | | | | | |
| <i>Xenops minutus</i> | Plain Xenops R | | | | | 4 | |
| <i>Automolus ochrolaemus</i> | Buff-throated Foliage gleaner R | | | | 1 | | |
| WOODCREEPERS - DENDROCOLAPTIDAE | | | | | | | |
| <i>Sittasomus griseicapillus</i> | Olivaceous Woodcreeper R | | | 5 | 1 | | |
| <i>Lepidocolaptis souleyetii</i> | Streak-headed Woodcreeper R | | | | 1 | | |
| <i>Xiphorhynchus flavigaster</i> | Ivory-billed Woodcreeper R | | | | | 4 | |
| ANTBIRDS - FORMICARIIDAE | | | | | | | |
| <i>Thamnophilus doliatus</i> | Barred Antshrike R | 2 | 2 | | 1 | 4 | |
| <i>Microrhopias quixensis</i> | Dot-winged Antwren R | | | | | 1 | |
| <i>Cercomacra tyrannina</i> | Dusky Antbird R | | | | | 4 | |
| <i>Formicarius moniliger</i> | Mexican Anttrush R | | | | | 4 | |

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| TYRANT FLYCATCHERS - TYRANNIDAE | | | | | | | |
| <i>Camptostoma imberbe</i> | | | | | | 4 | |
| <i>Myiopagis viridicata</i> | | | | | | 4 | |
| <i>Elaenia flavogaster</i> | | | | | | 4 | |
| <i>Mionectes eleagnis</i> | | | | | | 4 | |
| <i>Oncostoma cinereigulare</i> | | | | | | 4 | |
| <i>Todirostrum sylvia</i> | | | | | | 4 | |
| <i>Tolmomyias sulphurescens</i> | | | | | | 4 | |
| <i>Platyrinchus can Crominus</i> | | | | | | 4 | |
| <i>Contopus virens</i> | 2 | | | | 1 | 2 | |
| <i>Contopus cinereus</i> | | | | | 4 | | |
| <i>Empidonax flaviventris</i> | | | | | 4 | | |
| <i>Empidonax minimus</i> | | | | | 4 | | |
| <i>Attila spadiceus</i> | | | | | 4 | | |
| <i>Myiarchus tuberculifer</i> | | | | | 4 | | |
| <i>Myiarchus tyrannulus</i> | | | | | 4 | | |
| <i>Pitangus sulphuratus</i> | | | 3 | 5 | 1 | 4 | |
| <i>Megarynchus pitangua</i> | | | | 5 | | 4 | |
| <i>Myiozetetes similis</i> | 3 | 3 | 5 | 1 | 4 | | |
| <i>Myiodynastes luteiventris</i> | 3 | | | | | | |
| <i>Tyrannus melancholicus</i> | | | | | 4 | | |
| COTINGAS - COTINGIDAE | | | | | | | |
| <i>Schiffornis turdinus</i> | | | | | | 4 | |
| <i>Pachyrhamphus aglaiae</i> | | | | | | | |
| <i>Tityra semifasciata</i> | | | | 1 | 1 | | |
| MANAKINS - PIPRIDAE | | | | | | | |
| <i>Manacus candei</i> | 3 | 2 | | 1 | 4 | | |
| <i>Pipra mentalis</i> | | 2 | | | | | |
| SWALLOWS - HIRUNDINIDAE | | | | | | | |
| <i>Stelgidopteryx serripennis</i> | | | | | | 4 | |
| JAYS AND CROWS - CORVIDAE | | | | | | | |
| <i>Cyanocorax yncas</i> | 2 | | | 1 | | | |
| <i>Cyanocorax morio</i> | 1,3 | 3 | 5 | 1 | 4 | | |
| WRENS - TROGLODYTIDAE | | | | | | | |
| <i>Campylorhynchus zonatus</i> | 1 | | | 1 | 1 | | |
| <i>Thryothorus maculipectus</i> | | | | | 4 | 2 | |
| <i>Henicorhina leucosticta</i> | | | | | 4 | 2 | |
| OLD WORLD WARBLERS, KINGLETS AND GNATCATCHERS - SYLVIIDAE | | | | | | | |
| <i>Ramphocaenus melanurus</i> | | | 5 | | 4 | | |
| <i>Polioptila caerulea</i> | | | | | 4 | | |
| <i>Polioptila plumbea</i> | | | | | 4 | | |
| THRUSHES AND ALLIES - TURDIDAE | | | | | | | |
| <i>Turdus grayi</i> | | | | 1 | 1 | | |
| <i>Hylocichla mustelinus</i> | | | | | 4 | 2 | |
| MOCKINGBIRDS, THRASHERS AND ALLIES MIMIDAE | | | | | | | |

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| <i>Dumetella carolinensis</i> | Gray Catbird W | | | | | 4 | 2 | |
| VIREOS - VIREONIDAE | | | | | | | | |
| <i>Vireo griseus</i> | White-eyed Vireo W | | | | | 4 | | |
| <i>Vireo pallens</i> | Mangrove Vireo R | | | | 1 | 4 | | |
| <i>Vireo flavifrons</i> | Yellow-throated Vireo W | | | | | 4 | | |
| <i>Vireo flavoviridis</i> | Yellow-green Vireo RD | 1,2,3 | 3 | | | | 2 | |
| <i>Hylophilus ochraceiceps</i> | Tawny-crowned Greenlet R | | | | | 4 | | |
| <i>Hylophilus decurtatus</i> | Lesser Greenlet R | | | | | 4 | | |
| WOOD WARBLERS EMBERIZIDAE-PARULINAE | | | | | | | | |
| <i>Vermivora pinus</i> | Blue-winged Warbler W | | | | | 1 | | |
| <i>Vermivora peregrina</i> | Tennessee Warbler WT | | | | | 1 | | |
| <i>Dendroica petechia</i> | Yellow Warbler RW | | | | | | 2 | |
| <i>Dendroica magnolia</i> | Magnolia Warbler W | 3 | | | | 4 | 2 | |
| <i>Dendroica virens</i> | Black-throated Green Warbler W | | | | | 4 | 2 | |
| <i>Mniotilta varia</i> | Black-and-white Warbler W | | | | | 4 | 2 | |
| <i>Setophaga ruticilla</i> | American Redstart W | | | | | 4 | 2 | |
| <i>Helmitheros vermivorus</i> | Worm-eating Warbler W | | | | | 4 | 2 | |
| <i>Seiurus aurocapillus</i> | Ovenbird W | | | | | 1 | | |
| <i>Oporornis formosus</i> | Kentucky Warbler W | | | | | 4 | | |
| <i>Geothlypis trichas</i> | Common Yellowthroat W | | | | | 4 | | |
| <i>Wilsonia citrina</i> | Hooded Warbler W | | | | | 4 | 2 | |
| <i>Wilsonia pusilla</i> | Wilson's Warbler W | | | | | 4 | | |
| <i>Basileuterus culicivorus</i> | Golden-crowned Warbler R | | | | | 4 | | |
| <i>Icteria virens</i> | Yellow-breasted Chat W | | | | | 4 | 2 | |
| TANAGERS - EMBERIZIDAE: THRAUPINAE | | | | | | | | |
| <i>Tangara larvata</i> | Golden-hooded Tanager R | | | | | 1 | | |
| <i>Cyanerpes cyaneus</i> | Red-legged Honeycreeper R | | | | | 4 | | |
| <i>Euphonia affinis</i> | Scrub Euphonia R | | | | | 4 | | |
| <i>Euphonia hirundinacea</i> | Yellow-throated Euphonia R | | | | | 4 | | |
| <i>Euphonia gouldi</i> | Olive-backed Euphonia R | | | | | 4 | | |
| <i>Thraupis abbas</i> | Yellow-winged Tanager R | 3 | | | 1 | 4 | 2 | |
| <i>Lanio aurantius</i> | Black-throated Shrike-Tanager R | | | | | 4 | | |
| <i>Habia rubica</i> | Red-crowned Ant-Tanager R | | | | | 4 | | |
| <i>Habia fuscicauda</i> | Red-throated Ant-Tanager R | 3 | 2 | 5 | 1 | 4 | 2 | |
| <i>Piranga rubra</i> | Summer Tanager W | | | | | 4 | 2 | |
| <i>Spermagra leucoptera</i> | White-winged Tanager R | | | | | 1 | | |
| GROSBEAKS AND BUNTINGS - EMBERIZIDAE: CARDINALINAE | | | | | | | | |
| <i>Slatator maximus</i> | Buff-throated Saltator R | | | | | 4 | | |
| <i>Saltator atriceps</i> | Black-headed Saltator R | 3 | 3 | 5 | 1 | 4 | | |
| <i>Caryothraustes poliogaster</i> | Black-faced Grosbeak R | | 2 | | | 4 | | |
| <i>Pheucticus ludovicianus</i> | Rose-breasted Grosbeak W | 3 | | | | | | |
| <i>Cyanocopsa cyanoides</i> | Blue-black Grosbeak R | | | | | 4 | | |
| <i>Cyanocopsa parellina</i> | Blue Bunting R | | | | | 4 | | |
| <i>Passerina cyanea</i> | Indigo Bunting W | 4 | | | | 4 | | |
| BRUSHFINCHES, SEEDEATERS, SPARROWS AND ALLIES - EMBERIZIDAE: EMBERIZINAE | | | | | | | | |

Rapid Ecological Assessment El Pilar Archaeological Reserve BIRD species list

R = Resident, W = Winter visitor
T = Transient, D = Summer Resident

1 = El Pilar site, 2 = High Forest
3 = El Chorro, 4 = El Pilar road,
5 = Water trail

| | | DRY S. | RAINY SEASON | | | | |
|--|--|-----------|--------------|-----------|----------|---------------------|-----------|
| | | 18-Apr-98 | 13-Aug-97 | 22-Aug-97 | 3-Sep-97 | 9-Nov-97 (Jones) | 19-Dec-97 |
| <i>Arremonops chloronotus</i> | Green-backed Sparrow R | | | 5 | | 4 | 5 |
| <i>Volatinia jacarina</i> | Blue-black Grassquit R | | 5 | 5 | | 4 | 5 |
| <i>Sporophila aurita</i> | Variable Seedeater R | | 5 | 5 | | | 5 |
| <i>Sporophila torqueola</i> | White-collared Seedeater, Ricey, Grassy Bird R | | 5 | 5 | | 4 | 5 |
| AMERICAN BLACKBIRDS AND ORIOLES - ICTERIDAE | | | | | | | |
| <i>Dives dives</i> | Melodious Blackbird R | | 5 | | | 4 | |
| <i>Icterus dominicensis</i> | Black-cowled Oriole, Banana bird R | 3 | | | | 1 | 2 |
| <i>Icterus chrysater</i> | Yellow-backed Oriole R | | | | | 1 | |
| <i>Icterus mesomelas</i> | Yellow-tailed Oriole, Banana bird R | 3 | 3 | 5 | 1 | 1 | |
| <i>Icterus galbula</i> | Baltimore Oriole W | | | | | 1 | |
| <i>Amblycercus holosericeus</i> | Yellow-billed Cacique, Bamboo Cracker R | 3 | 3 | 5 | | 4 | |
| <i>Psarocolius montezuma</i> | Montezuma Oropendola, Yellow tail R | | 3 | 5 | | | |

El Pilar: Vegetation transect, Chorro Ruins
19 December 1997

| | | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 | 90-100 | 100-110 |
|----------------|------------------------------------|------|-------|-------------|-------------|------------|-------|-------|-------|-------|-----------|------------------------|
| Acanthaceae | <i>Aphelandra deppeana</i> | | x | | | | | | | | | |
| Acanthaceae | <i>Lutheridium donnell-mithii</i> | | | | | | | | | | x | |
| Anacardiaceae | <i>Spondias mombin</i> | | | | | | | | | | | |
| Annonaceae | <i>Unknown</i> | | 48 | | | | | | x | | | |
| Apocynaceae | <i>Aspidosperma megalocarpon</i> | | | | | | 36 | | | | | |
| Apocynaceae | <i>Stemmadenia donnell-smithii</i> | | | | | | | | | | 36,17, 74 | 20, 53, 15, 14, 51, 27 |
| Adiantaceae | <i>Adiantum sp.</i> | | | | | | | | | x | | |
| Araceae | <i>Anthurium pentaphyllum</i> | | | | | | | | | x | | |
| Araceae | <i>Philodendron sp.</i> | | | | | | | | x | | | |
| Arecaceae | <i>Attalea cohune</i> | | | | | | | | | x | | |
| Arecaceae | <i>Cryosophila stauracantha</i> | | | | | | | | | | | |
| Asteraceae | <i>Critonia morifolia</i> | x | 25 | | | | | | | | 23, 21 | |
| Asteraceae | <i>Koanophyllon albicaulis</i> | | | | | | | 41 | 20 | | | |
| Asteraceae | <i>Unknown</i> | x | 19 | | | | | | | | | |
| Bignoniaceae | <i>Parmentiera aculeata</i> | | | | | | | | | | | |
| Bromeliaceae | <i>Bromelia pinguin</i> | | | | | | | | x | | | |
| Burseraceae | <i>Bursera simaruba</i> | | 27 | 103 | | | | | | | | 25 |
| Burseraceae | <i>Protium sp.</i> | | | 20, 26, 140 | | | 17 | | | 76 | 49 | 13 |
| Capparaceae | <i>Forchhammeria trifoliata</i> | | | | | | | | | | | |
| Cecropiaceae | <i>Cecropia peltata</i> | | | | | | | 27 | | | | |
| Euphorbiaceae | <i>Jatropha tubulosa</i> | | | | | | | | | | | |
| Euphorbiaceae | <i>Unknown</i> | | | | | | | | | | | |
| Flacourtiaceae | <i>Unknown</i> | | 36 | | | | | | | | | |
| Lauraceae | <i>Unknown</i> | | | | 28 | | 20 | | x | | | |
| Malvaceae | <i>Hampea trilobata</i> | | | | | | | | x | 19 | | 24 |
| Malvales | <i>Unknown</i> | | | | | | | | | | | |
| Marantaceae | <i>Maranta arundinaceae</i> | | | | | | | | | | | |
| Meliaceae | <i>Cedrela odorata</i> | | | | | | | | | | | |
| Mimosoideae | <i>Acacia sp.</i> | | 16 | | | | | | | 26 | | |
| Mimosoideae | <i>Mimosa hondurana</i> | x | | | | | | | | | | |
| Mimosoideae | <i>Unknown</i> | | | | | | | | | | | |
| Mimosoideae | <i>Unknown</i> | | | | | | | | | | 27 | |
| Moraceae | <i>Brosimum alicastrum</i> | | | 106 | 109, 58, 40 | 19, 89, 20 | | | | | | |
| Moraceae | <i>Ficus sp.</i> | | | | | | 13 | 31 | | | | |
| Myrtaceae | <i>Eugenia sp.</i> | | 25 | | | | | | | | | |
| Myrtaceae | <i>Pimenta dioica</i> | | | 68, 44 | | | | | | | | |
| Nyctaginaceae | <i>Pisonia aculeata ?</i> | | | | | | | | | | | |
| Piperaceae | <i>Piper sp.</i> | | x | | | | | 18 | x | | | |
| Poaceae | <i>Unknown</i> | | | | | | | | | | | |
| Rubiaceae | <i>Alseis yucatenensis</i> | | 43 | | | | | | x | | | |

El Pilar: Vegetation transect, Chorro Ruins
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| | | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 | 90-100 | 100-110 |
|-----------------|--------------------------------|--------|--------|--------|--------|---------------|--------|--------|-------|--------|--------|---------|
| Rubiaceae | <i>Hamelia patens</i> | x | | | | | | | x | | | |
| Rubiaceae | <i>Psychotria spp.</i> | | | | | (16,19) | | | | | | |
| Rubiaceae | <i>Simira salvadorensis</i> | | | | | | | 18 | | | | |
| Rutaceae | <i>Zanthoxylum sp.</i> | | | | | | | | | | | |
| Theophrastaceae | <i>Deherainia smaragdina</i> | | | | | | | | | | | |
| Sapindaceae | <i>Allophylus cominia</i> | | | | | | | | 23 | | | |
| Sapindaceae | <i>Cupania sp.</i> | | | | | 18 | | | | | | |
| Sapotaceae | <i>Chrysophyllum mexicanum</i> | | | | | | | | | | | |
| Sapotaceae | <i>Pouteria spp.</i> | | | 13 | 27 | (24,31,30,25) | 36, 27 | 41 | 22 | | | 16, 20 |
| Sterculiaceae | <i>Guazuma ulmifolia</i> | | | | | | | | 40 | | | |
| Unknown | <i>Unknown</i> | | | | | | | | | | | 17 |
| Unknown | <i>Unknown</i> | | 52 | | | 17 | 22 | 25 | | | | |
| Unknown | <i>Unknown</i> | | | 50 | 57, 24 | 21 | | | 20 | | 21 | |
| Unknown | <i>Dead tree</i> | | | | | | 21 | 16 | | | | |
| Urticaceae | <i>Unknown</i> | | | | | | | | | | | |
| Verbenaceae | <i>Vitex gaumeri</i> | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Canopy height | | 3 m | 15 m | 15 m | 15 m | 15 m | 15 m | 15 m | 15 m | 10 m | 15 m | 15 m |
| Canopy | | Closed | Closed | Closed | Closed | Closed | Closed | Closed | Open | Closed | Closed | Closed |
| 56 spp. | | Flat | Slope | Slope | Slope | Slope | Slope | Slope | Slope | Slope | Slope | Slope |

El Pilar: Vegetation transect, Chorro Ruins
19 December 1997

| | | 110-120 | 120-130 | 130-140 | 140-150 | 150-160 | 160-170 | 170-180 | 180-190 | 190-200 |
|----------------|------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Acanthaceae | <i>Aphelandra deppeana</i> | | | | | | | | | |
| Acanthaceae | <i>Lutheridium donnell-mithii</i> | | | x | | | | | | |
| Anacardiaceae | <i>Spondias mombin</i> | | 108 | 36 | | 100, 52 | | | | |
| Annonaceae | <i>Unknown</i> | | 19 | | | | | | | |
| Apocynaceae | <i>Aspidosperma megalocarpon</i> | | | | | | | | | |
| Apocynaceae | <i>Stemmadenia donnell-smithii</i> | 71, 18 | | | | | | | | |
| Adiantaceae | <i>Adiantum sp.</i> | | | | | | | | | |
| Araceae | <i>Anthurium pentaphyllum</i> | | | | | | | | | |
| Araceae | <i>Philodendron sp.</i> | | | | | | | | | |
| Arecaceae | <i>Attalea cohune</i> | | x | | | x | | | | x |
| Arecaceae | <i>Cryosophila stauracantha</i> | | x | | | | | | | |
| Asteraceae | <i>Critonia morifolia</i> | | | | | | | x | 26 | |
| Asteraceae | <i>Koanophyllon albicaulis</i> | | | | | | | | | |
| Asteraceae | <i>Unknown</i> | | | | | | | | | |
| Bignoniaceae | <i>Parmentiera aculeata</i> | | | | | 52 | | | | |
| Bromeliaceae | <i>Bromelia pinguin</i> | | | | | | | | | |
| Burseraceae | <i>Bursera simaruba</i> | 112, 75 | | | | | | | | |
| Burseraceae | <i>Protium sp.</i> | | 19 | | 74 | | | | | |
| Capparaceae | <i>Forchhammeria trifoliata</i> | | x | | | | | | | |
| Cecropiaceae | <i>Cecropia peltata</i> | | | | | | | | 49 | |
| Euphorbiaceae | <i>Jatropha tubulosa</i> | | | | | | x | | | |
| Euphorbiaceae | <i>Unknown</i> | | | | | | | x | | |
| Flacourtiaceae | <i>Unknown</i> | | | | | | | | | |
| Lauraceae | <i>Unknown</i> | | | | | | | | | |
| Malvaceae | <i>Hampea trilobata</i> | | | | | | | | | |
| Malvales | <i>Unknown</i> | | | | | | | x | | |
| Marantaceae | <i>Maranta arundinaceae</i> | | | | | | | | x | x |
| Meliaceae | <i>Cedrela odorata</i> | | | | x | | | | | |
| Mimosoideae | <i>Acacia sp.</i> | | | | | | | | | |
| Mimosoideae | <i>Mimosa hondurana</i> | | | | | | | | | |
| Mimosoideae | <i>Unknown</i> | | | | | 16 | | | | |
| Mimosoideae | <i>Unknown</i> | | | | | | | | | |
| Moraceae | <i>Brosimum alicastrum</i> | | | | | | | | | |
| Moraceae | <i>Ficus sp.</i> | | | | 334 | | | | | |
| Myrtaceae | <i>Eugenia sp.</i> | | | | | | | | | |
| Myrtaceae | <i>Pimenta dioica</i> | | | | | | | | | |
| Nyctaginaceae | <i>Pisonia aculeata ?</i> | | | | | | | x | | |
| Piperaceae | <i>Piper sp.</i> | x | | | x | | x | | | |
| Poaceae | <i>Unknown</i> | | | | | | x | | | |
| Rubiaceae | <i>Alseis yucatenensis</i> | | | | | | | | | |

El Pilar: Vegetation transect, Chorro Ruins
19 December 1997

| | | 110-120 | 120-130 | 130-140 | 140-150 | 150-160 | 160-170 | 170-180 | 180-190 | 190-200 |
|-----------------|--------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|------------------------|
| Rubiaceae | <i>Hamelia patens</i> | | | | | | | x | | |
| Rubiaceae | <i>Psychotria spp.</i> | | | | | 14 | | | | |
| Rubiaceae | <i>Simira salvadorensis</i> | | | | | | | | | |
| Rutaceae | <i>Zanthoxylum sp.</i> | (20,46) | | | | | | | | |
| Theophrastaceae | <i>Deherainia smaragdina</i> | | | | | | | | | |
| Sapindaceae | <i>Allophylus cominia</i> | | | | | | | | | |
| Sapindaceae | <i>Cupania sp.</i> | | | | | | | | | |
| Sapotaceae | <i>Chrysophyllum mexicanum</i> | | | | x | | | | | |
| Sapotaceae | <i>Pouteria spp.</i> | | | | | | | | | |
| Sterculiaceae | <i>Guazuma ulmifolia</i> | | (56,87) | | | | | | | (43,39,46), (39,30,35) |
| Unknown | <i>Unknown</i> | | | | | | | | | |
| Unknown | <i>Unknown</i> | | | | | | | | | |
| Unknown | <i>Unknown</i> | | | 20 | | | | | | |
| Unknown | <i>Dead tree</i> | 16 | | | | | | | | |
| Urticaceae | <i>Unknown</i> | | x | | x | | | | | |
| Verbenaceae | <i>Vitex gaumeri</i> | | 142 | | | 89 | 88 | | | |
| | | | | | | | | | | |
| Canopy height | | 15 m | 15 m | 15 m | 15 m | 15 m | 10 m | 3 m | 5 m | 7 m |
| Canopy | | Open | Closed | Closed | Open | Closed | Open | Open | Open | Open |
| 56 spp. | | Slope | Slope | Slope | Slope | Slope | Flat | Flat | Flat | Flat |

EI Pilar: Vegetation Transect, Border
19 December 1997

| | | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 | 90-100 |
|------------------|------------------------------------|------------|--------|------------|---------------|---------------|----------------|---------------|-----------------|------------|------------|
| Anacardiaceae | <i>Astronium graveolens</i> | | | | | | | | | | |
| Anacardiaceae | <i>Spondias mombin</i> | | | | 170 | | | | 30 | 34, 40, 33 | 44 |
| Annonaceae | <i>Unknown</i> | | | | | | | 26 | | | |
| Apocynaceae | <i>Aspidosperma megalocarpon</i> | | | | | | | | | | |
| Apocynaceae | <i>Stemmadenia donnell-smithii</i> | | 21 | | | | 30 | | | | |
| Arecaceae | <i>Attalea cohune</i> | | | Y, Y, Y | Y, Y, Y, Y, Y | Y, Y, Y, Y, Y | | 119 | Y, Y, 120 | Y, Y, 120 | Y, Y, Y, Y |
| Arecaceae | <i>Bactris mexicana</i> | | | | | | | | | | |
| Arecaceae | <i>Cryosophila stauracantha</i> | 28, 45, 35 | | | | | | | | | |
| Arecaceae | <i>Sabal mauritiiformis</i> | | | | | | | | 75 | | |
| Bignoniaceae | <i>Unknown</i> | | | | | | | | | | |
| Boraginaceae | <i>Cordia gerascanthus</i> | | | | | | | | | 29 | |
| Burseraceae | <i>Bursera simaruba</i> | | | | | | | | | 22 | 38 |
| Burseraceae | <i>Protium sp.</i> | 70 | | | | | | | | | |
| Caesalpinioideae | <i>Bauhinia herrerae</i> | | | | | | 27 | | | | |
| Caesalpinioideae | <i>Schizolobium parahybum</i> | | | | | | | | | 72 | |
| Mimosoideae | <i>Acacia sp.</i> | | | | 39 | | | | | | |
| Mimosoideae | <i>Unknown</i> | | | (135,57) | | | | | | | |
| Moraceae | <i>Ficus sp.</i> | | | | | | | | | | |
| Myrtaceae | <i>Eugenia sp.</i> | | | | | | | | | | |
| Moraceae | <i>Ficus sp.</i> | | | 170 | | | | | | | |
| Polygonaceae | <i>Coccoloba belizensis</i> | | | | | | | | | | |
| Piperaceae | <i>Piper sp.</i> | | | | | | | | | | |
| Rubiaceae | <i>Alseis yucatenensis</i> | | | | | | | | | | |
| Rubiaceae | <i>Simira salvadorensis</i> | x | | | | | | | | | |
| Rutaceae | <i>Zanthoxylum sp.</i> | | | | | | | | | | |
| Sapotaceae | <i>Pouteria spp.</i> | 75, 29 | | | | | | | | | |
| Simaroubaceae | <i>Simarouba glauca</i> | | | (16,38,27) | | | | | | | |
| Sterculiaceae | <i>Guazuma ulmifolia</i> | | | | | 30, 42 | 33, 41, 36, 25 | (50,33,51,47) | 1, 55), (70,29, | 32 | |
| Ulmaceae | <i>Ampelocera hottlei</i> | 75 | | | | | | 24 | | | |
| Unknown | <i>Unknown</i> | | 40 | | | | | | | | |
| Unknown | <i>Unknown</i> | | | | 19 | | | | 45 | 46 | |
| Unknown | <i>Unknown</i> | 75 | 53 | | | | | | 31 | | |
| Unknown | <i>Unknown</i> | | | | | | | | | | |
| Verbenaceae | <i>Rehdera penninervia</i> | | | | | | | | | | 18, 47 |
| Verbenaceae | <i>Vitex gaumeri</i> | | | | | | | | | | |
| Vitaceae | <i>Vitis tiliifolia</i> | | | | | | | | | | |
| Canopy height | | 15 m | 15 m | 15 m | 12 m | 12 m | 12 m | 12 m | 12 m | 12 m | 12 m |
| Canopy | | Closed | Closed | Closed | Closed | Closed | Closed | Closed | Closed | Closed | Closed |
| 36 spp. | | Bajo | Bajo | Bajo | Bajo | Bajo | Bajo | Bajo | Bajo | Bajo | Bajo |

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| | | 100-110 | 110-120 | 120-130 | 130-140 | 140-150 | 150-160 | 160-170 | 170-180 | 180-190 | 190-200 |
|------------------|------------------------------------|---------|------------|------------|---------|------------|----------------|------------|---------|---------|---------|
| Anacardiaceae | <i>Astronium graveolens</i> | 33, 46 | | | | | | | | | 16 |
| Anacardiaceae | <i>Spondias mombin</i> | 74 | | | | | | | 18 | | 33 |
| Annonaceae | <i>Unknown</i> | | | | | | | | | | |
| Apocynaceae | <i>Aspidosperma megalocarpon</i> | | | 87 | | | | | | | |
| Apocynaceae | <i>Stemmadenia donnell-smithii</i> | | | | | | | | | | |
| Arecaceae | <i>Attalea cohune</i> | | Y, 75 | Y | 102 | Y | 100 | | Y, Y | Y, Y, Y | Y, Y |
| Arecaceae | <i>Bactris mexicana</i> | x | | | | | | | | | |
| Arecaceae | <i>Cryosophila stauracantha</i> | | | 27, 28 | 30 | 19 | 27, 26 | 20, 19, 20 | | 20 | |
| Arecaceae | <i>Sabal mauritiiformis</i> | | 72 | | | 53, 44 | 58 | 49 | | | |
| Bignoniaceae | <i>Unknown</i> | | | | | | | 18 | | (22,20) | |
| Boraginaceae | <i>Cordia gerascanthus</i> | | | | | | | | | | |
| Burseraceae | <i>Bursera simaruba</i> | | | | | | | | | | |
| Burseraceae | <i>Protium sp.</i> | | | | | | | | | | |
| Caesalpinioideae | <i>Bauhinia herrerae</i> | | | | | | | | | | |
| Caesalpinioideae | <i>Schizolobium parahybum</i> | | | | | | | | | | |
| Mimosoideae | <i>Acacia sp.</i> | | | | 36 | | 28 | | | | |
| Mimosoideae | <i>Unknown</i> | | | | | 94 | | | | | |
| Moraceae | <i>Ficus sp.</i> | | | | | | | | | 197 | |
| Myrtaceae | <i>Eugenia sp.</i> | | | | | | | | | x | |
| Moraceae | <i>Ficus sp.</i> | | | | | | | | | | |
| Polygonaceae | <i>Coccoloba belizensis</i> | | | | | | | | | | (37,52) |
| Piperaceae | <i>Piper sp.</i> | | | | | | | | | x | |
| Rubiaceae | <i>Alseis yucatenensis</i> | | | 35 | 40 | | 36 | | | | |
| Rubiaceae | <i>Simira salvadorensis</i> | | | | | | | | | | |
| Rutaceae | <i>Zanthoxylum sp.</i> | | | | | | | | 71 | | |
| Sapotaceae | <i>Pouteria spp.</i> | | 20 | | | | 29 | | | | |
| Simaroubaceae | <i>Simarouba glauca</i> | | | | | | | | | | |
| Sterculiaceae | <i>Guazuma ulmifolia</i> | | | | | | | | | | |
| Ulmaceae | <i>Ampelocera hottlei</i> | | 36, 16, 16 | 31, 20, 35 | 37 | 22, 77, 49 | 90, 58, 98, 16 | (30, 104) | 47 | 36 | |
| Unknown | <i>Unknown</i> | | | | | 25 | | | 19 | | |
| Unknown | <i>Unknown</i> | | | | | | | | | | |
| Unknown | <i>Unknown</i> | | | 16, 19 | | | | | 21 | 24, 21 | |
| Unknown | <i>Unknown</i> | | | | | | | | 16 | | |
| Verbenaceae | <i>Rehdera penninervia</i> | 27 | | | | | | | | | |
| Verbenaceae | <i>Vitex gaumeri</i> | | 28 | | | | | | | 53 | 38 |
| Vitaceae | <i>Vitis tiliifolia</i> | | | | | | | | | 24 | |
| | | | | | | | | | | | |
| Canopy height | | 15 m | 15 m | 12 m | 12 m | 15 m | 15 m | 15 m | 15 m | 12 m | 15 m |
| Canopy | | Closed | Closed | Closed | Closed | Closed | Closed | Closed | Closed | Closed | Closed |
| 36 spp. | | Bajo | Bajo | Bajo | Bajo | Bajo | Bajo | Bajo | Bajo | Bajo | Bajo |

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| | | (50-40) | (40-30) | (30-20) | (20-10) | (10-0) | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 |
|----------------|-------------------------------------|---------|---------|---------|---|--------|--------|--------|-------------|---------|-------|
| Acanthaceae | <i>Lutheridium donnell-mithii</i> | | | | 27, (25,19,30,29,30,20), 22, 15, 41, 18 | | | | (34,20), 17 | | x |
| Acanthaceae | <i>Odontonema sp.</i> | | | | | | | | | | |
| Agavaceae | <i>Dracaena americana</i> | | | | | | | | | | x |
| Anacardiaceae | <i>Astronium graveolens</i> | | | 34 | | | | | | | |
| Anacardiaceae | <i>Metopium brownei</i> | | 17 | | | | | | | | |
| Anacardiaceae | <i>Spondias mombin</i> | | | | | | | | | | |
| Annonaceae ? | <i>Unknown</i> | | | | | | | | | | |
| Apocynaceae | <i>Aspidosperma megalocarpon</i> | 78 | 55 | 70 | | | | | | | |
| Apocynaceae | <i>Thevetia ahouai</i> | | | | | | | | | | |
| Arecaceae | <i>Chamaedorea ernesti-augustii</i> | | | | | | | | | | x |
| Arecaceae | <i>Chamaedorea pinnatifrons</i> | | | | | | | | | | x |
| Arecaceae | <i>Cryosophila stauracantha</i> | | | | | | 23, 20 | x | 28, 32 | 24 | x |
| Arecaceae | <i>Desmonchus orthacanthos</i> | | | | | | | | x | | |
| Arecaceae | <i>Gaussia maya</i> | 37 | 30 | 42 | | | | | | | |
| Asteraceae | <i>Critonia morifolia</i> | | | | | | | | | | |
| Asteraceae | <i>Koanophyllon albicaulis</i> | | | | | | | | | | |
| Asteraceae | <i>Unknown</i> | | | 32 | 21 | | | | | | |
| Bignoniaceae | <i>Unknown</i> | | | | | | | | | | |
| Burseraceae | <i>Bursera simaruba</i> | 20 | 72 | | | | | | | | |
| Burseraceae | <i>Protium sp.</i> | 37 | (48,32) | | | | | | x | | |
| Burseraceae | <i>Unknown</i> | | | | | 50 | | 46, 70 | | | |
| Cecropiaceae | <i>Cecropia peltata</i> | | | | | | | | | | |
| Clusiaceae | <i>Calophyllum brasiliense</i> | | | | | | 110 | | 90 | | |
| Euphorbiaceae | <i>Alchornea latifolia</i> | | | | | | | | | 104, 86 | |
| Euphorbiaceae | <i>Unknown</i> | | | | | | | | | | 18 |
| Flacourtiaceae | <i>Unknown</i> | | | | | | | | | | |
| Lauraceae | <i>Licaria sp.</i> | | | | | | | | | | |
| Malvaceae | <i>Hampea trilobata</i> | (21,20) | | | | | | | | | |
| Melastomaceae | <i>Miconia sp.</i> | | | | | 40 | | | | | |
| Meliaceae | <i>Trichilia sp.</i> | | 37 | | | | | | | 22 | |
| Mimosoideae | <i>Acacia sp.</i> | x | | | | 36 | | | | | |
| Mimosoideae | <i>Unknown</i> | | | | | | | | | | |
| Moraceae | <i>Brosimum alicastrum</i> | | 120 | | | | | | | | |
| Moraceae | <i>Brosimum sp.?</i> | | | | | | | | | 16 | |
| Moraceae | <i>Ficus sp.</i> | | | | | | | | | | |
| Moraceae | <i>Ficus sp.</i> | | | 22 | | | | | | | |
| Moraceae | <i>Unknown</i> | | | | | | | | | | |
| Myrtaceae | <i>Eugenia sp.</i> | | | | | | 28 | 28 | | | |

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| | | (50-40) | (40-30) | (30-20) | (20-10) | (10-0) | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 |
|-----------------|-----------------------------------|------------|---------|--------------|---------|------------|----------------|--------|-------|--------|--------|
| Myrtaceae | <i>Pimenta dioica</i> | | | | | | | x | | | |
| Orchidaeeae | <i>Vanilla planifrons</i> | | | | | x | | | | | |
| Papilionoideae | <i>Machaerium sp.</i> | | | | | | | | | | |
| Papilionoideae | <i>Unknown</i> | | | | | | | | | 80 | |
| Piperaceae | <i>Piper sp.</i> | | | | | | | | | | |
| Polygonaceae | <i>Coccoloba sp.</i> | | | | | | | | | | |
| Pterydophyte | <i>Unknown</i> | | | | | | | | | | x |
| Rubiaceae | <i>Alseis yucatenensis</i> | | | | | | | | | | 19 |
| Rubiaceae | <i>Guettarda combsii</i> | 35 | | | | | | | | | |
| Rubiaceae | <i>Hamelia patens</i> | | | | | | | | | | |
| Sapindaceae | <i>Paullinia sp.</i> | | | | | | | | | | |
| Sapotaceae | <i>Chrysophyllum mexicanum</i> | | | | | | | | | | |
| Sapotaceae | <i>Manilkara zapota</i> | | | | | | | | | | |
| Sapotaceae | <i>Pouteria spp.</i> | 60 | 28 | (27,100), 35 | | 17 | | | 39 | 47 | |
| Solanaceae | <i>Cestrum sp.</i> | | | | | | | | | | |
| Theophrastaceae | <i>Deherainia smaragdina</i> | | | | | | x | | | | |
| Tiliaceae | <i>Heliocarpus sp.</i> | | | | | | | | | | |
| Tiliaceae | <i>Trichospermum grewiifolium</i> | | | | | | | | | | |
| Ulmaceae | <i>Ampelocera hottlei</i> | | | | | | | | | | x |
| Unknown | <i>Unknown</i> | | | | | | | | | | |
| Unknown | <i>Unknown</i> | 38, 20, 19 | | | | | | 20 | | | |
| Unknown | <i>Unknown</i> | | | | | | 70 | | | | 22 |
| Unknown | <i>Unknown</i> | | (37,34) | | | | | | | | |
| Unknown | <i>Dead tree</i> | | | 70 | | 75 | 73 | 91, 90 | 70 | | 53, 27 |
| Verbenaceae | <i>Vitex gaumeri</i> | | | | | | | | | | |
| Vitaceae | <i>Vitis tiliifolia</i> | | | | | | | | | | |
| Canopy height | | 16 m | 16 m | 16 m | 18 m | 20 m | 22 m | 20 m | 20 m | 20 m | 20 m |
| canopy | | closed | closed | closed | closed | closed | open | closed | open | closed | closed |
| 63 spp. | | slope | slope | slope | slope | creek bank | creek crossing | creek | creek | creek | creek |

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23 December, 1997

| | | 50-60 | 60-70 | 70-80 | 80-90 | 90-100 | 100-110 | 110-120 | 120-130 | 130-140 | 140-150 |
|----------------|--------------------------------------|--------|-------|--------------|--------|------------|-------------------|------------|------------|---------|------------------|
| Acanthaceae | <i>Lutheridium donnell-mithii</i> | | | (20,24) | x | | | | | | |
| Acanthaceae | <i>Odontonema sp.</i> | | | | | | | | | | |
| Agavaceae | <i>Dracaena americana</i> | | | | | | | | | | |
| Anacardiaceae | <i>Astronium graveolens</i> | 19 | | | | | | | | | |
| Anacardiaceae | <i>Metopium brownei</i> | | | | | | | | | 17 | |
| Anacardiaceae | <i>Spondias mombin</i> | | 16 | | | | | | | 30 | |
| Annonaceae ? | <i>Unknown</i> | | | | 18 | | | | | | |
| Apocynaceae | <i>Aspidosperma megalocarpon</i> | | | | | | | | | | |
| Apocynaceae | <i>Thevetia ahouai</i> | | | | | | x | | | | |
| Arecaceae | <i>Chamaeodorea ernesti-augustii</i> | x | | | | | | | | | |
| Arecaceae | <i>Chamaeodorea pinnatifrons</i> | x | | | | | | | | | |
| Arecaceae | <i>Cryosophila stauracantha</i> | 28, 20 | 18 | | | | | | | | |
| Arecaceae | <i>Desmonchus orthacanthos</i> | | | | | | | | | | |
| Arecaceae | <i>Gaussia maya</i> | 40 | | | | | | | | | |
| Asteraceae | <i>Critonia morifolia</i> | | | | 20 | | | | | | |
| Asteraceae | <i>Koanophyllon albicaulis</i> | | | 25 | | 18, 33, 18 | 21, 17, 16, 22 | 20 | | 17 | |
| Asteraceae | <i>Unknown</i> | 49 | | 20 | | | | 33, 18, 17 | | | |
| Bignoniaceae | <i>Unknown</i> | | | | x | | | | | | x |
| Burseraceae | <i>Bursera simaruba</i> | | | 30 | | | | 16, 16 | | | 19, (42,32) |
| Burseraceae | <i>Protium sp.</i> | | | | x | x | | | | | |
| Burseraceae | <i>Unknown</i> | | | | | | | | | | |
| Cecropiaceae | <i>Cecropia peltata</i> | | | | 29, 24 | 48, 38 | 33 | 35, 17 | (23,24,24) | | (53,26), 32, 26 |
| Clusiaceae | <i>Calophyllum brasiliense</i> | | | | | | | | | | |
| Euphorbiaceae | <i>Alchornea latifolia</i> | | | 48 | | | 27, 70 | | | | |
| Euphorbiaceae | <i>Unknown</i> | | | | | | | | | | |
| Flacourtiaceae | <i>Unknown</i> | | | | | | | | | 16 | |
| Lauraceae | <i>Licaria sp.</i> | | | | | | (78#,24,29,20,45) | | | | |
| Malvaceae | <i>Hampea trilobata</i> | | | | | | | 22 | 18 | | (17, 16), 18, 24 |
| Melastomaceae | <i>Miconia sp.</i> | | | | | | | | | | |
| Meliaceae | <i>Trichilia sp.</i> | | | | | | | | | | |
| Mimosoideae | <i>Acacia sp.</i> | | | | | | 20 | (16,18) | | 17 | 29 |
| Mimosoideae | <i>Unknown</i> | | 94 | 70 | | | | | | | |
| Moraceae | <i>Brosimum alicastrum</i> | | | | | | | | | | |
| Moraceae | <i>Brosimum sp.?</i> | | 30 | 78 | | | | | | | |
| Moraceae | <i>Ficus sp.</i> | 23 | | | | | | | | | |
| Moraceae | <i>Ficus sp.</i> | | | | | | | | | | |
| Moraceae | <i>Unknown</i> | | | (70,125), 52 | | | | | | | |
| Myrtaceae | <i>Eugenia sp.</i> | | 20 | | | | | | | | |

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| | | 50-60 | 60-70 | 70-80 | 80-90 | 90-100 | 100-110 | 110-120 | 120-130 | 130-140 | 140-150 |
|-----------------|-----------------------------------|------------|------------|------------|-----------|------------|----------------|---------|---------|---------|---------|
| Myrtaceae | <i>Pimenta dioica</i> | | | | | | | | | | |
| Orchidaeeae | <i>Vanilla planifrons</i> | | | | | | | | | | |
| Papilionoideae | <i>Machaerium sp.</i> | | | | 18 | | | | | | |
| Papilionoideae | <i>Unknown</i> | | | | | | | | | | |
| Piperaceae | <i>Piper sp.</i> | | | | x | x | | 17, 13 | | | |
| Polygonaceae | <i>Coccoloba sp.</i> | | | | | | x | | | | |
| Pterydophyte | <i>Unknown</i> | | | | x | | | | | | |
| Rubiaceae | <i>Alseis yucatenensis</i> | | | | | | | | | | |
| Rubiaceae | <i>Guettarda combsii</i> | | | | | | | | | | |
| Rubiaceae | <i>Hamelia patens</i> | | | | | | | 17 | | | |
| Sapindaceae | <i>Paullinia sp.</i> | | | | | | | | | | x |
| Sapotaceae | <i>Chrysophyllum mexicanum</i> | | | | | | | | | | |
| Sapotaceae | <i>Manilkara zapota</i> | | | | | | | 100 | | | |
| Sapotaceae | <i>Pouteria spp.</i> | | | | | | | | | | |
| Solanaceae | <i>Cestrum sp.</i> | | | | | 33 | | | | | |
| Theophrastaceae | <i>Deherainia smaragdina</i> | | | | | | | | | | x |
| Tiliaceae | <i>Heliocharpus sp.</i> | | | | | | 74, 35, 33, 40 | 26, 32 | 54,42 | 72 | 18 |
| Tiliaceae | <i>Trichospermum grewiifolium</i> | | | | | | | | | 50 | 19 |
| Ulmaceae | <i>Ampelocera hottlei</i> | | | | | | | | | | |
| Unknown | <i>Unknown</i> | 17, 32 | 21 | | | | | | | | |
| Unknown | <i>Unknown</i> | | 44 | 32 | | | | | | | |
| Unknown | <i>Unknown</i> | | | | | | | | | | |
| Unknown | <i>Unknown</i> | | | | | | | | | | |
| Unknown | <i>Dead tree</i> | | 55, 24 | 80 | 43, 74 | 88, 22, 78 | 36 | | | | |
| Verbenaceae | <i>Vitex gaumeri</i> | | | | | | | | | | 48 |
| Vitaceae | <i>Vitis tiliifolia</i> | | | | x | | | | | | x |
| Canopy height | | 18 m | 18 m | 18 m | 14 m | 10 m | 8 m | 8 m | 5 m | 8 m | 10 m |
| canopy | | | | | | | | | | | |
| 63 spp. | | bank creek | bank creek | bank creek | dry creek | slope | slope | slope | slope | slope | slope |