

OCCASIONAL PAPERS  
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April 1, 1993

ANNOTATED CHECKLIST OF THE VASCULAR FLORA OF THE  
CHAMELA BAY REGION, JALISCO, MEXICO

By

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**ABSTRACT:** An annotated checklist of the vascular plants of the Chamela Bay region in Jalisco, Mexico is presented. The study site includes elevations ranging from sea level to roughly 500 m. Principal vegetation types found in the area are Tropical Deciduous Forest, Tropical Semideciduous Forest, riparian associations, mangrove swamps and brackish lagoons, coastal strand, and secondary communities derived from these. The vascular flora in an area of about 350 km<sup>2</sup> consists of 1,120 species in 544 genera of 124 families. Of these species, about 10 percent are presumed to be endemic to the states of Jalisco and Colima.

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INTRODUCTION

An earlier checklist (Lott 1985) of the Estación de Biología Chamela (Chamela Biological Station) included 779 species of vascular

plants in 107 families. Collecting has continued on the station's grounds, yielding a few new records. Recent collections in a newly established private nature reserve (Cuixmala Reserve), in the same area, in fact adjoining the biological field station on one boundary, have brought to light additional species, principally by giving access to several habitat types that are not included in the Chamela Biological Station. I am taking this opportunity to expand and update the earlier checklist by including records from a larger area that includes both the Chamela station and the Cuixmala reserve. Annotations on flowering times and prominent characteristics that were not included in the previous list are added here. Although a local florula is the ultimate goal, it is hoped that this checklist will be useful to biologists and conservation managers in the area. Availability of McVaugh's (1983 - present) flora of Nueva Galicia has contributed greatly to the elaboration of a florula, but much remains to be done.



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The history of collecting in Nueva Galicia has been treated by McVaugh (1972). Opening of the coast highway (Highway 200, referred to here as the Puerto Vallarta-Barra de Navidad highway) in 1972 made access for botanical collecting much easier, and most of the collections cited in the checklist were made after that time.

Recent literature on the botany of the area includes studies of breeding systems of 708 species of the Chamela Biological Station (Bullock 1985), species diversity (Lott et al. 1987), phenology of 108 tree species (Bullock and Solís Magallanes 1990), and a manual for identification of Tropical Deciduous Forest trees by bark characters (Barajas and Pérez Jiménez 1990). A symposium on the ecology of tropical dry forests was held at the Chamela Biological Station in 1991; the proceedings are in preparation (S. Bullock, pers. comm.). In addition to the botanical works, the mammals (Ceballos and Miranda 1986) and the avifauna (Arizmendi et al. 1990) have been studied. Taxonomic treatments of various insect groups are available (Morón 1988).

**LOCATION OF THE SITE**—The area included in the checklist lies within the municipality of La Huerta and is totally within "Nueva Galicia" as defined by McVaugh (1961). The Chamela Bay flora area (Figs. 1, 2) is bounded on the north by the Río San Nicolás, on the west by the Pacific Ocean, on the east by an arbitrary line roughly following the 500-meter contour line, and on the south by the Río Cuitzmala. In practice the eastern boundary has been the Juan Gil-Rancho San Borja road, a dirt track that gives access to the back portions of the Chamela Biological Station and to the Cumbres section of the Cuixmala Reserve. In addition, a few collections made to the southeast of the Río Cuitzmala have been included. No attempt has been made as yet to collect the entire zone, but intensive collections have been made at and near the Chamela Biological Station since its inception in 1974. A floristic survey was made on the 7,000-ha Fundación Ecológica Cuixmala from October, 1990 to November, 1991, but much remains to be done there. Other sites that have been visited in a more or less systematic manner include Quémario, Arroyo Chamela, and Arroyo Careyes. The other collecting sites were visited

as time permitted.

Rzedowski (1978) assigns our area to the physiographic province of the Sierra Madre del Sur. The topography of the area is of hilly eroded plains with many small drainages and a few larger river valleys. The soils are volcanic; those of the hillsides are usually derived either from basalt or from rhyolites (Bullock 1986). Rainfall, winds, weather systems, and precipitation at Chamela have been described by Bullock (1986). Average annual precipitation for the period 1977–1988 was 707 mm (Bullock 1988). The rainy season is only four months long; most (about 80 per cent) of the rains fall between the beginning of July and early November. In some years there are appreciable rains in December or January ("cabañuelas"), which can cause marked flowering in response (Bullock and Solís Magallanes 1990). The yearly mean temperature for the same eight-year period was 24.91 °C. Monthly average temperatures vary from about 22.3 °C in March to 27.3 °C in May.

**VEGETATION TYPES**—The vegetation of Nueva Galicia has been described by Rzedowski and McVaugh (1966). More recently, vegetation types of Mexico have been studied in detail by Rzedowski (1978).

**Tropical Deciduous Forest.** The dominant vegetation type of the Chamela Bay region is the Tropical Deciduous Forest. This vegetation type is most characteristic of the Pacific coast of Mexico from the extreme southern tip of Baja California and from southern Sonora and southwestern Chihuahua to Chiapas, and continues into Central America. It is also found discontinuously in three major zones on Mexico's Atlantic coast, one in southern Tamaulipas and southeastern San Luis Potosí, a second in central Veracruz, and the third in the Yucatán Peninsula (Rzedowski 1978). Nowhere on the Atlantic coast is this vegetation type as extensive as on the Pacific coast. The type of Tropical Deciduous Forest dominated by *Bursera* spp. ("Cuajitotal") commonly found in the Balsas River basin is rare, but in some sites a distinctive association of *Bursera* spp., *Jatropha malacophylla*, *J. standleyi*, *Croton* spp., *Phyllanthus* spp., and cacti is found.

The species composition of the forest is very diverse (Lott et al. 1987) and there are many variants of it, due to differences in aspect, soil

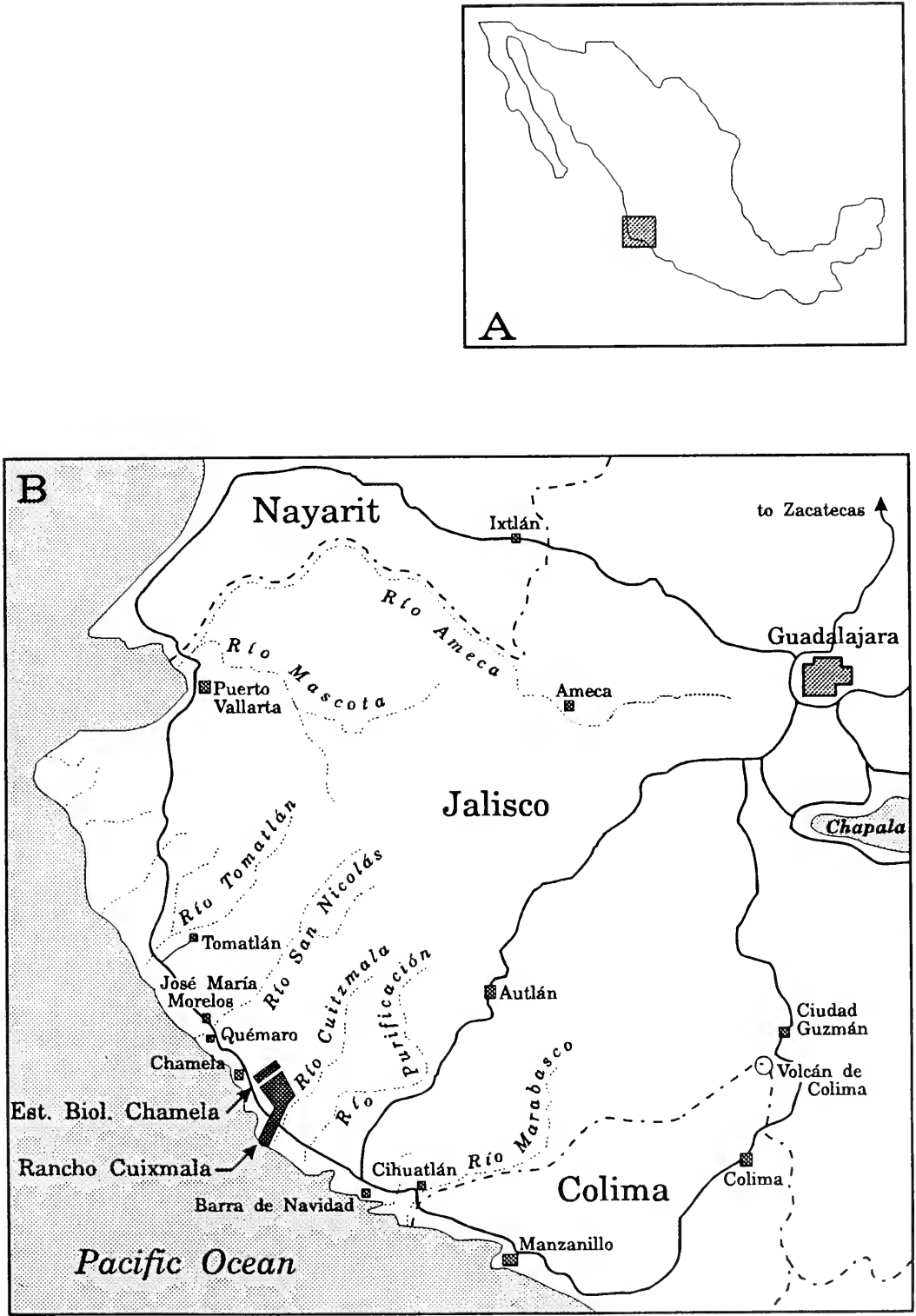


FIGURE 1. Location of the study site. A. Location in Mexico. B. Portion of southwestern coastal Mexico.

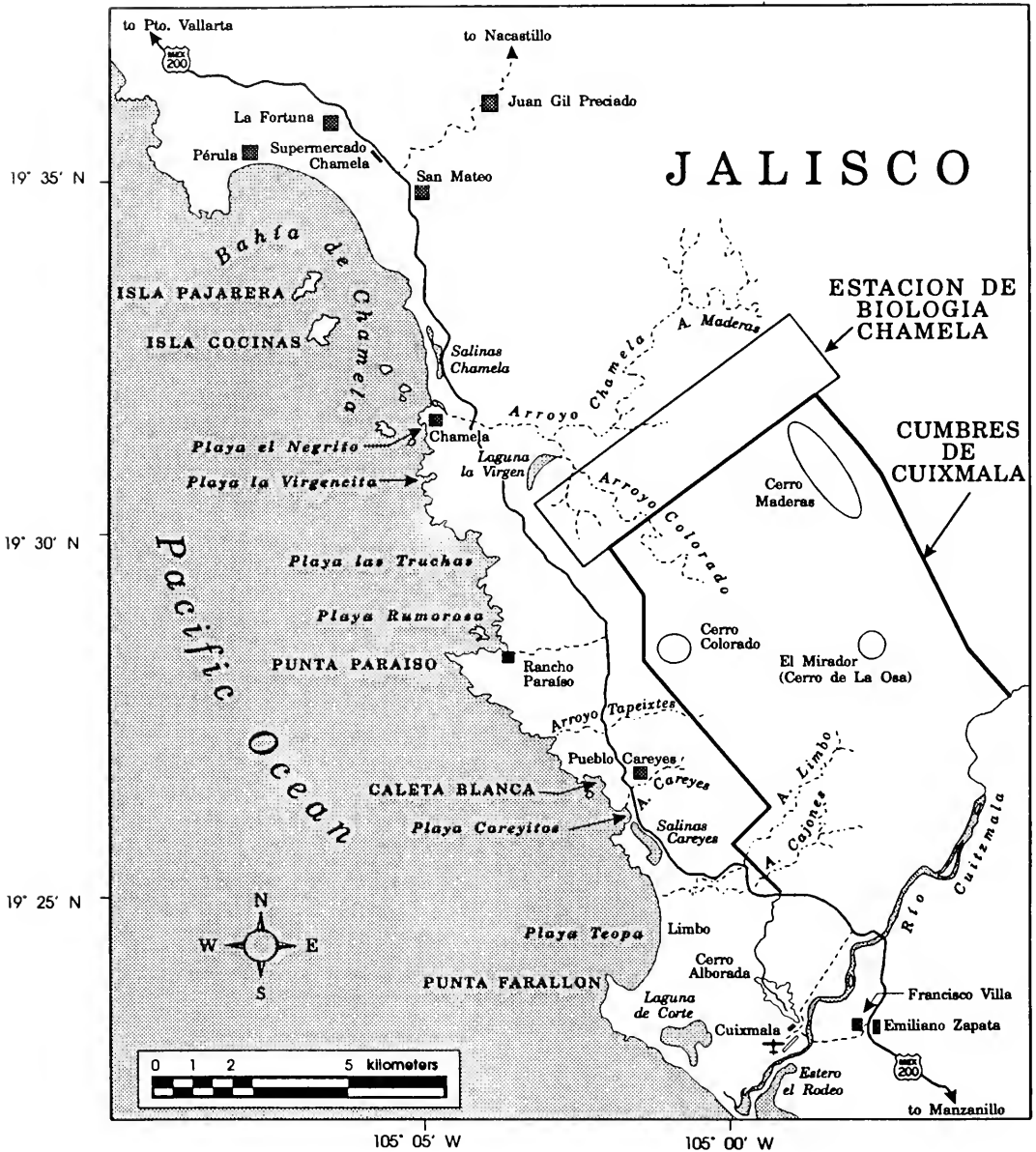


Figure 2. Map of the Chamela Bay area showing collecting localities, rivers, and major drainages.

depth, and exposure, and local factors not immediately apparent. Many associations could be identified, but in general some of the following species may be found as co-dominants: *Amphipterygium adstringens*, *Bourreria* cf. *purpusii*, *Bursera* spp., *Caesalpinia coriaria*, *C. eriostachys*, *Ceiba aesculifolia*, *Cordia alliodora*, *C. elaeagnoides*, *Ficus cotinifolia*, *Gua-*

*pira* cf. *macrocarpa*, *Jatropha standleyi*, *Lonchocarpus constrictus*, *L. lanceolatus*, *Lysiloma microphyllum*, and *Trichilia trifolia*. Other fairly common tree species are *Crescentia alata*, *Croton pseudoniveus*, *Exostema caribaeum*, *Forchhammeria pallida*, *Guaiacum coulteri*, *Lonchocarpus eriocarinalis*, *Morisonia americana*, *Plumeria rubra*, and *Spondias*

*purpurea*. Less common but conspicuous are the arborescent cacti, *Opuntia excelsa*, *Pachycereus pecten-aboriginum*, *Stenocereus chrysocarpus*, and the somewhat shorter, more slender *Cephalocereus purpusii*. Common shrubs are *Achatocarpus gracilis*, *Bromelia plumieri*, *Capparis indica*, *Casearia corymbosa*, *Croton* spp., *Hybanthus mexicanus*, *Justicia candicans*, *Randia thurberi*, *Sapranthus microcarpus*, and *Trichilia trifolia*. Some of the more common lianas are *Clytostoma binatum*, *Marsdenia lanata*, *Prestonia mexicana*, *Serjania brachycarpa*, and *Xylophragma seemannianum*.

The most common herbaceous vines are species of *Dioscorea* and *Ipomoea* as well as *Cucurbitaceae*. Although *Orchidaceae* are fairly uncommon or inconspicuous in the Tropical Deciduous Forest, epiphytic *Bromeliaceae* are common, in particular *Tillandsia dasytirifolia*, *T. fasciculata*, *T. ionantha*, *T. paucifolia*, and *T. schiedeana*. Herbs such as *Commelina* spp., *Dicliptera resupinata*, *Evolvulus* spp., *Henrya insularis*, *Justicia* spp., and *Monniera trifolia* abound in the rainy season wherever gaps in the canopy or clearings permit.

Some tree species generally indicative of highly disturbed or secondary Tropical Deciduous Forest are *Cnidioscolus spinosus*, *Cochlospermum vitifolium*, *Cordia alliodora*, *Cratva tapia*, *Guazuma ulmifolia*, *Heliocarpus pallidus*, *Ipomoea wolcottiana*, *Mimosa acantholoba*, and *M. arenosa*.

On windswept rocky headlands overlooking the Pacific Ocean a dense, dwarf, shrubby forest occurs of *Amphipterygium adstringens*, *Bursera excelsa*, *B. instabilis*, *Caesalpinia platyloba*, *Euphorbia* sp. nov., *Jatropha bullockii*, *Stenocereus standleyi*, *Thevetia ovata*, and sometimes *Prosopis juliflora*.

A distinctive forest association dominated by *Celaenodendron mexicanum* is common and often intergrades with the Tropical Deciduous Forest. Various aspects of this forest type are currently being studied (N. Martijena, pers. comm.), but results are not yet available.

**Tropical Semideciduous (or Subdeciduous) Forest.** Along the larger arroyos and river valleys a thin band of Tropical Semideciduous Forest is found. Some of the taller tree species most characteristic of this vegetation type are *Astronium graveolens*, *Brosimum ali-castrum*, *Bursera arborea*, *Couepia polyandra*,

*Cynometra oxacana*, *Ficus insipida*, *Sciadodendron excelsum*, *Sideroxylon capiri*, *Tabebuia donnell-smithii*, *Tabebuia rosea*, *Thouinidium decandrum*, and *Vitex hemsleyi*. Common small trees and shrubs of the understory may include *Acalypha cincta*, *Capparis verrucosa*, *Eugenia pleurocarpa*, *Piper pseudolindenii*, and *Trichilia trifolia*. Lianas are numerous and may form thick tangles in gaps of old treefalls. The most common are *Adenocalymma inundatum*, *Clytostoma binatum*, *Combretum fruticosum*, *Forsteronia spicata*, *Paullinia sessiliflora*, and *Podopterus cordifolius*. In sites where the Tropical Semideciduous Forest has been highly disturbed or cleared, *Acacia cochliacantha*, *Acacia hindsii*, *Bauhinia* spp., *Bourreria* cf. *purpusii*, *Celtis iguaneus*, *Gliricidia sepium*, *Guazuma ulmifolia*, *Gyrocarpus jatrophiifolius*, *Rauvolfia tetraphylla*, *Stemmadenia* cf. *grandiflora*, *Tabernaemontana amygdalifolia*, *Trema micrantha*, and *Urera caracasana* may be common.

**Wetland communities.** Riparian areas on the floodplains of the major rivers experience considerable destructive flooding and scouring. Characteristic tree species found in these areas are *Astianthus viminalis*, *Salix gooddingii*, *Tabebuia* spp., and *Vitex mollis*. Common remnant species of the Tropical Semideciduous Forest along the arroyos are *Coccoloba barbadensis*, *Couepia polyandra*, *Cynometra oxacana*, *Ficus insipida*, *F. pertusa*, and *Guarea glabra*. Numerous herbaceous and suffrutescent species are found on the sandbars and banks of the rivers. Freshwater lagoons occur at the mouths of the rivers with *Typha domingensis*. The lagoons are very limited in scope because of restricted fresh water and lack of flat areas on the coast. The watercourses are often choked with *Eichhornia crassipes* and *Pistia stratiotes*. In narrower streams this association grades into Tropical Semideciduous Forest, while at the coast it grades into mangrove swamps and brackish lagoons. *Avicennia germinans*, *Conocarpus erecta*, *Laguncularia racemosa*, and *Rhizophora mangle* are all present. Beyond the edges of the mangrove swamps in seasonally inundated flats or depressions are *Annona glabra*, *Coccoloba barbadensis*, *Cupania dentata*, *Hippomane mancinella*, *Hyperbaena ilicifolia*, *Phyllanthus elisiae*, and *Pithecellobium lanceolatum*.

**Coastal strand.** Two distinct subdivisions of this type are present. Windswept plains with *Ipomoea pes-caprae* and thick mats of *Jouvea pilosa* and other grasses intermix with rocky headlands supporting *Agave colimana*, *Mammillaria* spp., *Melocactus dawsonii*, and *Stenocereus standleyi*. Protected dune areas, like that at Salinas Careyes, support a short forest of *Capparis* spp., *Couepia polyandra*, *Crateva tapia*, *Cupania dentata*, *Diospyros aequoris*, *Prosopis juliflora*, and *Schoepfia* cf. *schreberi*.

## RESULTS

**TAXONOMIC SUMMARY**—There are 1,120 species in 544 genera and 124 families included in the checklist (Table 1). This is over 300 more species than were earlier reported for the Chamela biological station (Lott 1985).

**FLORISTIC AFFINITIES**—McVaugh (1961: 146) reported in the earlier years of his floristic work in the region that "The flora includes a considerable endemic element and a very much larger element (perhaps one-half of all the species) that is endemic or essentially so in western Mexico, in the region with a long winter dry season." Villaseñor (1991) found a high level of endemism in species of Heliantheae (Compositae) in Jalisco. Of 171 species of Heliantheae endemic to Mexico and found in the state, he calculated that 32 were known only from Jalisco. In the Chamela Bay region, Euphorbiaceae is the family with the highest number of endemic species.

Although any discussion of endemism at the species level in coastal Jalisco and Colima is still preliminary, thus far about 10 % of the species reported here are thought to be endemic to Jalisco and Colima or to Jalisco, Colima, and Michoacán. This figure is higher, about 16 %, for the Chamela Biological Station alone (Lott 1985) because it does not include the wetland communities where most of the species of wider distribution are found. Nearly 40 % of the total flora is endemic to the dry forest of the Pacific slope (roughly 28 % of the species are restricted to Mexico, 17 % are known from Mexico to Central America, 36 % extend from Mexico to South America, and 6 % are pantropical in distribution). Continued collecting in coastal Sonora, Sinaloa, and Nayarit to the

TABLE 1. The checklist's largest families.

Family	Species	Local endemics
Leguminosae	155	6
Euphorbiaceae	91	16
Compositae	63	2
Gramineae	57	1 var.
Convolvulaceae	40	2
Malvaceae	38	2
Acanthaceae	28	4
Rubiaceae	28	2
Solanaceae	28	0
Bromeliaceae	27	4
Cucurbitaceae	23	0
Verbenaceae	22	2
Boraginaceae	21	1
Cyperaceae	19	0
Cactaceae	17	3

northwest, and in Michoacán, Guerrero, and Oaxaca to the southeast will surely extend the ranges of many of our presumed endemics. Three recent instances in Cucurbitaceae are illustrative of this progress. Lira and Torres (1991) reported *Chalema synanthera* for the first time in Oaxaca and Guerrero. A. Sanders (pers. comm.) has found an *Apatzingania* in Sonora that may be conspecific with *A. michoacana*, and *Dieterlea fusiformis* in Sinaloa. Another range extension resulting from recent collections in Cuixmala is *Dirhampis mexicana* (Malvaceae), previously known only from Colima and Guerrero. Although they may not be as narrowly restricted as previously thought, it seems that a large proportion of our species is indeed endemic to the dry forests of western Mexico. The discovery on the Pacific coast of *Enriquebeltrania crenatifolia* (Euphorbiaceae), formerly known only from the Yucatán peninsula, *Savia sessiliflora* (Euphorbiaceae), a Caribbean species (Lott 1986), and *Carpodiptera ameliae* Lundell (Tiliaceae) on Isla María Madre and near Barra de Navidad (Télliz V. 1981 and pers. comm.) again raises the question of relationship with the dry forests of Mexico's Atlantic coast.

In one year of seven short collecting trips to the Cuixmala reserve, five additional new species were discovered. The hilly terrain with



many small arroyos, irregular patterns of rainfall from one year to the next, and the short flowering period of many species all contribute to the difficulty of making what could be considered a complete floristic survey of the area.

#### ARRANGEMENT OF THE CHECKLIST

The plants are arranged in three major groups, Ferns and Fern Allies, Dicotyledons, and Monocotyledons. Within each group the families are arranged alphabetically, and within each family the plants are arranged alphabetically by genus and species.

Each entry gives the following information:

(1) Scientific name with authority. Only locally used synonyms are cited, such as names used in earlier checklists or research publications of the Chamela Biological Station. Misidentifications under which herbarium specimens were distributed are cited whenever possible.

(2) Common name if any is known from our locality. Most of the common names cited in the checklist were gleaned from long-time residents. When common names from herbarium specimens of collectors who were not resident in the area are used, the collector's initials are cited. The few common names taken from the literature or from herbarium specimens are attributed to the source. I have not included common names from published sources treating other areas of Mexico, since these vary so much locally. Therefore, common names are not cited for every species, but the ones given are names that are actually used locally. Also included are a few English names of common species that are important or well-known to visitors.

(3) Habit and size range of the plants as they occur in our area only.

(4) Flower color or conspicuous details of the inflorescence.

(5) Flowering period.

(6) Fruiting period if flowering period is not known.

(7) Collectors and collection numbers, arranged alphabetically for each site.

(8) Localities. Specimens are cited by their localities, which are listed geographically from north and northwest to south and southeast. The abbreviation "EBCh" is used for the Chamela

Biological Station.

(9) Miscellaneous comments.

Some species about which we have scanty knowledge (or for which vouchers may no longer exist) are cited in the hope that future collecting may shed additional light on them. I would be most happy to receive questions, comments, additions, and corrections to this checklist.

**COLLECTIONS**—The checklist is based almost entirely on the collections of a few botanists who have worked intensively in the area. A few citations have been taken from the taxonomic literature and from *Flora Novo-galiciana* (McVaugh 1983–present). Collectors are cited alphabetically. Acronyms, shown below in parentheses, indicate herbaria where the vouchers cited for each collector were deposited. Acronyms for institutional affiliations follow Holmgren et al. (1990), except that the acronym EBCh is for the small reference herbarium at the Estación de Biología Chamela, which is not an officially recognized herbarium. In addition, representative collections have been deposited at CAS, MICH, and TEX.

The primary collectors are:

ACS	Andrew C. Sanders (UCR)
AR	Raul Acevedo Rosa (XAL, UCR)
BMR	Beth M. Rothschild (UCR)
CC	Gonzalo Castillo Campos (XAL), UCR)
EJL	Emily J. Lott (MEXU, UCR)
JASM	J. Arturo Solís Magallanes (MEXU, EBCh)
JLM	José Luís Martínez y Pérez (XAL, UCR)
LAPJ	Luís Alfredo Pérez Jiménez (MEXU, EBCh)
MGA	María Guadalupe Ayala (MEXU, EBCh)
SHB	Stephen H. Bullock (MEXU, EBCh).

Ma. Guadalupe Ayala has two series of collecting numbers. The first began in 1985 and ran through 1986, and the second began in 1991 when she began collecting for the Cuixmala floristic survey. To collections of the latter series I have assigned the prefix "91-" in the checklist. However, the labels of the herbarium specimens corresponding to this series do not always bear the prefix, and care must be taken to note the date. Other collectors in the area are cited in the text by their last names. They

are Ricardo Ayala (EBCh), Josefina Barajas (MEXU), Carlos Beutelspacher (MEXU), Luís Cervantes S. (EBCh), Alfonso Delgado S. (MEXU), Rafael Guzmán (IBUG), Rogers McVaugh (MICH), Patricia Magaña R. (MEXU), James S. Miller (MO), Alfonso Pescalador (EBCh), Brian L. Phillips (UCR), and Mario Sousa S. (MEXU).

COLLABORATORS—A network of 79 taxonomic specialists has played a vital role in the elaboration of this checklist. They are shown below with their groups of interest and the acronyms of the institutions where they are currently working.

F. Almeda	Melastomataceae	CAS	M. Johnston	Rhamnaceae	TEX
W. Anderson	Malpighiaceae	MICH	D. Kearns	Cucurbitaceae	MO
J. Atwood	Orchidaceae	SEL	D. Keil	<i>Pectis</i>	OBI
T. Ayers	<i>Lobelia</i>	ASC	R. Kral	Cyperaceae	VDB
R. Barneby	Leguminosae	NY	J. Kuijt	Rubiacaceae	UVIC
F. Barrie	<i>Valeriana</i>	K	D. Lorence	Rubiaceae	PTBG
J. Bauml	<i>Hymenocallis</i>	LASCA	A. McDonald	Convolvulaceae	GH
C. Berg	<i>Ficus</i>	U	J. MacDougal	<i>Passiflora</i>	MO
A. Bornstein	Piperaceae	SEMO	R. McVaugh	Various taxa	NCU
D. Breedlove	Various	CAS	P. Magaña	Bromeliaceae	FCME
W. Burger	Moraceae, Piperaceae	F	M. Martínez	<i>Physalis</i>	TEX
K. Burt-Utley	<i>Begonia, Hechtia</i>	NOLS	J. Mickel	Pteridophytes	NY
F. Chiang	Rutaceae, various taxa	MEXU	J. Miller	Boraginaceae	MO
L. Constance	Umbelliferae	UC	R. Moran	Crassulaceae	CAS
T. Croat	Araceae	MO	M. Nee	Solanaceae	NY
T. Daniel	Acanthaceae	CAS	G. Nesom	Compositae, Verbenaceae	TEX
G. Davidse	Gramineae	MO	T. Pennington	Meliaceae, Sapindaceae, Sapotaceae	K
B. Dehgan	<i>Jatropha</i>	FLAS	M. Powell	<i>Brickellia</i>	SRSC
A. Delgado	<i>Phaseolus</i>	MEXU	M. Pyne	<i>Physalis</i>	NCSC
O. Dorado	<i>Brongniartia</i>	RSA	T. Ramamoorthy	Labiatae	TEX
R. Faden	Commelinaceae	US	C. Reeder	Gramineae	ARIZ
M. Frohlich	<i>Heliotropium</i>	UCS	J. Reeder	Gramineae	ARIZ
P. Fryxell	Malvales	TAES	L. Rico	<i>Acacia</i>	K
A. Gentry	Bignoniaceae	MO	R. Rollins	Cruciferae	GH
A. Gómez-Pompa	<i>Dioscorea</i> , Piperaceae	UCR	V. Rudd	<i>Nissolia</i>	SFV
S. Graham	Lythraceae	E	J. Rzedowski	<i>Bursera</i>	IEB
R. Grether	<i>Mimosa</i>	UAMI	G. Schatz	Annonaceae	MO
E. Hágsater	Orchidaceae	AMO	A. R. Smith	Pteridophytes	UC
R. Hartman	Caryophyllaceae	RM	L. Smith	Bromeliaceae	US
M. Huft	Euphorbiaceae	F	M. Sousa	<i>Lonchocarpus</i>	MEXU
D. Hunt	Cactaceae, Commelinaceae	K	R. Spellenberg	Nyctaginaceae	NMC
H. Iltis	Capparaceae	WIS	W. Stevens	Asclepiadaceae	MO
J. Ingram	<i>Argythamnia</i>	BH	J. Strother	Compositae	UC
			E. Sundell	<i>Cynanchum</i>	UAM
			C. Todzia	<i>Phyllostylon</i>	TEX
			G. Tucker	<i>Cyperus</i>	NYS
			B. Turner	Compositae	TEX
			J. Utley	Bromeliaceae	NOLS
			H. van der Werff	Lauraceae	MO
			S. Verhoek	<i>Manfreda</i> Lebanon Valley College	College
			J. Villaseñor	Compositae	MEXU
			G. Webster	Euphorbiaceae	DAV
			T. Wendt	Lauraceae, Polygalaceae	LSU
			D. Windler	<i>Crotalaria</i>	BALT
			E. Zardini	Onagraceae	MO
			A. Zimmerman	Cactaceae	DES

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## CHECKLIST

## FERNS AND FERN ALLIES

**Marsileaceae**

*Marsilea ancylopoda* A. Braun. Slender aquatic herb 5–10 cm high, forming colonies, rooted in mud. Lvs 4-foliate. Oct.–Nov. EJL 2700, EJL 3321, EJL 3987, Quémaro.

**Polypodiaceae**

*Acrostichum danaefolium* Langsd. & Fischer. Perennial herb to 3 m high, at lagoon margins. Aug.–Nov. ACS 11160, BMR 140, EJL 3867, Cuixmala.

*Adiantum princeps* Moore. Perennial herb to 75 cm long. Dec.–Apr. EJL 1012, Arroyo Cajones.

*Adiantum tricholepis* Fee. Perennial herb to 75 cm long. Aug.–Jan. EJL 1736, EJL 1774, EBCh; EJL 3144, EJL 3147, Cuixmala.

*Asplenium pumilum* Sw. Perennial herb 15–20 cm high. Oct. EJL 2650, EBCh.

*Asplenium tenerrimum* Mett. ex Kuhn. Perennial herb. Oct. EJL 1386, EBCh.

*Cheilanthes lozanii* (Maxon) R. Tryon & A. Tryon. [*Pellaea seemannii* Hook.]. Perennial herb 30–40 cm high. Aug.–Oct. EJL 540, EJL 1278, EJL 1450, EBCh; EJL 3757, Arroyo Maderas; AR 985, CC 5397, Cuixmala.

*Cheilanthes skinneri* (Hook.) R. Tryon & A. Tryon. Perennial herb 30–40 cm high. Jul. EJL 3753, Ranchitos-Rancho San Borja road.

*Pityrogramma calomelanos* (L.) Link. Perennial herb 15–20 cm high. MGA 91-142, Cuixmala.

**Salviniaceae**

*Azolla mexicana* Presl. Floating aquatic herb. Aug.–Mar. ACS 10556, EJL 3368, Cuixmala.

**Schizaeaceae**

*Lygodium venustum* Sw. Vine. Oct.–Apr. JASM 2021, EBCh; EJL 1011, Arroyo Cajones; ACS 10618, EJL 3229, Cuixmala.

**Selaginellaceae**

*Selaginella pallescens* (Presl) Spring. Perennial herb. Sep.–Dec. EJL 1593, Arroyo Chamela; EJL 545, EBCh; EJL 2762, Arroyo

Careyes; sighted at Cuixmala.

*Selaginella sertata* Spring. Perennial herb. McVaugh 25329, along the coastal highway 20 km SE of Tomatlán. Cited in McVaugh 1992:428.

## DICOTYLEDONS

**Acanthaceae**

*Blechum brownei* Juss. Perennial herb 20–40 cm high. Fls white to blue. Flowering throughout the year. EJL 3631, Quémaro; EJL 912, EBCh; BMR 180, Cuixmala.

*Carlowrightia arizonica* A. Gray. Subshrub to 1 m high. Fls white to cream with purple markings. Sep.–Mar. or throughout the year. EJL 674, Playa La Virgencita; EJL 875, JASM 3940, EBCh; EJL 2876, EJL 3345, Cuixmala.

*Chileranthemum* sp. nov. ined. Daniel. Shrub to 3 m high. Fls blue-purple. Aug.–Sep. EJL 3794, EJL 3812, EJL 4139, Cuixmala.

*Dicliptera resupinata* (Vahl) Juss. Perennial herb to 1 m high. Fls purplish pink to lavender. Sep.–May. EJL 874, LAPJ 260, EBCh; EJL 3504, MGA 91-32, Cuixmala.

*Elytraria imbricata* (Vahl) Pers. Riendilla. Perennial herb to 30 cm high. Fls blue. Flowering throughout the year. LAPJ 684, EBCh; ACS 11201, EJL 2873, Cuixmala. *E. mexicana* Fryxell & Koch, a species with white flowers described from Michoacán and Guerrero, has not yet been found in our area, but likely will be found there.

*Henrya insularis* Nees ex Benth. Perennial herb to 1 m high. Fls white. Flowering throughout the year. LAPJ 258, EBCh; EJL 3156, MGA 91-34, Cuixmala.

*Holographis anisophylla* Daniel. Shrub to 1 m high. Fls greenish. Mar. EJL 2359, EBCh. Rare.

*Justicia breviflora* (Nees) Rusby. Perennial herb 40 cm high. Fls lavender. Sep.–Jan. EJL 1708, EJL 1860, EBCh.

*Justicia candicans* (Nees) L. Benson. Shrub

mostly 0.5 to 1.5 m high. Fls red. Jul.–Nov. BMR 87, Quémario; EJL 533, LAPJ 1530, SHB 1653, EBCh; BMR 62, Cuixmala.

*Justicia caudata* A. Gray sens. lat. Perennial herb 0.5–2 m high. Fls purple or lavender. Sep.–Nov. EJL 727, EJL 1418, LAPJ 1667, EBCh; EJL 614, Arroyo Careyes; EJL 4046, Cuixmala.

*Justicia ixtlania* Daniel [= *Ixtlania acicularis* M. E. Jones]. Perennial herb to 30 cm high. Fls lavender. Jan.–Apr. EJL 967, Arroyo Chamela; EJL 2773, Arroyo Careyes.

*Justicia reflexiflora* Rich. Perennial herb to 1 m high. Fls lavender to blue-purple with white markings on lip. Nov.–May. EJL 2412, Río San Nicolás; EJL 1662, EBCh; BMR 159, EJL 3938, EJL 3403, Cuixmala.

*Justicia* sp. 1. Perennial herb 50–80 cm high. Fls white. Dec.–Jan. EJL 1042 (MEXU), EJL 1703, EJL 2171 (CAS), EBCh.

*Justicia* sp. 2. Shrub 75 cm high. Fls orange-red. Jul. EJL 3733, Cuixmala.

*Justicia* sp. 3. Perennial herb 20 cm high. Fls lavender. Nov. EJL 4047, EJL 4144, Cuixmala.

*Mexacanthus mcvaughii* Daniel. Shrub to 3 m high. Fls yellow with brick-red markings. Mar.–Apr. EJL 484, EJL 988, Arroyo Chamela; EJL 2363, JASM 4163, EBCh.

*Pseuderanthemum alatum* (Nees) Radlk. Annual herb to 80 cm high. Fls lavender or purple. Aug.–Sep. EJL 1862, EBCh; EJL 3782, Cuixmala.

*Ruellia foetida* Willd. [= *Ruellia albiflora* Fern.]. Shrub to 2 m high. Fls white. Oct.–Mar. MGA 448, Arroyo Chamela; SHB 1271, EBCh; ACS 10614, EJL 3148, Cuixmala.

*Ruellia hookeriana* (Nees) Hemsl. Herb. Fls lavender. Aug. EJL 1743, EBCh.

*Ruellia intermedia* Leonard [= *Ruellia pilosa* Pav.]. Perennial herb mostly 30–40 cm high. Fls lavender. Jul.–Nov. EJL 1269, JASM 3020, EBCh; EJL 3704, EJL 4010, Cuixmala.

*Ruellia inundata* HBK. Subshrub 50–80 cm high. Fls blue-lavender. Oct.–May. EJL 1512, EBCh; BMR 59, EJL 3270, EJL 3510, Cuixmala.

*Siphonoglossa mexicana* Hilsenbeck. Perennial herb or subshrub to 50 cm high. Fls lavender. (Aug.–) Oct.–Mar. EJL 891, EJL 1259, EJL 1537, LAPJ 1228, EBCh; EJL 2656, 19.7 km E of Juan Gil, road to Nacastillo; EJL 3207, EJL 4120, Cuixmala.

*Staurogyne agrestis* Leonard. Perennial herb to 15 cm tall. Fls white. Mar.–May. EJL 3226, EJL 3396, Cuixmala.

*Stenandrium pedunculatum* (Donn. Sm.) Leonard. Perennial herb to 30 cm high. Fls pink or white. Jun.–Aug. EJL 1204, EJL 2584, SHB 1366, EBCh; LAPJ 1739, Playa Careyitos; MGA 91-248, Arroyo Careyes; JLM 1339, Cuixmala.

*Tetramerium diffusum* Rose. Herb or subshrub 20–50 cm high. Fls white to cream with purple markings. Dec.–Mar. BMR 86, Quémario; EJL 888, EJL 2178, LAPJ 1215, EBCh.

*Tetramerium glandulosum* Oerst. Shrub to 2.5 m high. Fls bright yellow. Jan.–May. EJL 2398, Juan Gil-Nacastillo road; EJL 3239, EJL 3511, EJL 4100, Cuixmala.

*Tetramerium nervosum* Nees. Perennial herb or subshrub to 50 cm high. Fls white or yellow with purple markings. Flowering throughout the year. EJL 882, EBCh; EJL 3927, Cuixmala.

*Tetramerium tenuissimum* Rose. Perennial herb or subshrub to 75 cm high. Fls white or cream-colored with purple markings. Nov.–May. EJL 3479, Cuixmala.

#### Achatocarpaceae

*Achatocarpus gracilis* H. Walt. Spiny shrub or small tree 2–4 m high. Fls greenish-white. Jun.–Jul. EJL 3638, Quémario; MGA 91-128, Arroyo Chamela; JASM 3697, JASM 4215, EBCh; MGA 189, Salinas Careyes; MGA 91-193, Arroyo Careyes; CC 5375, CC 5384, Cuixmala.

#### Aizoaceae

*Glinus radiatus* (Ruiz & Pav.) Rohrb. Prostrate annual herb. Fls green. Jan. (throughout the year?). EJL 3125, Cuixmala.

*Mollugo verticillata* L. Annual herb. Fls greenish-white. Flowering throughout the year. MGA 423, Río San Nicolás; EJL 1006, Arroyo Chamela; JASM 4160, Playa Chamela Sector

Naval; EJL 724, EJL 2365, EBCh; MGA 578, Cuixmala.

*Sesuvium verrucosum* Raf. Perennial herb. Fls pink. May–Oct. MGA 960, Pérula; EJL 3593, Cuixmala.

*Trianthema portulacastrum* L. Annual herb. Fls pink. Flowering throughout the year. EJL 1194, EBCh; EJL 3606, MGA 580, Cuixmala.

### Amaranthaceae

*Achyranthes aspera* L. Annual or perennial herb to ca 70 cm high. Fls white. Flowering throughout the year. MGA 263, Arroyo Chamela; SHB 1571, EBCh; EJL 4091, Cuixmala.

*Alternanthera caracasana* HBK. Prostrate perennial herb with stems to 50 cm long. Bracts white. Aug. EJL 3862, Cuixmala.

*Alternanthera* cf. *pycnantha* (Benth.) Standl. Shrub to 3 m high. Fls greenish white. Nov.–Feb. EJL 881, LAPJ 614, EBCh; MGA 91-24, Arroyo Careyes; EJL 3163, EJL 4056, Cuixmala.

*Amaranthus retroflexus* L. Annual herb. Fls greenish-white. Aug. EJL 1215, Chamela.

*Amaranthus spinosus* L. Quelite (CC). Annual herb to 1 m high. Fls green. Jul.–Aug. MGA 800, Playa Careyitos; CC 5255, Cuixmala.

*Amaranthus venulosus* S. Wats. Annual herb. Fls yellowish. Aug. CC 5145, Cuixmala.

*Chamissoa altissima* (Jacq.) HBK. Shrub with viny branches 2 m or more long. Fls greenish-white. Nov.–Feb. MGA 411, Arroyo Chamela; LAPJ 595, EBCh; EJL 3150, MGA 554, Cuixmala.

*Froehlichia interrupta* HBK. Perennial herb 50 cm high. Fls white. Aug.–Nov. EJL 640, EJL 1551, Rancho El Paraíso; EJL 3832, Cuixmala.

*Gomphrena decumbens* Jacq.? Perennial herb 20–30 cm high. Fls whitish. Aug.–Nov. EJL 1498, EBCh.

*Gomphrena nitida* Rothr. Erect annual herb 50 cm high. Fls white. Nov. ACS 11210, EJL 3862, EJL 3973, Cuixmala.

*Iresine calea* (Ibañez) Standl. Shrub with arching branches 2–3 m long. Fls green. May.

EJL 2523, EBCh.

*Iresine interrupta* Benth. Viney shrub 2 m high. Fls green or yellowish. Nov.–Apr. JASM 598, SHB 1296, EBCh; MGA 91-43, Pueblo Careyes; ACS 10609, Cuixmala.

*Iresine pacifica* Standl. Shrub to 1 m high. Fls yellowish. Jan.–Mar. EJL 3310, Quémario; JASM 4009, EBCh.

*Lagrezia monosperma* (Rose) Standl. Shrub 2–4 m high. Bracts white, fls greenish. Nov.–Dec. MGA 410, Arroyo Chamela; LAPJ 268, MGA 1079, EBCh; EJL 3267, Cuixmala.

### Anacardiaceae

*Astronium graveolens* Jacq. Culebro. Tree 10–20 m high. Fls green. Apr.–Jun. JASM 4065, EBCh; MGA 714, Pueblo Careyes; EJL 3370, Cuixmala.

*Comocladia engleriana* Loes. Hinchahuevos. Shrub or small tree to 5 m high. Fls red. Jan.–Feb. SHB 1058, SHB 1072, EJL 2361, EBCh; sighted at Cuixmala. Contact with the bark, leaves or flowers may cause severe dermatitis.

*Spondias purpurea* L. Ciruelo. Tree 4–6(–10) m high. Fls red. Jan.–May. EJL 3313, Quémario; JASM 450, EBCh; BMR 137, EJL 3347, EJL 3901, Cuixmala. The ripe fruits are used to prepare a refreshing drink.

### Annonaceae

*Annona glabra* L. Tree to 8 m high. Fls cream-white. Apr.–Jun. CC 5246, EJL 2562, EJL 3589, MGA 91-69, Cuixmala. The fruits are edible but insipid.

*Annona muricata* L. Guanábana. Tree 4 m high. Fls green. May. EJL 3569, Cuixmala. Apparently once cultivated experimentally at Rancho Cuixmala. This individual was found in understory of Tropical Semideciduous Forest.

*Annona palmeri* Safford. Shrub 2–4 m high. Fls cream-white. Jul.–Sep. EJL 1756, EJL 2228, MGA 104, SHB 1419, EBCh; EJL 3712, Cuixmala.

*Oxandra lanceolata* (Sw.) Baill. Chilcahuite. Tree 3–8 m high. Fls cream-white, ca 1 cm long. Oct. EJL 2782, EJL 2849, Arroyo Careyes; EJL 2895, EJL 4043, Cuixmala.

*Sapranthus microcarpus* (Donn. Sm.) R. E.

Fries [previously identified as *S. borealis* R. E. Fries]. Shrub or small tree 2–6 m high. Fls maroon, 2–3 cm long. May–Sep. EJL 1854, JASM 4209, EBCh; EJL 3418, EJL 3432, EJL 3464, EJL 3772, MGA 91-223, MGA 91-228, Cuixmala.

*Sapranthus violaceus* (Dunal) Safford [= *S. foetidus* (Rose) Safford]. Tree 3–6 m high. Fls maroon, 5–8 cm long. May–Aug. EJL 2841, LAPJ 661, EBCh; EJL 3332, EJL 3689, MGA 91-223, MGA 91-228, Cuixmala.

**Apocynaceae**

*Alstonia longifolia* (A. DC.) Pichon [= *Tonduzia longifolia* (A. DC.) Woods.]. Tree to 6 m high. Fls cream or greenish. Oct.–Feb. JASM 2763, SHB 1275, EBCh; EJL 660, Rancho El Paraíso; CC 5407, Cuixmala.

*Echites yucatanensis* Millsp. ex Standl. Vine. Fls white. May–Aug. EJL 1209, Chamela; EJL 2598, SHB 937, EBCh; EJL 3483, Cuixmala.

*Forsteronia spicata* (Jacq.) G.F.W. Meyer. Vine. Fls yellowish-white. Jul.–Aug. JASM 3046, Chamela; SHB 1220, SHB 1301, EBCh; CC 5304, Cuixmala.

*Laubertia contorta* (Mart. & Gal.) Woods. [= *L. pringlei* (Greenm.) Woods.]. Vine. Fls purple. Aug.–Nov. MGA 307, 6.1 km E of Juan Gil; EJL 1246, MGA 316, EBCh; EJL 3888, Cuixmala.

*Mandevilla subsagittata* (Ruiz & Pav.) Woods. Vine. Fls yellow with orange throat. Oct. EJL 1385, Arroyo Chamela. This is a rare plant in our area.

*Plumeria rubra* L. Palo de oído; Flor de mayo (CC). Tree mostly 3–6 m high but may reach 12 m, reported to reach 20 m high. Fls white with yellow throat. May–Aug. EJL 1076, JASM 4351, EBCh; MGA 91-161, Caleta Blanca; CC 5338, Cuixmala. A decoction of the leaves is used to relieve earache.

*Prestonia mexicana* A. DC. High-climbing vine. Fls pale yellow. Aug.–Oct.; Feb. JASM 487, near Arroyo Chamela; MGA 276, Playa Careyitos; EJL 567, EBCh; EJL 2877, MGA 91-14, Cuixmala.

*Rauvolfia tetraphylla* L. Zarzamora (CC). Shrub 1–2 (–3) m high. Fls white or yellow.

Mar.–Oct. EJL 1210, Chamela; SHB 1373, EBCh; ACS 10583, BMR 155, MGA 91-129, Cuixmala.

*Stemmadenia* cf. *grandiflora* (Jacq.) Miers. Shrub to small tree 5 m high. Fls yellowish-white. May–Sep. LAPJ 1671, SHB 976, EBCh; EJL 3441, EJL 3767, Cuixmala.

*Tabernaemontana amygdalifolia* Jacq.? Shrub to 3 m high. Fls pale yellow. Apr.–Aug. MGA 718, La Fortuna; EJL 1005, Arroyo Chamela; EJL 3430, EJL 3663, Phillips 1166, Cuixmala.

*Thevetia ovata* (Cav.) A. DC. Ortiguillo. Shrub 1–3 m high. Fls yellow. Jul.–Sep. EJL 3316, Quémario; SHB 974, EBCh; EJL 1223, LAPJ 729, Rancho El Paraíso; ACS 11238, CC 5359, Cuixmala.

**Araliaceae**

*Sciadodendron excelsum* Griseb. Cedro macho. Tree to 20 m high. Fls yellowish or green. May–Aug. LAPJ 111, Chamela; LAPJ 660, SHB 1137, EBCh; EJL 3802, Cuixmala.

**Aristolochiaceae**

*Aristolochia foetida* HBK. Vine to 1.5 m long, on ground. Fls maroon. Jul.–Aug. EJL 1755, JASM 4104, EBCh; EJL 3220, Cuixmala.

*Aristolochia taliscana* Hook. & Arn. Guaco (CC). High-climbing vine with corky bark. Fls green with purple markings. Flowering throughout the year. BMR 94, Quémario; JASM 276, EBCh; BMR 123, Caleta Blanca; CC 5381, EJL 3088, MGA 569, Cuixmala.

*Aristolochia* sp. 1. Vine. JASM 3414, EBCh.

*Aristolochia* sp. 2 aff. *variifolia* Duchr. (Sect. *Pentandrae*). Vine. Fls purple. Oct. EJL 1532, EJL 1699, JASM 3849, EBCh.

*Aristolochia* sp. 3. High-climbing vine with large pseudostipules. Fls maroon with yellow eye. Nov. EJL 3171, EJL 4072, Cuixmala.

**Asclepiadaceae**

*Asclepias curassavica* L. Calderón (CC). Perennial herb to 1 m high. Fls red & orange. Jun.–Nov. MGA 265, Arroyo Chamela; MGA 91-83, MGA 91-140, Cuixmala.

*Blepharodon mucronatum* (Schlecht.) Dcsne. in DC. Perennial vine. Fls greenish-white. Sep.

ACS 11250, Cuixmala.

*Cynanchum foetidum* (Cav.) HBK. Vine. Fls greenish-yellow. Sep.–Oct. EJL 2694, Quémario; EJL 1381, EBCh.

*Gonolobus* sp. nov. aff. *barbatus* HBK. Chiquipos. Vine. Fls green. Jun.–Aug. MGA 338, road to the beach near Supermercado Chamela; MGA 91-127, Arroyo Chamela; SHB 970, EBCh; MGA 91-202, Arroyo Careyes; EJL 3646, Cuixmala.

*Macroscepis* sp. nov. Vine. Fls brown. Oct. EJL 1657, EJL 2637, MGA 332, Arroyo Chamela.

*Marsdenia astephanoides* (A. Gray) Woods. Vine. Fls greenish or yellowish white. Jun.–Sep. SHB 1227, SHB 1431, EBCh; EJL 3676, MGA 91-218, Cuixmala.

*Marsdenia lanata* (P. G. Wilson) W. D. Stevens. High-climbing vine. Fls white to yellow. Jul.–Aug. MGA 339, road to beach near Supermercado Chamela; SHB 977, EBCh; EJL 3865, Cuixmala.

*Marsdenia trivirgulata* Bartlett. Vine. Fls white. Aug. LAPJ s. n. on 30 Nov. 1983, Cuenca 1 B, EBCh; CC 5382, Cuixmala.

*Marsdenia* sp. aff. *edulis* S. Wats. Vine. Fls cream to pale pink. Jul.–Aug. JASM 3047, Chamela; MGA 75, MGA 91-204, Careyes; BMR 136, EJL 2888, Cuixmala.

*Matelea magallanesii* Lott. Vine. Fls green, to 7 cm in diam. Aug.–Oct. EJL 552, EBCh; EJL 1464, road to Playa La Rumorosa; EJL 3879, Cuixmala.

*Matelea quirosii* (Standl.) Woods. Vine. Fls white with green and purple markings, to ca 3 cm in diam. Jul.–Jan. LAPJ 1935, SHB 972, EBCh; MGA 248, Playa La Rumorosa; ACS 8686, Cuixmala.

*Matelea sepicola* W. D. Stevens. Vine. Fls green with purple markings to ca 1.5 cm in diam. Sep. EJL 2614, Quémario; EJL 553, EBCh.

*Metastelma* sp. nov.? aff. *latifolium* Rose. Vine. Fls white to yellow. Aug.–Nov. JASM 3904, EBCh; EJL 1550, Rancho El Paraíso; ACS 11260, EJL 3789, Cuixmala.

*Sarcostemma clausum* (Jacq.) Schult. Vine. Fls white. Aug.–Apr. MGA 424, Río San Nicolás; BMR 92, Quémario; MGA 241, Arroyo Chamela; EJL 1239, Playa El Negrito; EJL 525, EBCh; MGA 220, Playa Careyitos; BMR 175, EJL 2878, Cuixmala.

#### Basellaceae

*Anredera scandens* (L.) Moq. Vine. Fls white. Oct.–Nov. MGA 272, Quémario; EJL 1525, SHB 1254, EBCh; EJL 4074, Cuixmala.

#### Bataceae

*Batis maritima* L. Succulent, woody at base, colonial, mostly 20–40 cm high. Fls green. Mar. EJL 2404, EJL 2405, Salinas de Careyes.

#### Begoniaceae

*Begonia uruapensis* Sessé & Moc. Perennial herb. Fls white. Aug.–Sep. EJL 498, JASM 3802, SHB 988, EBCh; sighted at Cuixmala.

#### Bignoniaceae

*Adenocalymma inundatum* Mart. ex DC. Comecate blanco. Vine. Fls yellow. Jun.–Oct. EJL 1720, Quémario; JASM 2466, Isla Pajarera; EJL 1483, Arroyo Chamela; JASM 692, EBCh; EJL 2810, Pueblo Careyes, EJL 3336, Cuixmala.

*Arrabidaea corallina* (Jacq.) Sandw. Vine. EJL T8 in 1983, EBCh.

*Arrabidaea patellifera* (Schlecht.) Sandw. Vine. Fls? Frs Feb. JASM 467, EBCh.

*Arrabidaea viscida* (Donn. Sm.) A. Gentry. Vine. Fls pink or lavender. Jul. EJL 1795, Playa El Negrito; JASM 726, EBCh.

*Astianthus viminalis* (HBK.) Baill. Sauce. Tree 3–12 m high. Fls yellow. Mar.–Jun. SHB 1325, Arroyo Chamela; EJL 1045, EBCh; ACS 10531, Cuixmala.

*Clytostoma binatum* (Thunb.) Sandw. Vine. Fls pink or lavender. Jun.–Nov. EJL 3634, Quémario; SHB 1603, EBCh; SHB 1342, Hotel Careyes; MGA 91-188, Arroyo Careyes; EJL 3445, Cuixmala.

*Crescentia alata* HBK. Cuastecomate; Calabash Tree. Tree to 6 m high. Fls purple and green. Jul (Dec). JASM 327, Chamela; SHB 973, EBCh; MGA 91-201, Careyes; BMR 52, Cuixmala.



*Cydista aequinoctialis* (L.) Miers. Vine. Fls? EJL T10 in Oct., 1983, sterile, EBCh.

*Cydista diversifolia* (HBK.) Miers. Vine. Fls lavender with white throat. Jul.–Oct. JASM 828, JASM 3150, EBCh; SHB 1668, Km 59.6 of Pto. Vallarta–B. de Navidad hwy.; CC 5198, EJL 3657, Cuixmala.

*Melloa quadrivalvis* (Jacq.) A. Gentry. Vine. Fls yellow. Aug. SHB 1294, Arroyo Chamela; EJL 1248, EBCh; EJL 2811, Pueblo Careyes; EJL 4122, Cuixmala.

*Pithecoctenium crucigerum* (L.) A. Gentry. Vine. Fls yellow. Aug. EJL 1247, EBCh; EJL 3244A, Cuixmala.

*Tabebuia chrysantha* (Jacq.) Nicholson. Mapilla. Tree 4–18 m high. Fls yellow. Dec.–Feb. (Jun.). JASM 980, LAPJ 812, EBCh; EJL 1604, Arroyo Chamela; MGA 91-177, Caleta Blanca; EJL 1615, Cerro Colorado; BMR 102, Cuixmala.

*Tabebuia donnell-smithii* Rose. Primavera. Tree 4–18 m high. Fls yellow. (Jan.) Mar.–May. SHB 1149, Arroyo Chamela; JASM 564, EBCh; SHB 1149, Arroyo Chamela; ACS 10528, EJL 3619, Cuixmala. Saplings of this species are often transplanted to line roadways.

*Tabebuia impetiginosa* (Mart.) Standl. [= *T. palmeri* Rose]. Verdecillo. Tree to 15 m high. Fls lavender. Nov.–Feb. SHB 1277, EBCh; JASM 473, Rancho El Paraíso.

*Tabebuia rosea* (Bertol.) DC. Rosa Morada. Tree 4–25 m high. Fls lavender or pink with yellow throat. Mar.–May. JASM 996, Arroyo Chamela; JASM 709, Laguna La Virgen; EJL 1074, EBCh; BMR 127, EJL 3602, Cuixmala.

*Xylophragma seemannianum* (Ktze.) Sandw. Vine. Fls lavender or pink with yellow throat. May–Jul. JASM 679, EBCh; MGA 8, Arroyo Tapeixtes; MGA 91-178, Arroyo Careyes; JASM 4201, Playa Careyitos; JASM 683, EJL 3486, Phillips 1172, Cuixmala.

## Bixaceae

*Bixa orellana* L. Tree 3–5 m high. Fls pale pink. Oct.–Nov. EJL 687, La Fortuna; EJL 1656, Arroyo Chamela; JASM 4004, EBCh;

EJL 3766, EJL 4106, Cuixmala.

## Bombacaceae

*Ceiba aesculifolia* (HBK.) Britt. & Baker. Medium to large tree to 12 m high. Fls yellowish. Jun. SHB 1362, EBCh.

*Ceiba grandiflora* Rose. Pochote. Shrub or small tree 1–6 m high. Fls yellowish. Nov.–Apr. SHB 1016, EBCh; EJL 3407, EJL 3555, Cuixmala.

*Ceiba pentandra* (L.) Gaertn. Ceiba. Tree to 25 m or more high, 1–2 m in diam. Fls pinkish-brown. Jan. Sighted Arroyo Chamela; EJL 3254, JLM 1350, MGA 564, Cuixmala.

*Pseudobombax ellipticum* (HBK.) Dugand. Tree to 8 m high. Fls white. Mar. EJL 2360, EBCh; sighted upper Arroyo Cajones, Cuixmala.

## Boraginaceae

*Bourreria* cf. *purpusii* Brandegee. Tree 5–10 m high. Fls white. Mar.–Aug. (Nov.–Dec.). LAPJ 654, LAPJ 1817, MGA 743, EBCh; MGA 788, Pueblo Careyes; EJL 3805, Cuixmala.

*Bourreria rubra* Lott & J.S. Miller. Shrub to 3 m high. Fls red. Aug.–Feb. EJL 1712, Quémaro; EJL 507, EBCh.

*Cordia alliodora* (Ruiz & Pav.) Oken. Botoncillo; Hormiguero. Tree to 12 m high. Fls white. Nov. SHB 1017, EBCh; EJL 3990, Cuixmala.

*Cordia curassavica* (Jacq.) Roem. & Schult. [= *C. cylindrostachya* (Ruiz & Pav.) Roem. & Schult.]. Shrub to 2 m high. Fls white. Aug. EJL 1742, EJL 1792, EBCh.

*Cordia dentata* Poir. Zazanil. Tree 5–8 m high or more. Fls pale yellow. Jan.; May–Aug. EJL 3319, Quémaro; EJL 1062, Pérula; LAPJ 208, Arroyo Chamela; EJL 1134, EBCh; EJL 3339, Cuixmala.

*Cordia elaeagnoides* DC. Barcino. Tree to 10 m high, reported to reach 20 m high. Fls white. Sep.–Nov. SHB 1256, SHB 1442, San Mateo; ACS 11188, Cuixmala.

*Cordia gerascanthus* L. Tamborcillo. Tree 8 m high. Fls white. Feb.–Mar. SHB 1865, Km 66.8, B. de Nav.-Pto. Vallarta hwy.; LAPJ 631,

"road to Chamela"; MGA 708, SHB 1864, EBCh.

*Cordia globosa* (Jacq.) HBK. Shrub 2 m high. Fls white. May–Oct. EJL 2623, Quémario; EJL 1060, Pérula; JASM 4417, Playa Palancares; MGA 956, Arroyo Chamela.

*Cordia inermis* (Mill.) I. M. Johnst. Shrub 1–3 m high. Fls white. Jul.–Aug. EJL 1786, JASM 4258, EBCh; CC 5408, EJL 3883, Cuixmala.

*Cordia salvadorensis* Standl. [= *C. hintonii* I. M. Johnst.] Tree 6–8 m high. Fls yellowish green. Aug.–Nov. LAPJ 667, LAPJ 1025, EBCh; EJL 3581, EJL 3658, EJL 3769, Cuixmala.

*Cordia seleriana* Fern. Shrub 2–4 m high. Fls white. Nov.–Jul. EJL 3633, EJL 3976, Quémario; EJL 665, Playa El Negrito; SHB 1328, Arroyo Chamela; EJL 1018, SHB 913, EBCh; EJL 2399, near Juan Gil.

*Cordia* sp. JASM 674. "EBCh, camino a Nacastillo, entre los terrenos de experimentación TI y TP. Arbol de 5 m de alto muy ramificado, casi desde la base. Flor blanca. Iguanero. Se usa para cercas y vigas cortas. Fls 18 mayo 1977." This collection was determined as *C. seleriana* Fern. by A. Pérez Jiménez, but the leaves are 5–7 cm long and the corollas are much larger than in that species.

*Heliotropium angiospermum* Murray. Perennial herb. Fls? J.S. Miller 391, Chamela area.

*Heliotropium curassavicum* L. Fleshy perennial herb, prostrate to erect. Fls white. May. EJL 3586, Cuixmala.

*Heliotropium indicum* L. Perennial herb. Fls white to blue. Jan.–Mar. J. S. Miller 434 (MO), EBCh; ACS 10508, EJL 3237, Cuixmala.

*Heliotropium procumbens* Mill. Perennial herb 30 cm high. Fls white. Jan.–May. LAPJ 1324, Rancho El Paraíso; EJL 3112, Cuixmala.

*Heliotropium* sp. Perennial herb 30 cm high. Fls white. May. EJL 3420, Cuixmala.

*Tournefortia glabra* L. Shrub to 4 m high. Fls white. Jul.–Aug. LAPJ 1820, SHB 1539, EBCh; ACR 969, Cuixmala.

*Tournefortia hartwegiana* Steud. Shrub to 2

m high. Fls white. Dec.–Apr. EJL 1666, MGA 509, EBCh; BMR 157, EJL 3199, MGA 91-20, Cuixmala.

*Tournefortia hirsutissima* L. Erect or sprawling shrub with vinelike branches, 1–1.5 m high. Fls white. Mar.–May. SHB 1111, Arroyo Chamela; ACS 10547, BMR 138, EJL 3354, Cuixmala.

*Tournefortia volubilis* L. Vine 1–3 m long. Fls yellow. May–Jul. LAPJ 1843, Playa El Negrito; SHB 1584, EBCh; EJL 3417, EJL 3553, Cuixmala.

### Burseraceae

*Bursera arborea* (Rose) Riley. Papelillo. Tree 8–15 m high. Bark red. Fls yellowish. Jun.–Aug. LAPJ 884, SHB 1157, EBCh; AR 952, EJL 3282, Cuixmala.

*Bursera excelsa* (HBK.) Engl. var. *acutidens* (Sprague & Riley) McVaugh & Rzed. Copal; Copalillo. Tree 3 m high. Bark gray-brown, not peeling. Fls cream-colored. Jun.–Aug. EJL 1709, Quémario; SHB 1154, EBCh; CC 5218, EJL 700, Cuixmala. *B. excelsa* cf. var. *favonialis* McVaugh & Rzed. has also been reported from our area (EJL 656, Rancho El Paraíso).

*Bursera* cf. *fagaroides* (HBK.) Engl. Copalillo. Tree 4 m high. Bark yellowish, trunk bluish gray. Fls yellowish. Jun. SHB 1163, EBCh; SHB 1907, Cerro Colorado.

*Bursera heteresthes* Bullock. Copal. Tree 8–15 m high. Bark dark brown, not peeling. Fls cream-colored. Jun.–Jul. EJL 693, EJL 1144, EBCh; MGA 6, Arroyo Tapeixtes; EJL 1225, Rancho El Paraíso; CC 5395, Cuixmala.

*Bursera instabilis* McVaugh & Rzed. Papelillo. Tree commonly 4–5 m high. Branches often interlaced, forming a "bird's nest" effect. Bark bronze to reddish, trunk green. Fls yellow-orange. Jun.–Jul. EJL 1141, SHB 1155, SHB 1586, EBCh; EJL 3323, EJL 3686, Cuixmala.

*Bursera* sp. 1. Tree 4 m high. Bark red, peeling. Lvs glabrous. EJL 2823, Quémario.

*Bursera* sp. 2. Cuajote. Tree 4–8 m high. Bark yellowish, trunk green. Lvs pubescent, flts rounded, 5–7. Fls red. Jan. EJL 3289, EJL

4007, Cuixmala.

*Bursera* sp. nov. ined. Rzed. Tree. Lvs glabrous. Fls? Frs Sep.–Oct. JASM 3807, EBCh; EJL 604, 1.1 km S of EBCh on Pto. Vallarta- B. de Nav. hwy.

### Cactaceae

*Acanthocereus occidentalis* Britt. & Rose. Pitahaya. Shrub with spreading branches 1–4 m long. Stems 3-angulate with long spines. Fls white. Mar. EJL 954, EBCh; sighted at Cuixmala.

*Acanthocereus* sp.? Epiphytic shrub, stems 1–2 m long, gray, 3-angulate with inconspicuous spines. Gargollo entrance road, near buildings of headquarters. Sterile, Aug. EJL 3906, Cuixmala.

*Cephalocereus purpusii* Britt. & Rose. Tree to 6 m high. Stems mostly with 11 ribs. Fls green, white or light pink. Mar.–Jun. EJL 1117, JASM 3602, EBCh; ACS 10983, Cuixmala.

*Mammillaria beneckeii* Ehrenb. Cylindrical-stemmed succulent, colonial 10–15 cm high. Fls bright yellow-orange. Jun. SHB 1176, EBCh.

*Mammillaria* aff. *collinsii* (Britt. & Rose) Orcutt [= *M. ortegae* (Britt. & Rose) Orcutt]. Cylindrical-stemmed succulent, 10–15 cm high. Fls green. May. EJL 1090, SHB 1172, EBCh.

*Mammillaria occidentalis* (Britt. & Rose) Boedeker. Cylindrical-stemmed succulent, colonial, 10 cm high. Fls lavender to pink. May–Aug. SHB 1177, EBCh; BMR 381, Cuixmala.

*Melocactus dawsonii* Bravo. Cylindrical-stemmed succulent, single, 15–25 cm high. Stems 12–20-ribbed. Fls pink. Aug. EJL 1222, Rancho El Paraíso; CC 5231, Cuixmala.

*Nopalea karwinskiana* (Salm-Dyck) Schumann. Shrub to 3 m high. Fls pink. Jan.–Apr. EJL 905, EJL 968, Arroyo Chamela; EJL 3240, Cuixmala.

*Opuntia excelsa* Sánchez-Mejorada. Erect shrub or tree 6–10 m high. Fls yellow, turning pink. EJL 3320, Quémario; SHB 944, EBCh; EJL 3598, Salinas Careyes; sighted at Cuixmala.

*Opuntia puberula* Pfeiffer. Spreading shrub to

80 cm high. Fls yellow. Mar.–May. EJL 960, EBCh; EJL 3431, Cuixmala.

*Pachycereus pecten-aboriginum* Britt. & Rose. Organo. Tree 5–10 m high. Stems 8–12-ribbed. Jan.–Mar. EJL 3309, Quémario; SHB 1088, EBCh; sighted at Cuixmala.

*Peniocereus cuixmalensis* Sánchez-Mejorada. Shrub to 2 m high. Stems 4–5-ribbed, 2.5 cm in diam or more. Fls green to white, innermost tepals pink. Jun.–Jul. EJL 1125, EBCh, EJL 3764, Cuixmala.

*Peniocereus rosei* González-Ortega. Shrub to 2.5 m high. Stems terete, 0.5–1 cm in diam. Fls white. Jun.–Jul. SHB 1178, SHB 1192, EBCh; sighted at Cuixmala.

*Selenicereus vagans* (K. Brandg.) Britt. & Rose. Vine. Stems with 9–10 flattened ribs. Fls white to pinkish. Jun.–Jul. EJL 485, Arroyo Chamela; EJL 1025, EJL 1119, EBCh; sighted at Cuixmala.

*Stenocereus chrysocarpus* Sánchez-Mejorada. Pitayo. Tree to 10 m high. Stems with 4–7 ribs. Outer tepals reddish-purple, inner tepals white. Aug. EJL 1193, EBCh; sighted at Cuixmala. The fruit is a great delicacy.

*Stenocereus fricii* Sánchez-Mejorada. Erect shrub 2–4 m high, from a single stem. Stems with 4–7 ribs. Fls greenish-white. Jun. JASM 3603, Salinas de Chamela.

*Stenocereus standleyi* (González-Ortega) Buxbaum. Sprawling shrub 1–4 m high. Stems with 4–5 ribs. Outer tepals pink, inner tepals white. Jun. EJL 2553, Cuixmala. This species is common on rocky headlands.

### Campanulaceae

*Lobelia cordifolia* Hook & Arn. Annual herb 10–30 cm high. Fls pale blue. Jan.–May. ACS 10515, EJL 3222, EJL 3394, Cuixmala.

*Lobelia xalapensis* HBK. Annual herb. Fls purple with white throat. Jan. ACS 10225, Cuixmala.

### Capparaceae

*Capparis flexuosa* (L.) L. Shrub or vine 1–4 m high. Fls white. May–Jun. JASM 741, SHB 1514, EBCh; EJL 3330, Cuixmala.

*Capparis frondosa* Jacq. Shrub 2 m high. Fls white with purple spots. May–Jun. JASM 1013, SHB 2043, Hotel Careyes. This species is rare in our area.

*Capparis incana* HBK. Shrub or small tree 2–6 m high. Fls white. May–Jul. Ejl 1717, Quémario; JASM 4165, Salinas de Chamela; MGA 190, MGA 91-205, Salinas de Careyes; MGA 91-114, Arroyo Careyes; SHB 1578, Rancho Cuixmala [Cuitzmala] to Playa Teopa.

*Capparis indica* (L.) Fawc. & Rendle. Shrub 1–4 m high. Fls white. Apr.–Jul. JASM 687, EBCh; MGA 91-114, MGA 91-180, Arroyo Careyes; Ejl 2556, Ejl 3405, Cuixmala.

*Capparis verrucosa* Jacq. Shrub or tree to 5 m high. Fls white. Apr.–Jun. (Nov). JASM 707, Laguna La Virgen; SHB 1165, EBCh; JASM 1015, Hotel Careyes; MGA 91-167, Caleta Blanca; Ejl 3499, Cuixmala.

*Cleome aculeata* L. Herb 30 cm high. Fls white. Jul.–Oct. Ejl 1431, EBCh.

*Cleome hemsleyana* (Bullock) Iltis. Annual herb to 30 cm high. Fls yellow. Aug.–Oct. Ejl 1233, Arroyo Chamela; Ejl 1392, EBCh; Ejl 3856, Cuixmala.

*Cleoma serrata* Jacq. Perennial herb 50 cm high. Fls white. May. Ejl 3572, Cuixmala.

*Cleoma spinosa* Jacq. Annual herb to 75 cm high. Fls white, stamens purple. Feb.–Mar. ACS 10520, MGA 91-11, Cuixmala.

*Cleome viscosa* L. Annual herb to 75 cm high. Fls yellow. Flowering almost throughout the year. SHB 993, EBCh; MGA 202, Arroyo Cajones; ACS 10559, Cuixmala. This is a common weed on roadsides.

*Crataeva tapia* L. Zapotillo (CC). Shrub or tree 2–15 m high. Fls greenish-white to purple. Jul.–Apr. JASM 705, Laguna La Virgen; BMR 154, CC 974, Ejl 2875, Ejl 3241, Cuixmala.

*Forchhammeria pallida* Liebm. [= *F. lanceolata* Standl.]. Armol. Tree to 10 m high. Fls cream-colored to greenish. Dec.–Feb. MGA 552, Salinas de Chamela; JASM 4184, EBCh; Ejl 3311, Cuixmala.

*Forchhammeria sessilifolia* Standl. Shrub to 1 m high. Fls greenish to purple. Mar. Ejl 1048,

Ejl 2779, EBCh. Rare in understory of Tropical Semideciduous Forest.

*Morisonia americana* L. Zapotillo (CC). Shrub or small tree 3–7 m high. Fls white to cream-colored. May. SHB 1882, Quémario; JASM 1016, San Mateo; JASM 4015, Playa La Rumorosa; JASM 481, EBCh; Ejl 3216, Cuixmala.

### Caricaceae

*Jacaratia mexicana* A. DC. Bonete. Tree 10–15 m high. Fls yellowish-green. Feb.–May. Ejl 895, SHB 1087, EBCh; BMR 122, Caleta Blanca; Ejl 3370, Ejl 3371, Cuixmala. The fruits are edible when cooked.

*Jarilla heterophylla* (Cav.) Rusby. Perennial herb 50 cm high. Fls white or yellowish. Jul. Ejl 1422, LAPJ 1765, EBCh; Ejl 3695, Ejl 3736, Cuixmala. The fruits are used in making preserves and sweets (Standley, 1926: 853).

### Caryophyllaceae

*Drymaria villosa* Cham. & Schlecht. subsp. *palustris* (Cham. & Schlecht.) J. Duke. Annual herb 15 cm high. Fls white. Jan–Mar. ACS 10590, Ejl 3100, Ejl 3224, Cuixmala.

### Celastraceae

*Crossopetalum uragoga* (Jacq.) O. Ktze. Slender shrub to 3 m high. Fls red. Feb.–Jul. MGA 546, Salinas de Chamela; LAPJ 306, EBCh; Ejl 2335, Ejl 3594, Salinas de Careyes; Ejl 3768, Cuixmala.

*Elaeodendron trichotomum* (Turcz.) Lundell. Tree 5–10 m high. Fls yellowish. Feb.–Apr. JASM 4157, Ejl 1872, EBCh; Ejl 2420, Arroyo Tapeixtes.

*Schaefferia lottiae* Lundell. Slender shrub 1–3 m high. Fls green. Jun. Ejl 716, the type; Ejl 1113, Ejl 1798, EBCh; sighted at Cuixmala.

### Chrysobalanaceae

*Couepia polyandra* (Kunth) Rose. Tepezapote. Tree 6–20 m high. Fls white to yellow. Mar.–Jun. JASM 4027, near Arroyo Chamela; Ejl 898, EBCh; Ejl 3331, Ejl 3600, Cuixmala.

### Cochlospermaceae

*Amoreuxia* cf. *palmatifida* Jacq. Perennial herb to 20 cm high. Fls yellow. Oct. Ejl 648,

Rancho El Paraíso. Thus far found only on rocky headlands.

*Cochlospermum vitifolium* (Willd.) Spreng. Pánicua; Rosa Amarilla. Tree 4–10 m high. Fls yellow. Jan.–Apr. EJL 2401, SHB 1062, EBCh; CC 5308, Cuixmala.

### Combretaceae

*Combretum fruticosum* (Loefl.) Stuntz. Peine-cilla. High-climbing woody vine. Fls orange-red. Flowering almost throughout the year. EJL 970, Arroyo Chamela; JASM 362, EBCh; EJL 649, Rancho El Paraíso; EJL 3211, Cuixmala.

*Combretum mexicanum* Humb. & Bonpl. [= *C. laxum* Jacq.?]. Vine. Fls white. Jan.–Mar. EJL 3137, MGA 91-27, Phillips 1168, Cuixmala.

*Combretum* sp. Vine. SHB 1853, 5 km N of Chamela; MGA 851, EBCh; EJL 4174, Cuixmala. Fls Sep. Frs Nov.–Dec. According to T. Croat, this is probably a new species. The fruits lack wings, but the leaves have scales typical of *C. fruticosum*. The flowers are orange-red with yellowish-green stamens.

*Conocarpus erecta* L. Botoncillo. Shrub or tree 2–6 m high. Fls greenish, in conelike heads. Mar. EJL 885, Pérula; ACS 9015, El Tecuán.

*Laguncularia racemosa* (L.) Gaertn. f. White Mangrove. Shrub or tree 2–10 m high. Fls white. May–Aug. EJL 1067, Playa El Negrito; CC 5152, EJL 3591, Cuixmala.

### Compositae

*Ageratum houstonianum* Mill. Perennial herb 0.5–1.5 m high. Fls lavender. Mar.–Aug. ACS 10500, EJL 3422, Cuixmala.

*Baccharis salicifolia* (Ruiz & Pav.) Pers. Shrub 1–3 m high. Fls white. Aug. EJL 2839, Arroyo Chamela.

*Baltimora geminata* (Brandege) Stuessy. Erect annual herb 0.5–1 m high. Fls yellow. Aug.–Nov. MGA 436, Río San Nicolás; JASM 3864, EJL 1271, EJL 1744, MGA 853, EBCh.

*Bidens odorata* Cav. Erect annual herb. Fls white. Sep. MGA 886, Pueblo Careyes.

*Bidens pilosa* L. sens. lat. Annual herb to 80 cm high. Fls yellow. Oct. EJL 1480, Arroyo Chamela.

*Bidens reptans* (L.) G. Don var. *urbanii* (Greenm.) O.E. Schulz. Vine. Fls yellow. Dec.–Mar.; Jul. EJL 1673, SHB 1558, EBCh; EJL 3266, Cuixmala.

*Bidens riparia* HBK. var. *refracta* (Brandege) O.E. Schulz. Erect annual herb. Fls yellow. Oct.–Nov. MGA 406, Arroyo Chamela, MGA 1234, Cuixmala.

*Brickellia coulteri* A. Gray var. *megalodonta* (Greenm.) McVaugh. Shrub 1–2 m high. Fls greenish. Nov.–Mar. JASM 384, JASM 4161, EBCh; EJL 3155, EJL 4005, Cuixmala.

*Brickellia diffusa* (Vahl) A. Gray. Herb to 1 m high. Fls greenish. Jan. EJL 3154, EJL 3227, Cuixmala.

*Conyza apurensis* HBK. Annual herb 70 cm high. Ray fls white, disc fls yellow. May–Aug. EJL 3401, EJL 3570, EJL 3877, Cuixmala.

*Decachaeta haenkeana* DC. Coarse shrubby herb to 2 m high. Fls white or greenish. Oct.–Feb. EJL 704, JASM 3930, MGA 1022, SHB 1295, EBCh.

*Eclipta prostrata* (L.) L. [= *E. alba* (L.) Hassk.]. Aquatic herb. Fls white or greenish. Jun.–Jul. EJL 2350, Pérula; JASM 3645, Arroyo Chamela; JASM 1126, Laguna la Virgen; EJL 3102, Cuixmala.

*Egletes viscosa* (L.) Less. Annual herb 30 cm high. Ray fls white, disc fls yellow. Mar.–Jul. EJL 3630, Quémario; EJL 2351, Pérula.

*Elephantopus spicatus* B. Juss. ex Aubl. [= *Pseudelephantopus spicatus* (Aubl.) Rohr]. Bushy perennial herb. Fls whitish. May. EJL 3580, Cuixmala.

*Eupatorium (Koanophyllon) albicaule* Sch.-Bip. ex Klatt. Shrub to small tree 1–4 m high. Fls white. Apr.–Jul. JASM 3026, EBCh; EJL 627, Arroyo Tapeixtes; BMR 146, Pueblo Careyes; EJL 3410, EJL 3484, EJL 3665, Cuixmala.

*Eupatorium (Chromolaena) collinum* DC. var. *mendezii* (DC.) McVaugh. Shrub 2–3 m high. Fls white. Oct.–Dec. JASM 3944, EBCh.

*Eupatorium haenkeanum* DC. Shrub 3 m high. Fls white. Nov. EJL 4006, Cuixmala.

*Eupatorium odoratum* L. Weak shrub with

vinelike branches 3–4 m long. Fls white. Nov.–Jan. EJL 3219, EJL 3942, EJL 3948, Cuixmala.

*Eupatorium quadrangulare* DC. Clump-forming herb 1–4 m high. Fls white. Jan. ACS 10612, EJL 3174, Cuixmala.

*Eupatorium solidaginifolium* A. Gray [= *E. palmeri* A. Gray var. *palmeri*]. Shrub 0.5–1.5 m high. Fls yellowish. Oct. EJL 1526, EBCh; EJL 627, Arroyo Tapeixtes; EJL 4051, Cuixmala.

*Fleischmannia arguta* (HBK.) B.L. Robins. Perennial herb 30–50 cm, in rock-crevices along arroyos. Fls lavender. Jan.–Apr. EJL 2358, EBCh; EJL 1013, Arroyo Cajones; EJL 3269, Cuixmala.

*Gnaphalium pensylvanicum* Willd. [= *Gamochaeta pensylvanica* (Willd.) Cabrera]. Annual herb 10–15 cm high. Fls greenish. Jan. ACS 10580, EJL 3122, EJL 3186, Cuixmala.

*Hofmeisteria dissecta* (Hook. & Arn.) King & H. Rob. Viscid annual herb 30–60 cm high. Fls white. Jan. EJL 3141, EJL 3378, Cuixmala.

*Lagascea aurea* Stuessy. Much-branched annual herb 1 m high. Fls yellow. Nov. EJL 2136, 5 mi E of Juan Pérez.

*Lasiantha ceanothifolia* (Willd.) K. Becker. Shrub or vine 1–3 m high. Fls yellow. Sep.–Nov. EJL 531, EJL 549, EBCh.

*Liabum (Sinclairia) caducifolium* Robins. & Bartlett. Vinelike shrub to 7 or 8 m long, usually reclining on other shrubs. Fls cream-colored, anthers yellow. Oct.–Nov. EJL 684, Quémaro; MGA 1034, SHB 1024, EBCh; EJL 3969, Cuixmala.

*Melampodium divaricatum* (Rich. in Pers.) DC. Annual herb to 1 m high. Fls yellow. Nov.–Jan. ACS 10522, EJL 3114, Cuixmala.

*Melampodium microcephalum* Less. Annual herb 50 cm or more high. Fls yellow. Jan. EJL 3188, Cuixmala.

*Melampodium tenellum* Hook. & Arn. Decumbent annual herb, rooting at the nodes. Fls yellow. Jan. EJL 3126, Cuixmala.

*Melanthera nivea* (L.) Small. Annual or perennial herb 1–1.5 m high. Fls white. Jun.–Nov. EJL 1480, SHB 1685, Arroyo Chamela; EJL 2314, JASM 3859, MGA 1000, EBCh; MGA

91-144, Cuixmala.

*Mikania cordifolia* (L. f.) Willd. Vine with weak stems to 3 m long, clambering on shrubs. Fls white. Apr.–Jun. EJL 2789, MGA 91-104, Salinas Careyes; BMR 179, EJL 3169A, EJL 3571, MGA 91-143, Cuixmala.

*Milleria quinqueflora* L. Annual herb 0.75–1 m high. Fls yellow. Sep.–Nov. MGA 412, Arroyo Chamela; SHB 1656, EBCh; EJL 2679, Pueblo Careyes; ACS 11252, Cuixmala.

*Otopappus microcephalus* Blake. Vinelike shrub to 1 m high or more, in trees. Fls yellow. Sep.–Oct. SHB 1249, 5 km S of Chamela; Cervantes 57, MGA 934, EBCh; ACS 8691, Cuixmala. .

*Otopappus tequilanus* (S. Wats.) B. L. Rob. Vine. Fls yellow. Nov. SHB 1015, SHB 1476, EBCh.

*Parthenium hysterophorus* L. Erect annual herb 40–75 cm high. Fls white. Aug.–Jan. EJL 2602, Río San Nicolás; JASM 3770, Chamela; EJL 3123, MGA 579, Cuixmala.

*Pectis arenaria* Benth. Mat-forming, prostrate perennial herb 10–20 cm high. Fls yellow. Flowering throughout the year. EJL 884, Pérula.

*Pectis exserta* McVaugh. Annual herb 10–30 cm high. Fls yellow. Aug.–Jan. MGA 961, Pérula; EJL 560, JASM 3730, EBCh; EJL 2874, EJL 3296, Cuixmala.

*Pectis prostrata* Cav. Annual herb 15 cm high. Fls yellow. Aug. EJL 1710A, Quémaro.

*Perityle microglossa* Benth. var. *microglossa*. Annual herb 30–50 cm high. Ray fls white, disc fls yellow. Nov.–May. EJL 2198, EBCh; MGA 91-25 Arroyo Careyes; ACS 10516, EJL 3574, Cuixmala.

*Pluchea salicifolia* (Mill.) Blake. Annual herb 10–30 cm high with winged stems. Fls pink. Feb.–Mar. MGA 643, Arroyo Chamela; EJL 2403, EBCh; ACS 10586, Cuixmala. ACS reports his as perennial.

*Pluchea symphytifolia* (Mill.) Gillis. Rounded shrub 1–3 m high with many stems. Fls pink. Nov.–Apr. MGA 644, Arroyo Chamela; EJL 2842, Hotel Careyes; EJL 2777, Salinas

Careyes; sighted at Cuixmala.

*Porophyllum punctatum* (Mill.) Blake. Hierba de venado. Weak shrub 0.5–1 m high. Fls greenish-white. May–Nov. MGA 91-115B, Arroyo Chamela; EJL 647, Rancho El Paraíso; EJL 2884, EJL 3364, Cuixmala.

*Porophyllum ruderale* (Jacq.) Cass. var. *macrocephalum* (DC.) Cronq. Slender annual herb to 1 m. Fls greenish to reddish-brown. Oct.–Nov. EJL 735, EBCh; EJL 2678, Pueblo Careyes; EJL 4000, Cuixmala.

*Pseudoconyza viscosa* (Mill.) D'Arcy [= *Pseudoconyza lyrata* (HBK.) Cuatrecasas]. Annual (?) herb 15–50 cm high. Fls pinkish or green. Jan.–May. EJL 3264, EJL 3377, Cuixmala.

*Sclerocarpus divaricatus* (Benth.) Benth. & Hook. f. ex Hemsl. Annual herb 50 cm high. Fls yellow. Aug.–Nov. EJL 2604, Río San Nicolás; EJL 557, JASM 3863, MGA 872, EBCh; EJL 3827, EJL 4020, Cuixmala.

*Simsia amplexicaulis* (Cav.) Pers. Weedy annual herb 20 cm high, perhaps reaching 1 m later in season. Fls yellow. Jan. EJL 3097, Cuixmala.

*Spilanthes alba* L'Her. Annual herb 15–30 cm high. Fls white. Jan. EJL 3105, Cuixmala.

*Spilanthes oppositifolia* (Lam.) D'Arcy. Perennial herb 20–30 cm high, sprawling among shrubs. Fls yellow. May. EJL 3376, Cuixmala.

*Synedrella nodiflora* (L.) Gaertn. Sprawling annual (?) herb. Fls yellow. Nov.–May. EJL 3084, EJL 3411, EJL 4111, Cuixmala.

*Tithonia rotundifolia* (Mill.) Blake. Robust annual herb 1–2 m high. Ray fls orange-red, disc fls yellow. Sep.–Nov. MGA 958, Arroyo Chamela; EJL 713, EBCh; MGA 261, Arroyo Tapeixtes; EJL 1488, Arroyo Cajones; EJL 2856, Cuixmala.

*Tridax dubia* Rose. Perennial herb 40–50 cm high. Fls bright yellow. Nov.–Jan. EJL 1566, Arroyo Chamela; ACS 10546, EJL 3190, EJL 3193, EJL 3408, Cuixmala.

*Tridax procumbens* L. Perennial herb 15–50 cm high. Fls white or pale yellow. Sep.–Mar. EJL 738, SHB 982, SHB 1310, SHB 1672,

EBCh.

*Trixis pterocaulis* Robins. & Greenm. Shrub 0.5–1.5 m high. Fls yellow. Oct.–May. BMR 84, Quémario; EJL 671, Playa La Virgencita; EJL 1511, MGA 1041, SHB 1552, EBCh; EJL 2885, Cuixmala; ACS 9011, El Tecuán.

*Verbesina lottiana* Turner & Olsen. Tacote. Vine. Fls orange. Oct.–Mar; Jun. EJL 1474, Arroyo Chamela; SHB 1695, EBCh; MGA 91-119, Cuixmala.

*Vernonia triflosculosa* HBK. subsp. *trifloculosa*. Shrub or small tree 4–6 m high. Fls white. Jan.–Mar. JASM 4010, SHB 1505, EBCh.

*Wedelia fertilis* McVaugh. Perennial herb 50–75 cm high. Fls yellow. Sep.–Oct. EJL 1541, JASM 3854, EBCh.

*Wedelia strigosa* Hook. & Arn. Perennial herb. Fls yellow. June. MGA 91-121, Cuixmala.

*Wedelia vexta* Strother. Annual herb. Fls yellow. Nov. EJL 4135, Cuixmala.

*Wedelia* sp. Annual herb. Fls yellow. Sep. ACS 11248, Cuixmala.

*Zinnia bicolor* (DC.) Hemsl. Annual herb 20 cm high. Fls yellow. Dec. JASM 336, EBCh.

*Zinnia flavicomma* (DC.) Olorodes & Torres. Annual herb 15–30 cm high. Ray fls yellow, disc fls dark purple. Oct. EJL 1429, EBCh.

*Zinnia maritima* HBK. Annual herb mostly 30–50 cm high. Ray fls yellow, disc fls purple. Oct.–Mar. EJL 1540A, JASM 3853, EBCh; ACS 10561, EJL 2879, EJL 3146, MGA 91-33, Cuixmala. Two varieties have been reported from our area, *Z. maritima* var. *maritima* (ACS 10561) and var. *palmeri* (EJL 3146).

*Zinnia purpusii* Brandegees. Annual herb 20–30 cm high. Fls yellow. Sep. MGA 878, EBCh.

### Connaraceae

*Rourea glabra* HBK. Shrub or vine. Fls whitish. May–Sep. JASM 2890, SHB 1490, EBCh; MGA 91-103, Careyes; EJL 3274, EJL 3465, Cuixmala.

### Convolvulaceae

*Bonamia mexicana* McDonald [first reported as

- Calycobolus* sp.]. Vine. Fls white. Oct.–Nov. EJL 678, near Río San Nicolás; BMR 100, Quémario; MGA 325, Laguna La Virgen; EJL 2703, EBCh.
- Cressa truxillensis* HBK. Perennial herb to 15 cm high. Fls white. Nov. EJL 2746, Quémario.
- Cuscuta* sp. Annual vine. Fls white with yellow stamens. Jan.–May. EJL 994, Arroyo Chamela; SHB 1297, EBCh; ACS 10526, EJL 3107, Cuixmala.
- Cuscuta* sp. Annual vine. Fls greenish-white. Mar. ACS 10525, Cuixmala.
- Evolvulus alsinoides* L. Perennial herb. Fls blue. Sep.–Oct. EJL 543, EJL 1401, EBCh.
- Evolvulus cardiophyllus* Schlecht. Perennial herb. Fls blue. Sep.–Jan. EJL 541, EJL 696, EJL 2316, EBCh.
- Evolvulus* aff. *tenuis* Mart. ex Choisy. Perennial herb. Fls blue. Oct. EJL 1406, EJL 1659, EBCh.
- Ipomoea alba* L. Vine. Fls white. Oct.–Mar. SHB 1839, Km 60, Pto. Vallarta-B. de Navidad hwy.; EJL 2668, Playa La Virgencita; ACS 10510, MGA 570, Cuixmala.
- Ipomoea ampullacea* Fern. Vine. Fls white. Oct.–Mar. EJL 2192, EJL 2362, EBCh.
- Ipomoea* cf. *batatas* L. Vine. JASM 3947, Chamela area.
- Ipomoea batatoides* Choisy. Vine. Fls pink. Aug. EJL 3890, EJL 3903, Cuixmala.
- Ipomoea bombycina* (Choisy) Benth. & Hook. Vine. Fls green and wine-red to maroon. Nov.–Feb. EJL 1693, EBCh; EJL 3162, Cuixmala.
- Ipomoea bracteata* Cav. [= *Exogonium bracteatum* (Cav.) Choisy]. Vine. Bracts magenta, corolla pale pink or lavender. Jan.–Mar. EJL 897, SHB 1298, EBCh; ACS 10539, EJL 3244, Cuixmala.
- Ipomoea chamelana* McDonald. Vine. Fls yellow. Aug.–Feb. EJL 729, EJL 1402, EJL 2400, EBCh; BMR 58, Cuixmala.
- Ipomoea clavata* (G. Don.) v. Ooststr. Vine. Fls blue to pale lavender with white throat. Oct.–Jan. EJL 2644, road to Playa La Virgen-
- cita; EJL 1518, EBCh; EJL 1545, Arroyo Tapeixtes.
- Ipomoea crinicalyx* Moore. Vine. Fls purple with white tube. Jan. ACS 9019, El Tecuán.
- Ipomoea hederifolia* L. [= *Quamoclit coccinea* (L.) Moench. var. *hederifolia* (L.) House]. Vine. Fls red. Oct.–Mar. EJL 733, JASM 3896, EBCh; MGA 91-41, Cuixmala.
- Ipomoea imperata* (Vahl) Griseb. Vine. Fls white with yellow throat. Jun. EJL 2554, Cuixmala.
- Ipomoea* aff. *laeta* A. Gray. Vine. Fls lavender. Oct. EJL 2867, Cuixmala.
- Ipomoea lottiae* McDonald. Vine. Fls white. Aug.–Sep. EJL 537, EJL 551, EJL 1207, JASM 3793, EBCh; EJL 1264, Arroyo Careyes; ACS 8679, Cuixmala.
- Ipomoea meyeri* (Spreng.) Don. Vine. Fls blue to lavender. Nov.–Jan. SHB 1470, EBCh.
- Ipomoea* cf. *microsticta* Hallier f. Vine. Fls lavender with white throat. Sep. EJL 1868, EBCh.
- Ipomoea minutiflora* (Mart. & Gal.) House. Vine. Fls yellow or orange. Oct.–Nov. JASM 3938, SHB 1459, EBCh; EJL 4053, Cuixmala.
- Ipomoea muricata* Cav. Vine. Fls lavender. Mar. EJL 2369, EBCh.
- Ipomoea neei* (Spr.) O'Donnell. Vine. Fls yellow with red corolla lobes. Jan.–Mar. MGA 719, Arroyo Chamela; EJL 2364, MGA 511, EBCh.
- Ipomoea nil* (L.) Roth. Vine. Fls sky blue, wilting to violet, with white throat. Sep.–Nov. JASM 3855, EBCh; MGA 712, Pueblo Careyes; BMR 48, Cuixmala.
- Ipomoea pedicellaris* Benth. Vine. Fls lavender to purple. Oct.–Nov. EJL 1585, Arroyo Chamela; EJL 661, EBCh; BMR 66, Cuixmala.
- Ipomoea pes-caprae* (L.) Sweet. Vine on dunes just behind beach. Fls bright pink. Nov. BMR 89, Quémario; AR 1015, Cuixmala.
- Ipomoea quamoclit* L. Vine. Fls red. Nov.–Mar. EJL 734, JASM 4136, EBCh; ACS 10595, Cuixmala.
- Ipomoea trifida* (HBK.) G. Don. Vine. Fls



lavender or pink with darker purple throat. Oct.–Mar. SHB 1258, Chamela; JASM 3897, EBCh; ACS 10527, EJL 2855, Cuixmala.

*Ipomoea triloba* L. Vine. Fls pink. Nov. BMR 50, Cuixmala.

*Ipomoea wolcottiana* Rose. Ozote. Tree 4–10 m high. Fls white with maroon throat. Jan.–Mar. EJL 3166, SHB 1006, EBCh; ACS 10568, Cuixmala.

*Ipomoea wrightii* A. Gray. Vine. Fls purple. Oct. EJL 2869, Cuixmala.

*Jacquemontia nodiflora* (Desr.) G. Don. Vine. Fls white. Oct.–Dec. SHB 1009, EBCh; EJL 635, Rancho El Paraíso.

*Jacquemontia* cf. *pentantha* (Jacq.) G. Don. Vine. Fls pale blue. Nov–May. EJL 3333, EJL 3970, Cuixmala.

*Jacquemontia tamnifolia* (L.) Griseb. Vine. Fls pale lavender. Oct. SHB 1263, EBCh.

*Merremia aegyptia* (L.) Urb. Vine. Fls white. Oct.–Nov. MGA 281, Arroyo Chamela; EJL 2751, EBCh; BMR 49, EJL 2858, Cuixmala.

*Merremia quinquefolia* (L.) Hallier f. Vine. Fls pale yellow or white. Aug.–Apr, practically throughout the year. BMR 93A, Quémaro; JASM 3720, Chamela; MGA 327, Laguna La Virgen; SHB 1002, EBCh; ACS 10564, BMR 158, Cuixmala.

*Merremia umbellata* (L.) Hallier f. Vine. Fls bright yellow. Jan.–May. JASM 4341, Chamela; Sousa 3902, EBCh; MGA 506, Playa Careyitos; EJL 3372, Cuixmala.

*Operculina pteripes* (G. Don) O'Donnell. Vine. Fls salmon-pink. Aug.–Nov. EJL 1405, EBCh; ACS 8674, Cuixmala.

### Crassulaceae

*Sedum hintonii* R.T. Clausen. Succulent herb 3–6 cm high. Fls white. Nov. EJL 1580, EBCh.

### Cruciferae

*Rorippa teres* (Michx.) Stuckey. Annual herb 15 cm high. Fls yellow. Mar.–May. ACS 10589, EJL 3386, Cuixmala.

### Cucurbitaceae

*Cayaponia attenuata* (Hook. & Arn.) Cogn.

Annual vine. Fls white with yellow throat. Oct.–Jan. MGA 433, Río San Nicolás; JASM 4277, EBCh; EJL 3178, MGA 587, Cuixmala.

*Chalema synanthera* Dieterle. Annual vine. Fls white. Oct. EJL 1416, EBCh; EJL 2892, Cuixmala.

*Cucumis anguria* L. Pepino cimarrón. Annual vine. Fls yellow. Oct.–Apr. MGA 340, road to beach near Supermercado Chamela; EJL 1482, Arroyo Chamela; LAPJ 779, EBCh; MGA 711, Pueblo Careyes; EJL 3131, Cuixmala.

*Cucumis dipsaceus* Spach. Annual vine. Fls yellow. Aug.–May. EJL 2612, Río San Nicolás; EJL 1217, Chamela; EJL 722, EBCh; MGA 715, Pueblo Careyes; EJL 3380, Cuixmala.

*Cucumis melo* L. var. *dudaim* (L.) Dunal. Annual vine. Fls yellow. May–Nov. EJL 2621, Quémaro; EJL 3293, EJL 3575, EJL 3926, Cuixmala.

*Cucurbita argyrosperma* subsp. *sororia* (L. H. Bailey) Merrick & Bates. Calabacilla. Annual vine. Fls yellow. Sep.–Nov. EJL 2611, Río San Nicolás; EJL 2626, Arroyo Chamela; EJL 1513, EBCh; MGA 846, Pueblo Careyes; EJL 3152, EJL 4025, Cuixmala.

*Cyclanthera dissecta* (T. & G.) Arnott. Annual vine. Fls white. Oct. EJL 2857, Cuixmala.

*Cyclanthera multifoliola* Cogn. [“*multifoliolata*”]. Annual vine. Fls white. Sep.–Mar. MGA 414, Arroyo Chamela; EJL 2645, Laguna La Virgen; EJL 1519, EBCh; ACS 11167, EJL 2866, EJL 3972, Cuixmala.

*Dieterlea fusiformis* Lott. High-climbing perennial vine. Fls white. Jul. JASM 4241, EBCh; EJL 1849, Hotel Careyes; BMR 51, MGA 91-225, Cuixmala.

*Doyerea emetocathartica* Gros. Perennial vine. Fls yellowish. Dec.–Apr. EJL 2176, EBCh; SHB 1566, Arroyo Tapeixtes; sighted at Cuixmala.

*Echinopepon paniculatus* (Cogn.) Dieterle. Annual vine. Fls white. Oct. EJL 2631, Quémaro; EJL 2692, La Fortuna.

*Echinopepon racemosus* (Steud.) C. Jeffrey [= *E. horridus* Naud.]. Annual vine. Fls white. Oct.–Nov. SHB 1267, EBCh; EJL 609, Arroyo

## Careyes.

*Luffa cylindrica* (L.) Roem. [= *L. aegyptiaca* Mill.]. Annual vine. Fls yellow. Oct.–Jan. MGA 341, road to beach near Supermercado Chamela; MGA 419, Arroyo Chamela; EJL 3167, EJL 4075, Cuixmala. Escaped from cultivation.

*Luffa quinquefida* (Hook. & Arn.) Seemann. Annual vine. Fls yellow. Oct.–Dec. JASM 3963, MGA 330, MGA 1056, MGA 1062, Laguna La Virgen.

*Melothria pendula* L. Annual vine. Fls yellow. Sep.–Apr. MGA 303, 8.4 km E of Juan Gil; EJL 726, SHB 1004, EBCh; BMR 181, Cuixmala.

*Momordica charantia* L. Alvellana. Annual vine. Fls yellow. Sep.–Mar., but probably throughout the year. LAPJ 630, ‘road to Chamela’; EJL 506, EJL 519, EBCh; ACS 10518, BMR 64, Cuixmala.

*Polyclathra albiflora* (Cogn.) Jeffrey. Annual vine. Fls white. Oct. EJL 2370, road to Juan Gil; JASM 4115, EBCh; EJL 3287, Cuixmala.

*Rytidostylis gracilis* Hook. & Arn. Annual vine. Fls pale green. Oct. EJL 1477, Arroyo Chamela; EJL 2665, 8 km E of Juan Gil.

*Schizocarpum longisepalum* Jeffrey. Annual vine. Fls bright yellow with dark green spots in base of throat. Oct.–Nov. EJL 1515, MGA 294, EBCh; EJL 617, Arroyo Careyes; EJL 4169, Cuixmala.

*Sechiopsis tetraptera* Dieterle. Annual vine. Fls green. Oct.–Jan. SHB 1474, EBCh; EJL 1489, Arroyo Cajones; EJL 4068, Cuixmala.

*Sicyos barbatus* (H. Gentry) C. Jeffrey. Annual vine. Fls yellowish. Sep. SHB 1689, Arroyo Chamela. This is the only collection of this species known from our area.

*Sicyos microphyllus* HBK. Annual vine. Fls green. Oct.–Nov. MGA 342, Río San Nicolás; MGA 335, Arroyo Chamela.

**Dilleniaceae**

*Tetracera portobellensis* Beurl. Woody vine. Fls cream-colored. Oct.–Nov. Frs Jun. EJL 1472, Arroyo Chamela; EJL 2558, Cuixmala. This species is seldom collected in our area.

**Ebenaceae**

*Diospyros aequoris* Standl. [earlier reported as *D. salicifolia* HBK.]. Shrub 1–3 m high. EJL 1824, LAPJ 1067, EBCh; EJL 2333, Salinas Careyes; EJL 4159, Cuixmala; ACS 9013, El Tecuán.

*Diospyros* sp. Shrub 4 m. Fls not known. Frs Sep. EJL 1855, EBCh. The leaves are similar to those of *D. rosei* Standl.

**Erythroxylaceae**

*Erythroxylum havanense* Jacq. Shrub 1–3 m high. Fls white. Jun.–Jul. LAPJ 169, Chamela; SHB 1345, EBCh; LAPJ 1738, Club Med; MGA 91-169, Caleta Blanca; EJL 3675, Cuixmala.

*Erythroxylum mexicanum* HBK. Garrapata; Ocotillo. Tree 4–6 (–9) m high. Fls white. Apr. JASM 3052, EBCh; JASM 4087, Pueblo Careyes.

*Erythroxylum rotundifolium* Lunan sens. lat. [= *E. compactum* Rose]. Shrub 1–3 m high. Fls white. Jun.–Oct. JASM 3048, Arroyo Chamela; EJL 1799, EBCh; EJL 652, Rancho El Paraíso.

**Euphorbiaceae**

*Acalypha* cf. *brachyclada* Muell. Arg. Shrub 1 m high. Fls May. EJL 3444, Cuixmala.

*Acalypha cincta* Muell. Arg. Shrub 1–2.5 m high. Fls green. Jul.–Dec. EJL 1234, Arroyo Chamela; LAPJ 1897, EBCh; EJL 3720, Cuixmala.

*Acalypha langiana* Muell. Arg. Shrub 0.5–1.5 m high. Pist fls white, stam. fls red. May–Oct. EJL 1492, EJL 1846, EBCh.

*Acalypha microphylla* Kl. Perennial herb 15–50 cm high. Styles red. Aug.–Apr. EJL 1662A, EBCh; EJL 2843, Hotel Careyes; CC 5168, Cuixmala.

*Acalypha multiflora* (Standl.) A. Radcliffe-Sm. [= *A. filipes* (S. Wats.) McVaugh]. Shrub 1–4 m high. Fls white or green. Jan.–Aug. EJL 1129, Arroyo Chamela; MGA 91-186, Arroyo Careyes; BMR 166, EJL 3648, Cuixmala.

*Acalypha ostryifolia* Ridd. Annual herb to 1 m high. Fls green. Aug. EJL 3780, Cuixmala.

*Acalypha pseudoalopecuroides* Pax & Hoff. Viscid annual herb 20–50 cm high. Fls green. Aug.–Sep, but probably flowering practically throughout the year. EJL 1216, Chamela; EJL 588, 1 km N of EBCh; JASM 3858, EBCh; ACS 8665, Cuixmala.

*Acalypha schiedeana* Schlecht. Shrub 2–3.5 m high. Fls green. Jun.–Jan. EJL 1124, EBCh; MGA 91-247, Arroyo Careyes.

*Acalypha vagans* Cav.? Shrub. Fls green. Aug. CC 5329, Cuixmala.

*Acalypha* sp. 1. Shrub. Fls green. Dec. EJL 1643, Arroyo Tapeixtes.

*Acalypha* sp. 2. Shrub. EJL 1112, EBCh (Arroyo Zarco X Camino Antiguo).

*Acalypha* sp. 3. Herb. Fls red. Oct. EJL 1415, EBCh.

*Acalypha* sp. 4. Perennial herb. Fls red. Jan. EJL 1669, EBCh (Vereda Buho m 300).

*Adelia oaxacana* (Muell. Arg.) Hemsl. Shrub 3–5 m high. Fls green. Nov.–Dec. LAPJ 552, EBCh; EJL 1611, Cerro Colorado.

*Argythamnia lottiae* J. Ingram. Slender shrub 1–2 m high. Fls green. Jun.–Feb. EJL 2183, JASM 4031, EBCh; EJL 2893, Cuixmala.

*Argythamnia manzanilloana* Rose. Subshrub to 50 cm high. Fls greenish-white. Aug.–Oct. EJL 651, EJL 1221, Rancho El Paraíso.

*Astrocasia peltata* Standl. Shrub 2–5 m high. Fls yellowish-green. Jun.–Jul. EJL 1442, EBCh; JASM 1122, Rancho El Paraíso; LAPJ 1804, Pueblo Careyes.

*Bernardia mexicana* (Hook. & Arn.) Muell. Arg. Slender shrub 2 m high. Fls? Frs Jan. EJL 2318, Rincón de Careyes.

*Bernardia spongiosa* McVaugh. Shrub or small tree 3–6 m high. Fls green. Jun.; Dec. LAPJ 685, EBCh; EJL 1639, Arroyo Tapeixtes.

*Bernardia wilburi* McVaugh. Shrub or small tree 3–5 m high. EJL 3685, Cuixmala.

*Caperonia palustris* (L.) St. Hil. Weedy, erect annual herb to 75 cm high, in damp places. Fls white. Aug.–Mar. EJL 2349, Pérula; EJL 2628, MGA 334, Arroyo Chamela; EJL 3876, EJL 4113, Cuixmala.

*Celaenodendron mexicanum* Standl. Guayabillo; Guayabillo borcelano; Palo prieto. Tree mostly 8–15 m high but occasionally to 25 m. Fls white or green. Jun.–Aug. LAPJ 1789, San Mateo; JASM 529, Las Truchas; LAPJ 373, EBCh; SHB 1563, Arroyo Tapeixtes; LAPJ 1736, Pueblo Careyes; JLM 1317, Cuixmala; JASM 1114, Los Angeles de Tenacatita.

*Chamaesyce dioica* (HBK.) Millsp. Annual herb. Aug. CC 5169, Cuixmala. This collection was earlier reported as *C. hirta* (L.) Millsp.

*Chamaesyce hirta* (L.) Millsp. Annual herb. Fls; bracts white, involucre red. Nov.–Feb. EJL 1597, Arroyo Chamela; EJL 737, JASM 521, EBCh; EJL 3233, Cuixmala.

*Chamaesyce hypericifolia* (L.) Millsp. Annual herb to 40 cm high. Gland appendages white. Aug.–Dec. EJL 1596, EJL 1842, Arroyo Chamela; LAPJ 785, EBCh; ACS 9023, Hotel Careyes.

*Chamaesyce hyssopifolia* (L.) Small. Annual herb. May–Aug. CC 5307, EJL 3614, Cuixmala.

*Chamaesyce mendezii* (Boiss.) Millsp. Perennial herb. Gland appendages white. Dec. EJL 1653, Arroyo Seco.

*Chamaesyce perlignea* (McVaugh) Webster [= *Euphorbia perlignea* McVaugh]. Slender shrub 1–1.5 m high. Bracts white. Oct.–Dec. EJL 1600, Arroyo Chamela; EJL 2667, 6.1 km E of Juan Gil, road to Nacastillo; EJL 695, EBCh.

*Chamaesyce thymifolia* (L.) Millsp. Prostrate annual herb. Sep. ACS 11172, Cuixmala.

*Chamaesyce* sp. Herb. Gland appendages white. Sep. EJL 544, EBCh.

*Cnidosculus spinosus* Lundell. Mala Mujer; Manteca de Puerco; Urtiga. Shrub or small tree 1–4 m high. Fls white. May–Jul. LAPJ 1778, EBCh; CC 5369, EJL 3491, Cuixmala.

*Cnidosculus urens* (L.) Arthur subsp. *urens*. Robust herb to 1 m high. Fls white. May–Nov. EJL 1565, SHB 1315, Arroyo Chamela.

*Croton alamosanus* Rose. Shrub 1–3 m high. Stam fls green, pist fls white. Flowering practically throughout the year. EJL 1608, SHB 1272, EBCh; MGA 91-162, MGA 91-171,

Caleta Blanca; CC 5183, Cuixmala.

*Croton chamelensis* Lott. Shrub 1–2 m high. Fls white. Jul.–Aug. LAPJ 1391, the type, EBCh; EJL 3728, Cuixmala.

*Croton* cf. *conspurcatus* Croizat. Shrub. Fls? Aug. AR 999, Cuixmala.

*Croton* cf. *culiacanensis* Croizat. Shrub. Fls? JASM 3098, EBCh.

*Croton cupulifera* McVaugh. Herb or subshrub 80 cm high. Fls white. Aug. EJL 1829, EBCh.

*Croton flavescens* Greenm. Shrub. Fls? Frs Aug. AR 998, Cuixmala.

*Croton hirtus* L'Herit. Annual herb. Fls white. May. EJL 3607, Cuixmala.

*Croton lobatus* L. Annual herb. Fls white? Sep. ACS 8660, Cuixmala.

*Croton pseudoniveus* Lundell. Tree 2–6 m high. Fls white. Jun.–Feb. JASM 917, San Mateo; LAPJ 990, EBCh; MGA 109, Arroyo Tapeixtes; ACS 11214, EJL 2862, Cuixmala.

*Croton septemnerivius* McVaugh. Vara Blanca. Tree 5–7 m high. Fls? Frs in Dec. EJL 3755, Juan Gil-Ranchitos road; EJL 1665, EBCh.

*Croton sphaerocarpus* HBK.? Shrub 2–3 m high. Fls? Frs Jul. LAPJ 1809, Cerro Pedregoso, near Chamela; LAPJ 1828, EBCh.

*Croton suberosus* HBK. Shrub to 2.5 m high. Fls yellow. Jun.–Sep. LAPJ 214, Arroyo Chamela; EJL 571, SHB 969, EBCh; CC 5189, Phillips 1163, Cuixmala.

*Croton* sp. nov. Shrub or small tree 2–5 m high. Fls white. Jul.–Aug. LAPJ 946, SHB 932, EBCh; EJL 3642, Cuixmala.

*Croton* sp. 1. Shrub. Fls white. Jul. EJL 2813, Arroyo Careyes.

*Dalechampia scandens* L. Vine. Bracts white. Fls green. Jan.; May–Nov. EJL 548, EJL 1674, MGA 927, EBCh; EJL 1553, Rancho El Paraíso; EJL 3442, Cuixmala; MGA 750, Agua Caliente.

*Enriquebeltrania crenatifolia* (Miranda) Rzed. Shrub 3–4 m high with long, arching branches. Fls green. Jun.–Jul. EJL 2805, EJL 3325, EJL

3625, Pueblo Careyes. Also sighted in Arroyo Colorado, EBCh. Sterile specimens of this plant are easily confused with *Podopterus mexicanus*. It was previously known only from the Yucatán peninsula.

*Euphorbia colletioides* Benth. Viney shrub. Gland appendages greenish-white. Nov.–Apr. EJL 872, JASM 581, EBCh; Sousa 3880, Playa Careyitos; BMR 124, Caleta Blanca.

*Euphorbia dioscoreoides* Boiss. Erect annual herb to 1 m high. Gland appendages white. Aug. EJL 1825, EBCh; EJL 3815, Cuixmala.

*Euphorbia francoana* Boiss. Annual herb. Oct. EJL 2658, 11.7 km E of Juan Gil, road to Nacastillo.

*Euphorbia graminea* Jacq. Erect annual herb to 40–50 cm high. Gland appendages white. Oct.–Nov. EJL 2662, 8.8 km E of Juan Gil, road to Nacastillo; EJL 1424, EBCh; EJL 615, EJL 2685, Arroyo Careyes; EJL 1485, Arroyo Cajones; EJL 4134, Cuixmala.

*Euphorbia heterophylla* L. Weedy annual herb to 1 m high. Infl green. Aug.–Mar. EJL 572, EBCh; EJL 2393, Arroyo Tapeixtes; CC 5263, EJL 3857, Cuixmala.

*Euphorbia humayensis* Brandegee. Delicate annual herb 10–75 cm high. Gland appendages white to green. Oct.–Dec. EJL 1603, Arroyo Chamela; EJL 1535, EJL 1618A, EBCh; EJL 4171, Cuixmala.

*Euphorbia mexiae* Standl. Perennial herb. Gland appendages white, involucre red. Oct. EJL 621, EJL 2686, Arroyo Careyes.

*Euphorbia oaxacana* Rob. & Greenm. Subshrub with arching vinelike stems 2–3 m long. Gland appendages white. Oct. EJL 1606, Arroyo Chamela; EJL 2661, 8.8 km E of Juan Gil, road to Nacastillo; EJL 1390, EBCh.

*Euphorbia peganoides* Boiss. Shrub 1–3 m high with weak, wand-like branches. Gland appendages white. Oct.–Feb. EJL 670, Playa La Virgencita; EJL 1241, EJL 1446, EJL 1588, SHB 1032, EBCh.

*Euphorbia tanquahuete* Sessé & Moc. Tree to 8 m tall. Bark gray, peeling. Infl white. Apr.–Jun. EJL 1138, EJL 1520A, EBCh; EJL 2272, Arroyo Tapeixtes; BMR 129, EJL 3542,

Cuixmala.

*Euphorbia* sp. nov. ined. McVaugh [earlier identified as *E. schlechtendalii* Boiss.]. Shrub with long vinelike branches. Gland appendages green. Aug.–Jan. SHB 1070, La Rumorosa; EJL 1592, EBCh; EJL 645, EJL 1220, Rancho El Paraíso.

*Hippomane mancinella* L. Manzanilla. Tree mostly 3–8 m high, reported to reach 15–17 m. Lvs glossy, glabrous. Infl green. Jun.–Jul. EJL 1237, Playa El Negrito; EJL 2560, Cuixmala.

*Hura polyandra* Baill. Habillo. Tree to 15 m high with straight, spiny trunk. Infls white. Jul. SHB 1120, Km. 70 of Pto. Vallarta-B. de Navidad. hwy.; sighted on Juan Gil road. This species is becoming very scarce in our area. Although poisonous compounds in the wood may cause dermatitis, the wood is sought after because it is soft and easy to work.

*Jatropha bullockii* Lott. Shrub 0.5–3 m high, branches erect to sprawling. Bark not peeling. Fls white to pink. Aug.–Sep. (Nov). JASM 4242, Playa El Negrito; EJL 1863, EBCh; EJL 1219, Rancho El Paraíso; EJL 4157, Cuixmala.

*Jatropha chamelensis* Pérez-Jiménez. Papelillo Amarillo; Piñoncillo. Tree to 10 m high. Bark yellow, papery, peeling. Fls pink. Jul.–Sep. LAPJ 534, Cerro de la Punta de la Virgen, Rancho El Milagro; LAPJ 1091, EBCh; SHB 1520, Hotel Careyes.

*Jatropha malacophylla* Standl. [= *J. plataniifolia* Standl.]. Tree to 7 m high. Bark gray, not peeling. Pist fls green, stam fls cream-colored. Jun. EJL 1107, EJL 1867, JASM 4214, EBCh; MGA 91-163, Caleta Blanca; EJL 3723, Cuixmala.

*Jatropha platyphylla* Muell. Arg. Sangre de Grado; Sangredrago. Shrub 2–5 m high. Bark not peeling, stems green-glaucous. Stam fls pink, pist fls white. May–Jul. EJL 1818, SHB 1158, Arroyo Chamela; EJL 3707, MGA 91-153, Phillips 1167, Cuixmala; MGA 748, Agua Caliente.

*Jatropha standleyi* Steyer. Papelillo. Shrub or tree 2–8 m high. Bark yellow, papery, peeling. Fls pink. Jul.–Aug. EJL 1143, EBCh; ACS 8666, CC 5203, CC 5349, Cuixmala.

*Jatropha* sp. [earlier reported as *J. mcvaughii* Dehgan & Webster]. Shrub 2–3 m high. Fls cream-colored. Jun.–Aug. EJL 2791, EJL 2792, EJL 3905, Cuixmala. Cultivated at Rancho Cuixmala, perhaps escaping.

*Jatropha* sp. Shrub 2–4 m high. Bark yellow, papery, peeling. Lvs pandurate. EJL 1717A, Quémaro; EJL 2801; Playa Careyitos; EJL 4119, Cuixmala. This appears to be a hybrid between *J. standleyi* and *J. chamelensis*.

*Manihot chlorosticta* Standl. & Goldman. Tripa de Pollo. Vine. Fls greenish-yellow. Jan; Apr.–Nov. LAPJ 1570, Las Truchas; EJL 512, EBCh; MGA 91-172, Caleta Blanca; MGA 91-113B, Arroyo Careyes; EJL 3301, Cuixmala.

*Margaritaria nobilis* L. f. Tree 5–8 m high. Fls green. Jul. EJL 1440, MGA 131, EBCh.

*Meineckia bartlettii* (Standl.) Webster [= *Phyllanthus* ?]. Shrub 1–2 m high. Fls green. Jul. EJL 3673, EJL 3706, Cuixmala.

*Ophellantha spinosa* Standl. Spiny shrub to 5 m high with many arching stems from the base. Forming clumps in thickets and understory of Tropical Semideciduous Forest. Fls green. Aug.–Jan. EJL 1435, EJL 1707, EBCh; ACS 9028, Hotel Careyes; EJL 2804, Playa Careyitos; EJL 1651, Arroyo Seco.

*Pedilanthus calcaratus* Schlecht. Shrub 2 m high. Infls red. Dec.–Apr. EJL 2137, 5 mi E of Juan Pérez, road to Nacastillo; JASM 3995, EBCh; EJL 1630, Cerro Colorado; EJL 2421, Arroyo Tapeixtes.

*Phyllanthus amarus* Schum. Annual herb 15–30 cm high. Fls green. Jan.–May. ACS 10501, EJL 3181, EJL 3375, EJL 3565, Cuixmala.

*Phyllanthus botryanthus* Muell. Arg. Shrub 2–4 m high. Fls green. Jul.–Sep. MGA 837, EBCh; CC 5320, CC 5404, EJL 3705, Cuixmala.

*Phyllanthus elsiae* Urb. Shrub or tree to 12 m high. Stam fls green, pist fls reddish. May–Feb. EJL 1056, Playa El Negrito; EJL 2561, EJL 3472, Cuixmala.

*Phyllanthus gypsicola* McVaugh. Subshrub 50 cm high. Fls? Frs in Aug. EJL 1823, EBCh. This is a rare species in our area.

*Phyllanthus mickelii* McVaugh. Shrub or small tree 2–4 m high. Fls greenish or white with red streaks. Jul.–Aug. LAPJ 1760, EBCh; EJL 2592, Arroyo Tapeixtes; EJL 2815, Arroyo Careyes; EJL 3820, Cuixmala.

*Phyllanthus micromalus* McVaugh. Shrub 1 m high. Fls white with red streaks. Sep. EJL 2607, Río San Nicolás.

*Phyllanthus mocinianus* Baill. Shrub or small tree 1–4 m high. Fls pale yellow-green or white. Jul.–Oct. LAPJ 691, MGA 837, EBCh; MGA 162, Arroyo Tapeixtes; EJL 3671, Cuixmala.

*Phyllanthus* sp. *grandfolius* complex. Tree 3 m high. Frs in Nov. EJL 1564, Arroyo Chamela.

*Phyllanthus* sp. Tree 10 m. Sterile in Sep. EJL 1873, EBCh (road to Cuencas 4 and 5, just before final dip into arroyo). Known only from this collection.

*Phyllanthus* sp. Herb. Fls greenish-cream. Sep. EJL 2629, Arroyo Chamela.

*Phyllanthus* sp. nov. ined. McVaugh. Annual herb 20 cm high. Fls greenish-white. Aug. EJL 3793, Cuixmala.

*Ricinus communis* L. Shrub 1–3 m high. Fls green, stigmas red. Oct.–Jan. EJL 2632, Arroyo Chamela; EJL 3195, Cuixmala.

*Sapium pedicellatum* Huber. Mataisa. Tree 3–8 m high. Infls green. May–Jul. EJL 1840, Arroyo Chamela; EJL 524, LAPJ 1831, EBCh; MGA 144, Arroyo Tapeixtes; EJL 3643, JLM 1346, Cuixmala.

*Savia sessiliflora* (Sw.) Willd. Tree 3–10 m high. Fls green. Jul.–Dec. LAPJ 380, near Río San Nicolás; EJL 1778, EBCh; EJL 1616, Cerro Colorado; EJL 2593, EJL 2597, Arroyo Tapeixtes; JASM 280, Rancho El Paraíso; LAPJ 1805, Pueblo Careyes; EJL 3279, Cuixmala.

*Sebastiania* cf. *hintonii* Lundell. Tree 5–10 m high. Fls green. Jul. JASM 4407, Arroyo Chamela; EJL 1766, JASM 4383, EBCh.

*Sebastiania pavoniana* (Muell. Arg.) Muell. Arg. Shrub or tree 3–5 m high. Infls green. Jan; Jul.–Aug. LAPJ 163, Chamela; EJL 2818, Arroyo Chamela; EJL 2327, Playa La Virgen-cita; MGA 91-209, Costa Careyes; CC 5220,

EJL 3850, Cuixmala.

*Tragia pacifica* McVaugh? Vine. Fls green. Sep. EJL 538, EBCh.

*Tragia volubilis* L. Vine. Fls green. Jul.–Sep. EJL 514, EBCh; EJL 3654, Cuixmala.

#### Flacourtiaceae

*Casearia arguta* HBK. Shrub to 4 m high. Fls green. Dec. Frs Jan.–Apr. JASM 894, Arroyo Las Hilamas, Nacastillo; BMR 160, Cuixmala. This species is found only in disturbed areas and is uncommon in our area.

*Casearia corymbosa* HBK. Cuatalaca; Ciruelillo; Juanita. Shrub 1–6 m high. Fls white. Feb.–Jul. EJL 1214, Chamela; LAPJ 1016, EBCh; MGA 108, Arroyo Tapeixtes; BMR 148, EJL 3359, MGA 91-230, Cuixmala.

*Casearia obovata* Schlecht. [= *C. aculeata* Jacq.]. Shrub 2–5 m high. Fls greenish-yellow. Jul. EJL 1137, Arroyo Chamela; JASM 4211, JASM 4385, EBCh.

*Casearia sylvestris* Sw. var. *sylvestris*. Tree 8–10 m high. Fls cream-colored or green. Dec.–Jan. EJL 1634, Arroyo Tapeixtes; ACS 10620, EJL 3223, Cuixmala.

*Casearia tremula* (Griseb.) Wright. Ocotillo (CC). Tree 3–8 m high. Fls white. Feb.–Jul. LAPJ 1734, SHB 1424, EBCh; ACS 8688, Cuixmala.

*Prockia crucis* P. Browne ex L. Canalillo (CC). Shrub or small tree 1–5 m high. Fls yellow. Jun.–Aug. EJL 1745, JASM 775, SHB 1609, EBCh; CC 5285, Cuixmala.

*Samyda mexicana* Rose. Shrub or small tree 2–5 m high. Fls white. (Feb.–)May–Aug. SHB 903, EBCh; JASM 1074, Club Med; MGA 91-176, Caleta Blanca; CC 5321, EJL 3833, Cuixmala.

*Xylosma intermedium* (Seem.) Triana & Planch. Shrub 2–7 m high. Fls cream-colored. Dec. EJL 1602, Arroyo Chamela; MGA 91-176, Caleta Blanca; EJL 3303, Cuixmala.

*Xylosma velutinum* (Tulasne) Triana & Planch. Crucecilla. Shrub or small tree 4 m high. Sterile in Jun. LAPJ 1156, EBCh.

**Hernandiaceae**

*Gyrocarpus jatrohifolius* Domin [earlier reported as *G. americanus* Jacq.]. Hediondillo. Shrub or small tree 2.5–7 m high. Fls green. Jun.–Nov. EJL 718, SHB 1019, EBCh; MGA 91-133, Cuixmala.

**Hippocrateaceae**

*Hemiangium excelsum* (HBK.) A. C. Sm. Shrub or vine. Fls green. Apr.–May. MGA 240, Arroyo Chamela; JASM 3585, EBCh; BMR 131, EYL 3160, EYL 3286, EYL 3290, Cuixmala.

*Hippocratea volubilis* L. Vine. Fls green. Mar.–Jul. JASM 374, JASM 4182, EBCh; ACS 10619, Cuixmala.

*Pristimera celastroides* (HBK.) A. C. Sm. Vine. Fls green. Mar.–Jun. SHB 1888, Arroyo Chamela; JASM 4034, EBCh; EYL 2345, EYL 3225, Cuixmala.

**Hydrophyllaceae**

*Hydrolea spinosa* L. Subshrub 0.5–1.5 m high. Fls blue. Oct.–Mar. MGA 446, Arroyo Chamela; MGA 507, Playa Careyitos; ACS 10554, EYL 3099, Cuixmala.

*Wigandia urens* (Ruiz & Pav.) HBK. var. *urens* [= *W. kunthii* Choisy?]. Shrub 1–2 m high. Fls blue. Feb. MGA 642, Arroyo Chamela; EYL 3198, Cuixmala.

**Julianaceae**

*Amphipterygium adstringens* (Schlecht.) Schiede. Cuachalalate. Tree 3–10 m high. Pist fls green; stam fls brownish-yellow. Jun.–Aug. SHB 1170, SHB 1604, EBCh; MGA 91-173, Caleta Blanca; EYL 3854, Cuixmala.

**Krameriaceae**

*Krameria cuspidata* Presl. Shrub 50–80 cm high. Fls pink-purple. Aug.–Mar. EYL 900, EYL 1676, LAPJ 1018, EBCh; EYL 601, Rancho Arroyo Zarco.

**Labiatae**

*Asterohyptis mocianiana* (Briq.) Epling. Perennial herb. R. Ayala 290, Chamela area. I am unsure of this record, which was reported to me by S. Bullock. The specimen was determined by T. P. Ramamoorthy.

*Hyptis albida* HBK. Shrub to 2 m. Fls violet. June. MGA 91-134, Cuixmala.

*Hyptis capitata* Jacq. Erect perennial herb. Fls white. May. EYL 3381, Cuixmala.

*Hyptis mutabilis* (Rich.) Briq.? Annual or perennial herb 20–50 cm high. Fls lavender. Jan. EYL 3192, Cuixmala.

*Hyptis pectinata* (L.) Poit. Annual herb. Fls lavender. Jan.–Feb. EYL 1668, EYL 1704, JASM 3975, EBCh.

*Hyptis suaveolens* (L.) Poit. Annual herb to 1 m high. Fls blue or lavender. Sep.–Nov. EYL 743, EYL 1505, SHB 1014, EBCh; ACS 11194, EYL 3940, Cuixmala.

*Hyptis urticoides* Benth. Annual herb. MGA 977, Arroyo Careyes.

*Ocimum micranthum* Willd. Herb 30 cm high. Fls purple. Sep. EYL 2617, Quémaro.

*Salvia amarissima* Ort. Perennial herb. Fls blue. May. EYL 3404, Cuixmala.

*Salvia languidula* Epling. Perennial herb. Fls blue-purple. Aug. R. Ayala 153, Chamela area; Acevedo 955, Cuixmala.

*Salvia occidentalis* Sw. Perennial herb. Fls purple, tube white. Jan. EYL 3183, Cuixmala.

*Salvia uruapana* Fern. ? Herb. LAPJ 1763, Chamela area.

*Scutellaria* sp. Annual herb 15–20 cm high. Fls white. Oct. EYL 2852, Cuixmala.

*Stachys coccinea* Jacq. Herb. LAPJ 799, EBCh. This is the only record of this species known from our area.

**Lauraceae**

*Licaria nayaritensis* (Lundell) Lundell. Shrub 2–6 m high. Fls cream-colored. Jul.–Aug. JASM 2884, Chamela; EYL 1771, EBCh.

*Licaria triandra* (Sw.) Kostermans. Tree 5 m high. Frs green. Jun. MGA 91-108, Arroyo Careyes.

*Nectandra martinicensis* Mez. Tree 4 m high. Fls white. Nov. EYL 4104, Cuixmala.

**Leguminosae**

*Acacia acatlensis* Benth. Unarmed tree 12 m

high. Fls white. May. EJL 3502, Cuixmala.

*Acacia angustissima* (Mill.) Ktze. Timbe; Timbre. Shrub 1–3 m high. Fls white. Sep.–Oct. JASM 2045, SHB 1673, EBCh; MGA 966, Pueblo Careyes; ACS 8656, Cuixmala.

*Acacia cochliacantha* Humb. & Bonpl. ex Willd. Huizache blanco; Huizache concho; Huinole. Shrub or tree 3 m high. Fls yellow. Aug.–Sep. JASM 2696, EBCh; ACS 8655, Cuixmala.

*Acacia farnesiana* (L.) Willd. Huizache. Shrub or tree 1–4 m high. Fls yellow. Dec.–Mar. SHB 1050, EBCh; MGA 91-26, Arroyo Careyes; ACS 10555, EJL 3302, Cuixmala.

*Acacia glomerosa* Benth. Tree 5–12 m high. Fls cream-white. Oct.–Nov. EJL 2887, EJL 3136, EJL 3492, EJL 4087, Cuixmala.

*Acacia hindsii* Benth. Perretadera; Huizcolote. Tree 4–6 m high. Fls yellow. Apr.–Jul. SHB 1327, JASM 4346, Arroyo Chamela; BMR 156, EJL 3334, Cuixmala.

*Acacia macracantha* Humb. & Bonpl. ex Willd. Shrub or tree 8–10 m high. Fls yellow. Apr.–May. BMR 153, EJL 3512, Cuixmala.

*Acacia pennatula* (Schlecht. & Cham.) Benth. Tepame (McVaugh). Tree 3–6 m high. Fls yellow. Oct. JASM 1150, EJL 662, EBCh; EJL 3732, Cuixmala.

*Acacia rosei* Standl. Shrub 1–3 m high. Fls white. Sep.–Mar. JASM 2024, JASM 4109, EBCh; ACS 11227, EJL 4152, EJL 4154, Cuixmala.

*Acacia* sp. nov. ined. L. Rico. Shrub 1.5 m high. Fls white. Feb. JASM 3984, JASM 3987, EBCh.

*Acaciella ortegae* Britt. & Rose. Shrub 2.5 m high. Fls white. Sep.–Oct. EJL 526, JASM 3915, EBCh.

*Aeschynomene americana* L. var. *americana*. Coarse annual herb 0.5–1.5 m high. Fls cream with purple. Oct.–May. JASM 862, EBCh; EJL 2880, EJL 3384, Cuixmala.

*Aeschynomene amorphoides* (S. Wats.) Rose ex B. L. Rob. Shrub to small tree 3 m high. Fls pink to purple-red. Sep.–Nov. JASM 466, McVaugh 25168, SHB 1011, EBCh; EJL 4161,

Cuixmala.

*Aeschynomene villosa* Poir. Perennial herb. Fls yellow. May. EJL 3384, Cuixmala.

*Albizia occidentalis* Brandegee. Shrub 2 m high or tree 5–15 m high. Fls white. Apr.–Jun. SHB 1876, Arroyo Chamela; EJL 1989, EBCh; MGA 91-99, Playa Careyes; MGA 710, MGA 91-113, Arroyo Careyes; EJL 3164, EJL 3480, EJL 3508, EJL 4086, Cuixmala.

*Albizia tomentosa* (Micheli) Standl. Tree 3–4 m high. Fls white. Jul. JASM 405, JASM 1059, EBCh; sighted at Cuixmala.

*Andira inermis* (W. Wright) HBK. ex DC. Tree 10–20 m high. Fls dark blue. Apr.–Jun. JASM 4404, SHB 1129, SHB 1313, Arroyo Chamela; MGA 91-80B, Cuixmala.

*Apoplanesia paniculata* Presl. Ocotillo. Tree 3–4 m high. Fls white. Sep.–Oct. JASM 299, JASM 2697, SHB 1003, SHB 1662, EBCh. SHB notes on his 1003: “All trees of the region flowered completely last night (30.9.81).”

*Bauhinia divaricata* L. Shrub 2–10 m high. Fls green to white. Oct.–Feb. JASM 2644, Juan Gil; EJL 699, JASM 797, JASM 4156, EBCh; MGA 970, Arroyo Careyes; EJL 3089, EJL 3326, Cuixmala.

*Bauhinia pauletia* Pers. Shrub 1–2.5 m high. Fls green. Oct.–Jan. LAPJ 304, SHB 1475, EBCh; MGA 969, Arroyo Careyes; MGA 969, Arroyo Careyes; EJL 3095, EJL 3255, EJL 3941, Cuixmala.

*Bauhinia subrotundifolia* (Cav.) HBK. Shrub 2–3 m high. Fls white to pink, calyx pink. Mar.–May. EJL 1000, JASM 573, JASM 4174, Arroyo Chamela.

*Bauhinia unguolata* L. Pata de Venado. Shrub 1–3 m high. Fls greenish-white, fading to red. May–Dec. LAPJ 302, SHB 1048, EBCh; EJL 3530, EJL 4028, EJL 4158, Cuixmala.

*Brongniartia pacifica* McVaugh. Shrub 0.7–1.5 m high. Fls brick-red. Oct.–Nov. EJL 2681, Arroyo Careyes; EJL 4147, Cuixmala.

*Brongniartia* sp. nov. ined. O. Dorado. Pape-lillo. Shrub or small tree 1–3 m high. Fls royal blue. Jan. EJL 3165, JASM 3845, EBCh; EJL 3247, EJL 3258, EJL 3533, Cuixmala.



*Caesalpinia bonduc* (L.) Roxb. [= *C. crista* of authors]. Ojo de Venado. Spiny-leaved shrub 1 m high. Fls yellow. Aug.–Jan. JASM 509, MGA 964, Pérula; JASM 1893, Tenacatita.

*Caesalpinia cacalaco* Humb. & Bonpl. Cascalote. Shrub 1–3 m high. Fls yellow. Oct.–May. JASM 749, EBCh. Cited in McVaugh (1987:24).

*Caesalpinia caladenia* Standl. Palofierro Cimarrón. Shrub 1.5–2 m high. Fls yellow. Dec.–May. SHB 1487, Isla Cocinas; SHB 915, EBCh; ?ACS 9029, Hotel Careyes; Ejl 3205, Ejl 3253, Ejl 3297, Cuixmala.

*Caesalpinia coriaria* (Jacq.) Willd. Cascalote. Tree 3–10 m high. Fls cream or greenish white. Aug.–Oct. BMR 98, Quémario; JASM 1134, MGA 857, MGA 889, SHB 1257, EBCh; CC 5277, Cuixmala.

*Caesalpinia eriostachys* Benth. Iguanero. Tree 5–10 m high. Fls golden yellow. Dec.–Mar. SHB 1307, EBCh; Ejl 3447, Cuixmala.

*Caesalpinia platyloba* S. Wats. Corál. Shrub or small tree to 6 m high. Fls yellow. Mar.–Aug. Ejl 3636, Quémario; Ejl 1135, EBCh; MGA 91-192, Arroyo Careyes; Ejl 3851, Ejl 3895, Cuixmala.

*Caesalpinia pulcherrima* (L.) Sw. Tabachín. Shrub or small tree to 5 m high. Fls yellow-orange and red-orange. (Jun.–)Aug.–Oct. SHB 1252, EBCh; BMR 366, CC 5341, Cuixmala.

*Caesalpinia sclerocarpa* Standl. Ebano. Tree 4–7 m high. Fls yellow. May–Sep. JASM 2660, La Fortuna; JASM 1141, MGA 888, EBCh; Ejl 3616, Ejl 3846, MGA 888, Cuixmala.

*Calliandra emarginata* (Willd.) Benth. Shrub 1–3 m high. Fls red. May. Ejl 1686, EBCh; Ejl 3524, Ejl 4143, Cuixmala.

*Calliandra formosa* (Kunth) Benth. [= *Calliandra rosei* Wiggins, *Zapoteca formosa* (Willd.) H. Hern. subsp. *rosei*]. Aretillo. Shrub or small tree 4 m high. Fls pink. Jul.–Sep. Ejl 1807, JASM 277, JASM 332, JASM 1166, EBCh; ACS 8654, Ejl 3750, Ejl 4012, Cuixmala.

*Calopogonium caeruleum* (Benth.) Hemsl. Vine. Fls blue. Jan.–Feb. Ejl 3170, Cuixmala; JASM 962, “road to Barra de Navidad.”

*Calopogonium mucunoides* Desv. Vine. Fls blue. Jan. Ejl 3121, Cuixmala.

*Canavalia acuminata* Rose. Vine. Fls purple-brown. Nov.–Jan. Ejl 2173, JASM 607, EBCh.

*Canavalia maritima* (Aubl.) Thouars. Vine. Fls lavender. Flowering throughout the year. JASM 2661, between La Fortuna and Quémario; MGA 92-212, Playa Careyes.

*Cassia hintonii* Sandw. Shrub or tree 2–3 m high. Fls yellow. Mar.–Jun. LAPJ 1132, EBCh?; JASM 1577, between Juan Gil and Nacastillo.

*Centrosema plumieri* (Pers.) Benth. Vine. Fls white with lavender. Nov.–Mar. JASM 595, JASM 908, EBCh; Ejl 3173, Cuixmala.

*Centrosema sagittatum* (Willd.) Brandeg. ex Riley. Vine. Fls white with purple. Dec.–Mar. JASM 583, JASM 2860, EBCh; Ejl 3096, Cuixmala.

*Centrosema virginianum* (L.) Benth. Herbaceous vine from perennial rootstock. Fls purple. Sep.–Dec. JASM 834, JASM 1915, Ejl 577, EBCh; ACS 11236, Cuixmala.

*Chamaecrista absus* (L.) I. & B. Annual herb 20 cm high. Fls yellow. Nov. Ejl 4017, Cuixmala.

*Chamaecrista chamaecristoides* (Colladon) Greene var. *chamaecristoides*. Perennial herb or subshrub forming large mats up to 1 m in diam. Fls yellowish. Sep.–Jan. Iltis & Nee 1577, W of Chamela, cited in McVaugh (1987:45).

*Chamaecrista nictitans* Moench var. *jaliscensis* (Greenm.) I. & B. Annual herb 50 cm high. Fls yellow. Oct.–Nov. Ejl 3933, Cuixmala.

*Chamaecrista rotundifolia* (Pers.) Greene var. *rotundifolia*. Annual herb. Fls pale yellow. Jan. Ejl 3079, Cuixmala.

*Chloroleucon mangense* (Jacq.) Britton & Rose var. *leucospermum* (Brandege) Barneby & Grimes [= *Pithecellobium mangense* (Jacq.) MacBride; *P. leucospermum* T. Brandeg.]. Guayabillo Negro. Shrub or tree 4–6 m high. Fls greenish-white. Apr.–Sep. McVaugh 25161, along Río de Chamela 7–8 km E of Chamela; McVaugh 25218, hills 9–11 km E of Chamela; MGA 996, LAPJ 1160, SHB 930, SHB 1347,

SHB 1562, EBCh; MGA 91-175, Caleta Blanca; MGA 91-195, Arroyo Careyes; EJL 4105, Cuixmala.

*Clitoria ternatea* L. Vine. Fls royal blue with white. Sep.–Nov. JASM 2650, 9 km E of Juan Gil, Rancho San Borja; EJL 587, EBCh. Escaped and naturalized.

*Conzattia multiflora* (B.L. Rob.) Standl. [= *C. sericea* Standl.]. Tree 4–8 m high. Fls yellow. Jun. EJL 2287, Ejido La Fortuna; JASM 2271, Chamela area.

*Coursetia caribaea* (Jacq.) Lavin var. *caribaea* [= *Cracca mollis* (HBK.) Benth.; *C. caribaea* (Jacq.) Benth.]. Shrub 1–2 m high. Fls white or pink with red veins. Flowering almost throughout the year. Delgado 74, EBCh; MGA 91-179, Arroyo Careyes; EJL 3228, EJL 3880, Cuixmala.

*Coursetia glandulosa* A. Gray [= *Coursetia seleri* Harms]. Shrub or tree 2–3 m high. Fls white. Dec.–Apr. Frs Mar.–Jun. JASM 1700, Quémaro; JASM 986, Chamela area.

*Crotalaria cajanifolia* HBK. Perennial herb 1–1.5 m high. Fls yellow. Dec.–May. SHB 1051, Chamela; JASM 1168, EBCh; EJL 3608, Cuixmala.

*Crotalaria incana* L. var. *incana*. Herb 0.4–1.5 m high. Annual or of indefinite duration, at times woody at base. Fls yellow. Aug.–Jan. JASM 400, EBCh; EJL 3800, Cuixmala.

*Crotalaria pumila* Ortega. Annual herb to 50 cm high. Fls: wings orange or red, keel yellow. Aug.–Mar. Delgado 478, JASM 493, EBCh; ACS 10592, EJL 3796, EJL 3853, EJL 3884, Cuixmala.

*Cynometra oaxacana* Brandege. Tree 5–20 m high. Fls white. Flowering throughout the year. JASM 591, JASM 3120, EBCh; MGA 91-105, Playa Careyes; MGA 111, Arroyo Tapeixtes; AR 994, Cuixmala.

*Dalbergia congestiflora* Pitt. Rosewood; Sangualique; Tampiserán. Tree 4–10 m high. Fls white. Sep.–Mar. EJL 1856, JASM 3402, JASM 3974, EBCh; sighted at Cuixmala. This species has been extensively cut in the Cumbres section of Cuixmala.

*Dalea carthagenensis* (Jacq.) MacBride. Herb

or subshrub 0.5–1.5 m high. Fls yellow and purple. Dec.–Mar. JASM 2867, Chamela; JASM 897, EBCh.

*Dalea cliffortiana* Willd. Annual herb 15–50 cm high. Fls blue-violet. Sep.–Nov; May, probably flowering throughout the year. EJL 2603, Río San Nicolás; MGA 1051, Laguna La Virgen; JASM 801, Chamela; BMR 54, EJL 3576, Cuixmala.

*Desmanthus bicornutus* S. Wats. [including *D. rostratus* B. L. Turner]. Herb or subshrub 1 m high. Fls white and some yellow. Aug.–Nov. JASM 829, JASM 1147, Playa El Negrito; ACS 8671, EJL 3966, Cuixmala.

*Desmanthus virgatus* (L.) Willd. Perennial herb to subshrub. Fls white. Sep.–Oct. MGA 920, Quémaro; JASM 1147, Playa El Negrito; MGA 1052, Laguna La Virgen; JASM 829, EBCh; MGA 935, Pueblo Careyes.

*Desmodium incanum* DC. Perennial herb. Fls lavender. May. EJL 3578, Cuixmala.

*Desmodium procumbens* (Mill.) Hitchc. Annual herb. Fls? Oct.–Nov. JASM 269, SHB 1836, EBCh; McVaugh 26264, 10 km SE of Chamela; EJL 3601, Cuixmala.

*Desmodium scorpiurus* (Sw.) Desv. Perennial herb. Fls white to purplish. Nov.–May. JASM 302, JASM 530, EBCh; ACS 9021, Hotel Careyes; EJL 3085, EJL 3230, EJL 3577, EJL 3618, Cuixmala.

*Desmodium tortuosum* (Sw.) DC. Perennial herb to 1.5 m high. Fls pale yellow to bluish. Oct.–Nov. JASM 274, SHB 1255, EBCh; EJL 3913, Cuixmala.

*Diphysa occidentalis* Rose. Shrub or small tree 1–5 m high. Fls yellow. Oct.–Feb; Jun.–Jul. JASM 261, JASM 322, EBCh; MGA 91-170, Caleta Blanca; EJL 2798, Pueblo Careyes; CC 5205, CC 5372, EJL 3842, Cuixmala.

*Diphysa puberulenta* Rydb. Palo Zorrillo. Shrub. Fls bright yellow. Dec.–Apr.? JASM 941, Chamela (cultivated?). Poorly known in our area, this species is commonly collected in other parts of Nueva Galicia.

*Diphysa thurberi* (A. Gray) Rydb. Shrub 0.5–1 m high. Fls yellow. Sep.–Dec. Delgado 339, JASM 291, JASM 1165, SHB 1285, EBCh.

*Entada polystachia* (L.) DC. [= *Adenopodia polystachya* (L.) Dixon; *Entadopsis polystachya* (L.) Britt.]. Bejuco de Agua. Vine. Fls white. Jul.–Sep. JASM 1115, Careyes; SHB 942, EBCh; BMR 67, Cuixmala; ACS 9010, El Tecuán.

*Enterolobium cyclocarpum* (Jacq.) Griseb. Parota; Guanacaste. Large tree 10–20 m high or more, the canopy spreading. Fls white. Apr.–May. JASM 4361, Río San Nicolás; EJL 990, SHB 1131, Arroyo Chamela; EJL 3214, EJL 3433, Cuixmala.

*Erythrina lanata* Rose var. *occidentalis* (Standl.) Krukoff & Barneby. Colorín. Shrub or tree 1–10 m high. Fls pink, calyx gray. Dec.–Apr. JASM 3962, EBCh; EJL 972, Arroyo Chamela; EJL 3285, Cuixmala.

*Galactia acapulcensis* Rose. Vine. Fls pink. Aug.–Jan. JASM 516, MGA 930, EBCh; EJL 3830, Cuixmala.

*Galactia striata* Jacq. Vine. Fls pink. Jun.–Sep. JASM 1698, Río San Nicolás; EJL 1715, Quémaro; EJL 504, EBCh.

*Gliricidia sepium* (Jacq.) Kunth ex Steudel. Teahuananche. Shrub or tree mostly 2–6 m high. Fls pink with yellow throat. Nov.–Jun. JASM 270, Chamela; BMR 78, Quémaro; SHB 1055, EBCh; EJL 3322, EJL 3910, Cuixmala.

*Haematoxylum brasiletto* Karst. Palo Brasil; Brasil; Logwood. Tree 3–8 m high. Fls yellow. Dec.–Apr. SHB 1288, EBCh; EJL 4133, Cuixmala.

*Indigofera constricta* Rydb. [= *Indigofera langlassei* Rydb.]. Shrub 1.5 m high. Fls pink to pale red. Sep.–Dec. JASM 2009, Salinas Chamela; JASM 389, Chamela area; SHB 1798, EBCh.

*Indigofera* ? *miniata* Ort. Perennial herb 30 cm high. Fls salmon [“mamey”]. Jun. MGA 91-123B, Arroyo Chamela.

*Indigofera palmeri* Rose. Shrub or small tree 0.5–3 m high. Fls brick-red. May–Nov. JASM 494, JASM 2009, EBCh; EJL 3340, EJL 3848, Cuixmala.

*Indigofera sabulicola* Benth. Perennial herb 1–1.5 m high. Fls pink. Dec. McVaugh 25308, ca 20 km SE of Tomathán. Cited in McVaugh

1987:547.

*Indigofera suffruticosa* Mill. Añil. Shrub. Fls orange or salmon-red. Flowering throughout the year. Iltis & Nee 1571, “Pacific beach ca 5 km W of Chamela”; not seen, cited in McVaugh (1987: 549); JASM 799, Chamela area.

*Inga eriocarpa* Benth. [earlier reported as *I. vera* Willd. subsp. *spuria* (Willd.) J. León]. Shrub 8 m high. Fls white. Mar.–May. SHB 1582, coastal flatland behind Playa Teopa, 0.5 km from Hwy. 200; ACS 10585, EJL 3352, Cuixmala.

*Lennea brunescens* Standl. Shrub or tree 2 m high. Fls greenish-yellow. Sep. JASM 1885, road to Arroyo Seco, near Cuixmala. This is the only collection of this species known from our area.

*Leucaena lanceolata* S. Wats. Tree 2–7 m high. Fls white. Sep.–Oct. EJL 576, JASM 1991, JASM 3142, EBCh; EJL 3453?, EJL 4023, EJL 4141, EJL 4181, Cuixmala.

*Lonchocarpus caudatus* Pitt. Shrub or tree reported to reach 25 m high. Fls lilac. Sep.–Nov. JASM 3161, 3920, Rancho El Paraíso; JASM 2670, turnoff to Arroyo Seco, 40 km from (NW of) Barra de Navidad, near Cuixmala. This is a rare plant, and should be sought elsewhere in our area, on rocky beaches and slopes, and in Tropical Deciduous Forest, from sea level to 1600 m.

*Lonchocarpus cochleatus* Pitt. Bajarique. Tree 2–6 m high. Fls Jun. JASM 706, JASM 720, JASM 1118, LAPJ 1781, vicinity of Chamela or EBCh; JASM 4075, SHB 1400, EBCh.

*Lonchocarpus constrictus* Pitt. Garrapato. Tree 2–6 m high. Fls lavender or purple. Feb; Jul.–Aug. JASM 3038, JASM 3990, EBCh; JASM 4155, Careyes.

*Lonchocarpus eriocarinalis* Micheli. Palo de Arco; Vara blanca. Tree 2–12 m high. Fls wine-red. Aug.–Sep. JASM 761, SHB 995, EBCh; ACS 8689, EJL 3281, EJL 4178, Cuixmala; JASM 1889, Tenacatita.

*Lonchocarpus guatemalensis* Benth. Jediondillo. Tree 3–5 m high. Fls pink to lavender.

Apr.–May. SHB 1106, SHB 1321, Arroyo Chamela; JASM 623, JASM 1004, JASM 1575; EBCh; sighted at Cuixmala.

*Lonchocarpus hintonii* Sandw. Garrapato. Shrub or tree. Fls violet to purple. May–Jun. JASM 1585, MGA 85, Arroyo Maderas, EBCh.

*Lonchocarpus lanceolatus* Benth. Vara Blanca. Shrub or small tree 1–5 m high. Fls purple. Jul.–Oct. EJL 505, JASM 2685, JASM 3804, SHB 1224, EBCh.

*Lonchocarpus longipedicellatus* Pitt. Cuero de Indio. Tree 8 m high. Fls? Frs Aug. AR 963, Cuixmala. This is apparently a new record for the Flora Novo-galiciana region.

*Lonchocarpus magallanesii* Sousa. Frijolillo. Shrub or tree up to 7 m high. Fls purple. Jun.–Sep. JASM 1572, EBCh, the type.

*Lonchocarpus minor* Sousa. Garrapata. Tree 2–3 m high. Fls lavender, lilac or purple. Aug.–Sep. EJL 1718, Quémario; JASM 1890, Tena-catita, the type; JASM 2027, Rancho El Paraíso; CC 5305, CC 5414, Cuixmala; Barajas 40, Arroyo Seco.

*Lonchocarpus mutans* Sousa. Cabo de Hacha; Cuero de Indio. Shrub or tree to 6 m high. Fls purple. Jun.–Jul. Sousa 3887, EBCh, the type; SHB 1399, EBCh; JLM 1345, Cuixmala.

*Lonchocarpus sinaloensis* (Gentry) F. J. Hermann. Shrub or small tree 5 m high. Fls lavender-pink. Feb.–Mar. JASM 1580, Ejido Sta. Cruz de los Otates, road to Juan Gil-Nacastillo.

*Lysiloma microphyllum* Benth. [= *L. divaricatum* (Jacq.) Macbr.]. Tepemezquite. Shrub or tree 2–20 m high. Fls white. Jul.–Aug. LAPJ 293, MGA 81, EBCh; EJL 4013, EJL 4150, Cuixmala.

*Machaerium salvadorensis* (Donn. Sm.) Rudd. Shrub or vine. Fls pale purple. Nov.–Jun. R. Ayala 308, Chamela area.

*Macroptilium atropurpureum* (DC.) Urb. Vine. Fls red or wine-purple. Oct.–Nov. JASM 1213, N of Ranchitos, road to Nacastillo; JASM 2035, EBCh; MGA 975, Arroyo Careyes; BMR 56, Cuixmala.

*Mimosa acantholoba* (Willd.) Poir. Colmillo de Puerco. Shrub to tree 4–8 m high. Fls white.

Jul.–Aug. BMR 322, CC 5229, EJL 3752, Cuixmala.

*Mimosa affinis* B.L. Rob. Annual herb 10–30 cm high. Fls pink. May. EJL 3399, Cuixmala.

*Mimosa albida* H. & B. ex Willd. var. *glabrior* Rob. Decumbent shrub 1 m high. Fls pink. Apr.–Sep. JASM 4169, EBCh; MGA 1143, Rancho El Paraíso; EJL 3824A, Cuixmala.

*Mimosa arenosa* (Willd.) Poir. var. *leiocarpa* (DC.) Barneby. Espino; Tepemesquite. Shrub or tree 2–6 m high. Fls white. (Apr.–?) Aug.–Sep. JASM 2863, Chamela; EJL 554, EBCh; MGA 91-249, Arroyo Careyes; BMR 380, CC 5327, Cuixmala.

*Mimosa caerulea* Rose [= *M. micheliana* Robins.]. Shrub 2.5 m high. Fls? Frs Nov. JASM 2047, JASM 3148, EBCh.

*Mimosa camporum* Benth. Shrub 30–50 cm high. Fls pink. Oct. JASM 1987, EBCh.

*Mimosa distachya* Cav. var. *chamelae* Barneby [= *M. brandegei* Robins.]. Shrub or tree 3–5 m high. Fls: Calyx pink, corolla and stamens white. Jun.–Dec. EJL 3975, Quémario; SHB 1052, near Playa El Negrito; JASM 2002, EBCh.

*Mimosa ervendbergii* A. Gray. Shrub. Fls? JASM 1140, Pueblo Careyes. This species is not mentioned in McVaugh (1987).

*Mimosa leptocarpa* Rose. Decumbent shrub or vine. Fls white. Sep. JASM 1140, JASM 1392, JASM 2894, SHB 1232, EBCh; ACS 11208, Cuixmala. This is a rare plant, poorly known, and little collected until recently. See McVaugh (1987:213).

*Mimosa pellita* H. & B. ex Willd. [earlier reported as *M. pigra* L.]. Shrub 2 m high. Fls pink. Oct.–Apr. MGA 897, Río San Nicolás; JASM 931, Arroyo Chamela; ACS 10511, BMR 171, EJL 3473, EJL 3863, Cuixmala; ACS 9009, El Tecuán.

*Mimosa quadrivalvis* L. var. *diffusa* (Rose) Beard [= *Schrankia diffusa* Rose]. Weak, spiny shrub with vinelike branches. Fls pink. Nov.–Jan. JASM 920, EBCh; EJL 3456, EJL 3964, EJL 4009, Cuixmala.

*Mimosa sicyocarpa* Robins. Vinelike shrub

1.5–2 m high. Fls lavender. Oct.–Nov. Cervantes 67, JASM 2026, SHB 1265, EBCh; JASM 882, JASM 883, Rancho El Paraíso.

*Mucuna sloanei* Fawc. & Rendle. Vine. Fls greenish-yellow. Jul.–Mar.? Frs Jul.–Aug.; Feb. EJL 2796, MGA 91-4, Cuixmala.

*Neptunia natans* (L. f.) Druce. Aquatic herb. Calyx and corolla green, stamens yellow. BMR 95, Cuixmala.

*Neptunia plena* (L.) Benth. Herb 1 m high. Fls greenish white with yellow stamens. Sep.–Oct but probably flowering throughout the year. JASM 1167, Fracc. Las Islas; EJL 3202, EJL 2882, Cuixmala.

*Neptunia pubescens* Benth. var. *pubescens*. Prostrate herb. Fls yellow. Jul. JASM 2033, 4 km N of EBCh; Delgado 296, EBCh.

*Nissolia fruticosa* Jacq. Vine. Fls yellow. Sep.–Oct. JASM 803, JASM 824, SHB 1438, EBCh; MGA 978, Arroyo Careyes.

*Nissolia leiogyne* Sandw. Vine. Fls yellow. Jul.–Oct. JASM 285, JASM 1159, MGA 849, EBCh; CC 5192, CC 5268, EJL 3788, Cuixmala.

*Pachyrrhizus erosus* (L.) Urb. Perennial vine. Fls blue. Sep.–Oct. EJL 550, JASM 2711, EBCh; ACS 8687, EJL 4156, Cuixmala.

*Phaseolus leptostachyus* Benth. var. *micranthus* (Hook & Arn.) Delgado. Annual vine. Fls white to pale pink. Oct. EJL 1420, EJL 1449, EBCh; EJL 1490, Arroyo Cajones.

*Phaseolus lunatus* L. Vine. Fls lavender. Jan.–May. JASM 532, JASM 4354, EBCh; EJL 3169, MGA 91-2, Cuixmala; ACS 9007, El Tecuán.

*Phaseolus microcarpus* Mart. Vine. Fls pink. Oct.–Nov. EJL 1408, JASM 300, MGA 993, EBCh; EJL 2881, EJL 4026, Cuixmala.

*Piptadenia constricta* (Micheli) Macbr. [= *Pityrocarpa obliqua* (Pers.) MacBride]. Nacastillo. Tree 2–7 m high. Fls greenish-yellow. Jun.–Jul.; Dec. SHB 965, SHB 1381, JASM 551, EBCh; EJL 3436, EJL 3554, Cuixmala.

*Piptadenia flava* (DC.) Benth. [= *Pityrocarpa flava* (Spreng.) Brenan]. Shrub or small tree

1.5–6 m high. Fls greenish-yellow. Sep.–Oct. JASM 1161, JASM 3147, EBCh; JASM 3160, Rancho El Paraíso; EJL 4014, Cuixmala.

*Piscidia carthagenensis* Jacq. Tree 3–12 m high. Fls pink or white with green patch in the center of the banner; keel pink. Feb.–Jun. JASM 622, JASM 2865, EBCh; ACS 10570, Cuixmala.

*Pithecellobium dulce* (Roth.) Benth. Guamúchil. Tree 4–12 m high. Fls white. Apr. SHB 1127, Arroyo Chamela; EJL 3091, EJL 3373, Cuixmala.

*Pithecellobium lanceolatum* (Willd.) Benth. Zizimúchil. Shrub or tree 2–15 m high. Fls cream-white. Apr.; Jul.–Nov. SHB 1123, Arroyo Chamela; JASM 2006, Salinas Chamela; JASM 528, Arroyo Las Truchas; MGA 1058, Laguna La Virgen; LAPJ 850, EBCh; BMR 151, EJL 3353, EJL 3471, Cuixmala.

*Pithecellobium platylobum* (DC.) Urb. Viney shrub 1–4 m high. Fls white. Jun.–Jul. JASM 695, SHB 1390, EBCh; MGA 91-111, Arroyo Careyes; EJL 3556, EJL 3900, Cuixmala.

*Pithecellobium unguis-cati* (L.) Mart. [= *P. seleri* Harms]. Tihuchil. Shrub 2–4 m high. Fls white. Feb. JASM 677, EBCh; BMR 101, Cuixmala.

*Platymiscium lasiocarpum* Sandw. Granadillo. Tree 12–15(–18) m high. Fls yellow. Mar.–Apr. EJL 2783, LAPJ 1262, SHB 1503, EBCh; sighted at Cuixmala. This species has been extensively cut in the Cumbres section of Cuixmala.

*Poeppigia procera* Presl. Panalillo. Tree 3–12 m high. Fls yellow. Jul.–Aug. JASM 748, EBCh; EJL 3090, EJL 4099, Cuixmala.

*Poiretia punctata* (Willd.) Desv. Vine. Fls yellow. Nov. MGA 1036, EBCh; JASM 264, Rancho El Paraíso. Rare or poorly collected in our area.

*Prosopis juliflora* (Sw.) DC. Mezquite; Algorrobo. Shrub or tree to 6 m high. Fls cream-white. Nov.–Jan. JASM 2085, Playa El Negrito; EJL 3298, EJL 3416, Cuixmala.

*Pterocarpus orbiculatus* DC. [= *P. amphymentium* DC.]. Lloro sangre. Tree 3–10 m high. Fls orange-yellow. Mar.–May. JASM

1026, Quémario; JASM 681, MGA 1086, EBCh; BMR 134, Ejl 3362, Ejl 3489, Ejl 3505, Cuixmala.

*Rhynchosia edulis* Griseb. Vine. Fls yellow. Nov.–Dec. JASM 307, Chamela area; Ejl 4049, Cuixmala.

*Rhynchosia minima* (L.) DC. Perennial vine. Fls yellow. Nov.–Feb. JASM 504, JASM 874, EBCh; ACS 9017, Hotel El Tecuán.

*Rhynchosia precatória* DC. [previously identified as *R. pyramidalis* (Lam.) Urb.]. Vine. Fls yellowish. Nov.–May. Ejl 2397, JASM 589, EBCh; BMR 161, Ejl 3327, Ejl 3419, Cuixmala.

*Rhynchosia reticulata* (Sw.) DC. in DC. var *reticulata*. Herb with trailing or twining stems. Fls yellow. Nov. Ejl 4049, Cuixmala.

*Senna atomaria* (L.) I. & B. Shrub or tree 4–12 m high. Fls yellow. Feb.–May; Sep. Ejl 565, JASM 1570, EBCh; Ejl 3759, Cuixmala.

*Senna fruticosa* (Mill.) I. & B. Weak shrub to 2 m high. Fls yellow. Flowering nearly throughout the year. JASM 584, SHB 1443, EBCh; Ejl 3243, Cuixmala.

*Senna mollissima* (Willd.) I. & B. var. *glabrata* (Benth.) I. & B. Shrub or small tree 1–5 m high. Fls yellow. Flowering throughout the year. JASM 627, EBCh; MGA 91-107, Arroyo Careyes; Ejl 3161, Ejl 4094, Cuixmala.

*Senna nicaraguensis* (Benth.) I. & B. Shrub or small tree. Fls yellow. Nov. JASM 885, Juan Gil.

*Senna obtusifolia* (L.) I. & B. Annual herb 50 cm high. Fls pale yellow. Flowering throughout the year. JASM 497, Arroyo Chamela; ACS 10558, Ejl 3390, Cuixmala.

*Senna occidentalis* (L.) Link. Herb to 1 m high. Fls yellow. Flowering throughout the year. MGA 912, Quémario; JASM 319, EBCh; Ejl 3108, Ejl 3390A, Cuixmala.

*Senna pallida* (Vahl) I. & B. var. *geminiflora* I. & B. [= *Cassia biflora* L.]. Shrub 0.5–2 m high. Fls yellow. Sep.–Apr. McVaugh 25085, SHB 1026, EBCh; Ejl 3249, Ejl 4063, Cuixmala.

*Senna pendula* (Willd.) I. & B. var. *advena*

(Vogel) I. & B. Shrub 1–3 m high. Fls yellow. Nov.–Feb. BMR 105, Ejl 4121, MGA 91-5, Cuixmala.

*Senna quinquangulata* (L. C. Rich.) I. & B. var. *quinquangulata*. Viney shrub 3 m high. Fls yellow. May. Ejl 3391, Cuixmala.

*Senna uniflora* (P. Mill.) I. & B. Herb 30–60 cm high. Fls yellow. Sep.–Nov. MGA 913, Quémario; JASM 2087, Playa El Negrito; Ejl 2859, Cuixmala.

*Sesbania herbacea* (Mill.) McVaugh [= *S. emerus* (Aubl.) Urb. of auth.]. Large herb to 2 m high. Fls yellow. Aug.–Nov. JASM 870, Chamela area; Ejl 3564, Cuixmala.

*Stylosanthes viscosa* Sw. Herb. Fls yellow. Mar. Ejl 2336, Salinas Careyes.

*Styphnolobium* sp. nov. ined. Sousa & Rudd. Tree 15–20 m high. Fls yellow. Apr. JASM 4195, EBCh (Arroyo El Zarco). This species is endemic to Jalisco.

*Tamarindus indica* L. Tamarindo. Tree 3–6 m high. Fls pink. Jul.–Aug. Ejl 2828, Salinas Chamela; ACS 1057, Ejl 3641, Cuixmala. Escaping from cultivation.

*Tephrosia leiocarpa* A. Gray var. *costenya* McVaugh. Shrub 1–2 m high. Fls white, to red or purplish. Aug.–May. Ejl 1681, Ejl 1761, EBCh; JASM 2646, 7 km E of Juan Gil, the type; ACS 11231, Ejl 3552, Ejl 4166, JLM 1355, Cuixmala.

*Tephrosia multifolia* Rose. Shrub 1–2 m high. Fls white or pink. Nov.–Mar. JASM 537, Chamela area; JASM 1382, road to Nacastillo.

*Tephrosia vicioides* Schlecht. Subshrub mostly ca 50 cm high. Fls pink or purple. Aug.–Feb. JASM 379, Chamela area; JASM 975, 4 km S of EBCh.

*Vigna speciosa* HBK. Vine. Fls lavender. Oct.–May. JASM 2748, EBCh.

*Vigna strobilophora* B. L. Rob. [= *Ramirezella strobilophora* (Robins.) Rose]. Vine. Fls lavender. Jan. ACS 9018, El Tecuán.

*Willardia mexicana* (S. Wats.) Rose. Shrub 1.5–2.5 m high. Fls lavender or purple. May–Jun. Frs Nov. JASM 1582, Rancho San Borja; JASM 2027, Rancho El Paraíso.

**Lennoaceae**

*Lennoa madreporoides* LaLlave & Lex. Parasitic herb 10 cm high. Fls purple with white throat. Sep. JASM 4119, Playa Pérula; MGA 195, Playa Careyitos.

**Loasaceae**

*Gronovia scandens* L. Vine. Fls greenish-yellow. Aug.–Nov. EJL 520, EJL 705, EBCh; EJL 610, Pueblo Careyes; EJL 3912, Cuixmala.

*Mentzelia aspera* L. Amor de Perro. Annual herb to 75 cm high. Fls yellow. Sep.–Nov. SHB 1262, EBCh; EJL 632, Arroyo Tapeixtes; ACS 11184, EJL 4065, Cuixmala.

**Loganiaceae**

*Buddleja sessiliflora* HBK. Shrub 2–3 m high. Fls yellow or green. Mar. ACS 10563, EJL 2344, Cuixmala.

*Strychnos* cf. *brachistantha* Standl. Shrub or vine. Fls white. Jul. LAPJ 1943, EBCh; EJL 2812, Pueblo Careyes; EJL 3159, EJL 3493, Cuixmala.

**Loranthaceae**

*Cladocolea gracilis* Kuijt. Parasitic shrub. Fls? Frs Nov. EJL 4172, Cuixmala. Host: *Caesalpinia caladenia*.

*Cladocolea inconspicua* (Benth.) Kuijt [= *Ixocactus* ?]. Parasitic shrub. Fls green. Oct.–Nov. SHB 1554, EBCh. Host unidentified.

*Cladocolea* sp. Parasitic shrub. Fls salmon-pink. June. EJL 906, EJL 1106, EBCh. Host: *Amphipterygium adstringens*.

*Cladocolea* sp. Parasitic shrub. Buds green. May. EJL 1050, EBCh. Host unidentified.

*Phoradendron quadrangulare* (HBK.) Krug & Urb. Parasitic shrub. Fls green. Jul. EJL 896, SHB 952, EBCh; EJL 4124, Cuixmala. Hosts: *Guazuma ulmifolia*, *Jacaratia mexicana*.

*Phoradendron robinsonii* Urb. Parasitic shrub. Fls yellow. Apr. Frs in Jan? BMR 133, EJL 3278, JLM 1341, Cuixmala. Hosts: *Celaenodendron mexicanum*, *Pterocarpus orbiculatus*.

*Phoradendron* sp. Parasitic shrub. Frs yellow, round. May. Fls not known. EJL 1075, EBCh. Host unidentified.

*Psittacanthus calyculatus* (DC.) G. Don. Parasitic shrub. Fls orange. Nov.–Mar. BMR 79, Quémaro; EJL 910, Playa Chamela Sector Naval; EJL 2331, EBCh; EJL 2778, Pueblo Careyes. Hosts: *Acacia* sp., *Coccoloba barbadensis*, *Ziziphus amole*.

*Struthanthus condensatus* Kuijt. Parasitic viny shrub. Fls yellowish-green. Jul.–Sep. Frs in Jan. EJL 3637, EJL 3640, Quémaro; SHB 1922, Chamela; EJL 3135, EJL 3206, EJL 4125, Cuixmala. Hosts: *Acacia* sp., *Caesalpinia* sp., *Guazuma ulmifolia*, *Pithecellobium* sp., *Cordia elaeagnoides*.

*Struthanthus densiflorus* (Benth.) Standl. Parasitic viny shrub. Fls green? Aug. CC 5162, EJL 3773?, Cuixmala. Host: *Guazuma ulmifolia*.

*Struthanthus interruptus* (HBK.) Blume in Schult. f. Parasitic shrub. Fls white. Sep. EJL 510, EBCh. Host: unidentified Leguminosae.

*Struthanthus quercicola* (Cham. & Schlecht.) Blume. Parasitic shrub. Fls green. May. EJL 1061, Pérula. Host: *Cordia dentata*.

*Struthanthus* sp. Parasitic shrub. Fls? Frs verrucose, in Jan. MGA 548, Salinas Chamela; EJL 3242, Cuixmala. Host: *Crateva tapia*.

*Struthanthus* sp. Parasitic shrub. Fls green. Jul. EJL 3668, Cuixmala. Host: *Prosopis juliflora*.

**Lythraceae**

*Ammania coccinea* Rottb. Annual herb 10–15 cm high. Fls green. Aug. EJL 2835B, Rancho Arroyo Zarco.

*Cuphea ferrisiae* Bacig. var. *rosea* S. Graham. Annual herb 10–25 cm high. Fls purple. Aug.–Sep. EJL 495, EJL 1200, EBCh; JLM 1361, Cuixmala.

*Cuphea leptopoda* Hemsl. Annual herb to 75 cm high. Fls pink. Aug. EJL 3872, Cuixmala.

*Cuphea vesiculigera* R. C. Foster. Annual herb 15–40 cm high. Fls pink or lavender. Jul.–Oct. EJL 1387, EBCh.

*Rotala ramosior* (L.) Koehne. Annual herb 15–20 cm high. Fls green (lavender?). May–

Nov. EJL 2835A, Rancho Arroyo Zarco; EJL 3982, EJL 4110, Cuixmala.

### Malpighiaceae

*Bunchosia mcvaughii* W. R. Anderson. Shrub or tree 2–3 m high. Fls yellow. Sep.–Feb. LAPJ 1704, SHB 1054, SHB 2002, EBCh; EJL 4151, Cuixmala.

*Bunchosia palmeri* S. Wats. sens. lat. Shrub or tree 2–3 m high. Fls yellow. Aug.–Oct. EJL 1858, JASM 287, EBCh; ACS 11186, CC 5273, EJL 3236, EJL 4137, Cuixmala.

*Byrsonima crassifolia* (L.) DC. Nance. Tree 4 m high. Fls yellow to reddish. Mar. ACS 10616, Cuixmala. This plant was found at the edge of an abandoned orchard. Perhaps not persisting as a permanent member of our flora.

*Callaeum macropterum* (DC.) D. M. Johnson [= *Mascagnia macroptera* (Moc. & Sessé) Ndzu.]. Vine. Fls yellow. Jan.–May. EJL 2790, Arroyo Chamela; EJL 3252, Cuixmala; SHB 1900, Km 41, Pto. Vallarta-B. de Navidad hwy.

*Galphimia glauca* Cav. [= *Thryallis glauca* (Cav.) Ktze.]. Shrub to 2 m high. Fls yellow. Apr.–May; Aug.–Sep. SHB 1320, Arroyo Chamela; EJL 558, EJL 1739, EBCh; EJL 647A, Rancho El Paraíso.

*Galphimia hirsuta* Cav. Shrub to 50 cm high. Fls yellow. Jul.–Sep. ACS 11221, EJL 3741, SHB 2053, Cuixmala.

*Gaudichaudia mcvaughii* W. R. Anderson. Vine. Fls yellow. Jul.–Nov. EJL 692, JASM 3935, EBCh; JLM 1358, Cuixmala.

*Heteropterys laurifolia* (L.) Adr. Juss. High-climbing woody vine. Fls yellow. Apr.–Jun. EJL 969, EJL 989, MGA 91-120, Arroyo Chamela; EJL 1043, EBCh; EJL 3495, Cuixmala.

*Heteropterys palmeri* Rose. High-climbing woody vine. Fls pink. Aug.–Oct. BMR 81, Quémario; EJL 1399, SHB 994, EBCh; EJL 4177, Cuixmala.

*Hiraea reclinata* Jacq. sens. lat. Vine. Fls yellow. Feb.–Jul. JASM 713, EBCh; EJL 2549, Rancho El Paraíso; EJL 3438, Cuixmala; EJL 2586, road to El Tecuán.

*Lasiocarpus* sp. Shrub or tree to 6 m high.

Fls? Frs Jan. MGA 33, EBCh; EJL 3753A, Rancho San Borja-Ranchitos road.

*Malpighia emiliae* W. R. Anderson. Shrub 1–2 m high. Fls pink. Jul.–Dec. EJL 1458, EJL 1658, the type; EJL 1683, LAPJ 1390, EBCh; CC 5267, EJL 3620, EJL 3669, Cuixmala. The Cuixmala population is somewhat distinct in type of pubescence and length of the pedicels.

*Malpighia novogaliciana* W. R. Anderson. Shrub or tree 1.5–5 m high. Fls pink. Jun.–Jul. EJL 1706, JASM 4205, SHB 1913, EBCh; EJL 3687, Cuixmala.

*Malpighia ovata* Rose. Shrub or tree 2–8 m high. Fls pink. Jul.–Jan. LAPJ 546, Isla Cocinas; EJL 1690, LAPJ 1540, EBCh; MGA 91-245, Arroyo Careyes; EJL 3621, Cuixmala.

*Malpighia rzedowskii* W. R. Anderson. Shrub or small tree 1–4 m high. Fls pink. Aug. EJL 1377, Hotel Angeles Locos de Tenacatita.

*Tetrapteryx mexicana* Hook. & Arn. Vine. Fls yellow. Feb.–Apr. LAPJ 1560, EBCh; MGA 91-23, Arroyo Careyes.

### Malvaceae

*Abutilon barrancae* M.E. Jones. Much-branched shrub 0.5–3 m high. Fls white to pale yellow with darker orange at base of petals. Sep.–May. ACS 11192, ACS 11207, EJL 2904, EJL 3521, EJL 4019, EJL 4148, Cuixmala.

*Abutilon mcvaughii* Fryxell. Shrub 1–3 m high. Fls yellow. (Jul.); Nov.–Mar. JASM 313, MGA 666, SHB 940, EBCh; ACS 10608, EJL 3138, EJL 3439, EJL 4008, Cuixmala.

*Abutilon orientale* Standl. & Steyerl. [= *A. demissum* Fryxell]. Much-branched, weak subshrub 0.3–1 m high. Fls yellow. Oct.–Nov. JASM 3917, EBCh; EJL 4058, EJL 4146, Cuixmala.

*Abutilon trisulcatum* (Jacq.) Urb. Robust herb 1–2 m high. Most commonly annual but may persist; flowers the first year from seed. Fls yellow-gold with purple spots at base of petals. Nov.–May. EJL 1567, Arroyo Chamela; EJL 3080, EJL 3611, Cuixmala.

*Allosidastrum interruptum* (Balbis ex DC.) Krap., Fryx. & Bates. Shade-loving subshrub 0.4–1.5 m high. Fls yellow with purple spots at



base of petals. Nov. JASM 3926, LAPJ 1218, EBCh; EJL 3996, EJL 4105, Cuixmala.

*Anoda acerifolia* Cav. Mostly annual herb 20 cm high with long stems. Fls lavender. Oct.–Jan. ACS 10533, EJL 2864, EJL 4052, Cuixmala.

*Anoda cristata* (L.) Schldl. Sprawling herb 40 cm high. Fls lavender. Sep.–Oct. JASM 3913, Chamela area; MGA 938, Pueblo Careyes.

*Anoda lanceolata* Hook. & Arn. Herb. Fls yellow. Oct.–Nov. EJL 1425, EBCh; EJL 4036, Cuixmala.

*Anoda thurberi* A. Gray. Robust annual herb 1–2 m high. Fls blue-lavender. Nov. EJL 4067, EJL 4149, Cuixmala.

*Bakeridesia bakeriana* (Rose) Bates. Tree 4–6 m high. Fls yellow. Jun. JASM 3609, Chamela; EJL 4029, Cuixmala.

*Bastardiastrum hirsutiflorum* (K. Presl) Bates. Herb 1 m high. Fls lavender. Nov. LAPJ 1096, Km 37, Pto. Vallarta-B. de Navidad hwy. This species is usually found at higher elevations.

*Bastardiastrum incanum* (Brandege) Bates. Subshrub 75 cm high. Fls white. May. EJL 3549, Cuixmala.

*Briquetia spicata* (HBK.) Fryxell. Annual herb to 1 m high. Fls? Frs Nov. MGA 1080, EBCh; EJL 4066, Cuixmala.

*Dirhampis mexicana* Fryxell. Shade-loving subshrub to 1.5 m high. Fls yellow. Nov. EJL 4042, Cuixmala. This species is known from four other localities.

*Gossypium aridum* (Rose & Standl.) Skov. Shrub or small tree 2–3 m high. Fls lavender with dark purple throat, fading to purple. Oct.–May. SHB 921, La Rumorosa; EJL 655, EJL 1224, Rancho El Paraíso; EJL 2845, Pueblo Careyes.

*Gossypium hirsutum* L. Algodón; Cotton. Shrub to 2.5 m high. Fls pale yellow to pink. Nov.–Jan. JASM 924, Chamela; EJL 3134, EJL 4180, Cuixmala. Naturalized.

*Herissantia crispa* (L.) Briz. Decumbent perennial herb. Fls white with yellow anthers. Nov.–Apr; Aug. Probably flowering throughout the year. JASM 3733, Chamela; EJL 740, SHB

1569, EBCh; ACS 10498, Cuixmala.

*Hibiscus citrinus* Fryxell. Shrub 0.4–1 m high. Fls yellow. Apr.–Nov. SHB 941, Chamela; JASM 2969, JASM 3631, SHB 1117, EBCh; EJL 3716, EJL 4083, EJL 4123, Cuixmala; EJL 2588, Hotel Angeles Locos de Tenacatita.

*Hibiscus pernambucensis* Arruda. Shrub or small tree 3–5 m high. Estuarine. Fls yellow to brown. Jun.–Aug. JASM 3644, Chamela; BMR 387, EJL 2555, Cuixmala.

*Hibiscus sabdariffa* L. Jamaica; Roselle. Subshrub to 1 m high. Fls yellow with dark red center; calyx vivid red and very conspicuous. Probably flowering throughout the year. EJL 3992, Cuixmala. Cultivated at Cuixmala but escaping and becoming naturalized.

*Kosteletzkya depressa* (L.) Blanchard, Fryx. & Bates. Robust perennial herb to 1.5 m high. Fls white to pale pink with yellow center. Sep.–May. MGA 1057, Laguna La Virgen; ACS 11164, EJL 2863, EJL 3588, EJL 4082, MGA 568, Cuixmala.

*Malachra alceifolia* Jacq. Annual herb 1–1.5 m high in low, damp areas. Fls yellow. Oct.–Jan. ACS 9008, EJL 2860, EJL 4080, Cuixmala.

*Malachra capitata* (L.) L. Annual herb to 1 m high in low, damp areas. Fls yellow. Sep.–Nov, but probably throughout the year. LAPJ 1934, Laguna la Virgen; EJL 4081, Cuixmala.

*Malachra fasciata* Jacq. Annual herb 1 m high. Fls white. Oct.–Nov. EJL 2750, Quémario; EJL 2868, EJL 4079, Cuixmala.

*Malvastrum americanum* (L.) Torr. Perennial herb or subshrub 0.5–1 m high. Fls yellow. Nov.–Jan, but probably throughout the year. EJL 3213, EJL 4182, Cuixmala.

*Malvastrum coromandelianum* (L.) Garcke. Perennial herb 0.6 m high or more. Fls yellow. Probably flowering throughout the year. JASM 3741, Chamela; EJL 3997, Cuixmala.

*Malvaviscus arboreus* Cav. [incl. var. *mexicanus* Schlecht.]. Clambering shrub 1–3 m high. Fls red. Aug.–Nov. MGA 322, SHB 987, EBCh; EJL 624, Pueblo Careyes; EJL 2896, EJL 4129, Cuixmala.

*Pavonia arachnoidea* K. Presl. Perennial herb 50 cm high. Fls pale yellow. Jan. EJL 1675, LAPJ 960, EBCh. Rare.

*Pavonia fryxellii* Krap. Subshrub 1–2 m high. Fls white. Aug.–Nov. EJL 581, LAPJ 1488, MGA 209, EBCh; BMR 430, Cuixmala.

*Sida acuta* Burm. f. Huinar. Subshrub 0.5–1 m high. Fls white to pale yellow or orange. Flowering throughout the year. EJL 712, EJL 1578, EBCh; EJL 2861, EJL 3920, Cuixmala. This species is used to make brooms.

*Sida aggregata* Presl. Shrub 1 m high. Fls peach-colored, petals dark red at base. Nov.–Jan. EJL 3318, Quémario; EJL 4153, Cuixmala.

*Sida alamosana* S. Wats. Prostrate perennial herb or subshrub. Fls yellow. May. EJL 3519, Cuixmala.

*Sida ciliaris* L. Prostrate perennial herb. Fls salmon-pink. Jun.–Nov., probably throughout the year. EJL 1733, MGA 854, EBCh; EJL 2576, Arroyo Tapeixtes; EJL 3994, Cuixmala.

*Sida glabra* Miller. Perennial herb. Fls yellow. Sep.–Mar. EJL 958, EJL 1423, JASM 3968, EBCh.

*Sida jamaicensis* L. Subshrub 0.5–1 m high. Fls white. Oct. MGA 1254, Cuixmala.

*Sida rhombifolia* L. Perennial herb to 1.2 m high. Fls yellow or yellow-orange. Nov.–Feb., but probably throughout the year. LAPJ 598, EBCh; EJL 4167, Cuixmala.

*Sida salviifolia* K. Presl. Herb or subshrub 1 m high on roadsides. Fls white with purple spots at base of petals. Nov. EJL 1552, Rancho El Paraíso; EJL 4155, Cuixmala. This species has barbed spines on the mericarp much like those of *S. cordifolia*.

*Wissadula periplocifolia* (L.) Presl ex Thwaites. Subshrub 0.5–1 m high. Fls pinkish-white. Sep.–Oct. EJL 3988, Quémario; EJL 2643, Playa La Virgencita; MGA 91-168, Caleta Blanca; sighted at Cuixmala.

### Martyniaceae

*Martynia annua* L. Siete Colores (CC). Annual herb to 1 m high. Fls white with purple spots. Aug.–Jan. EJL 579, JASM 768, EBCh;

BMR 57, CC 5256, EJL 2865, Cuixmala.

### Meliaceae

*Cedrela salvadorensis* Standl. Cedro. Slender tree 6–8 m high. Fls pink. Jun. EJL 1139, SHB 2082 (fl in Jan), EBCh; JASM 4192, Arroyo Tapeixtes.

*Guarea glabra* Vahl. Tree to 25 or 30 m high. Fls white. Jul. EJL 1582A, NW slopes of Cerro Colorado; ACS 10607, EJL 3329, Cuixmala.

*Melia azederach* L. Tree 4–6 m high. Fls pink-lavender. Jan.–Apr.; Aug. BMR 167, EJL 3149, Cuixmala. This species is found around old homesites.

*Swietenia humilis* Zucc. Caoba; Cóbano. Tree 5–20 m high. Fls yellowish-green. Apr.–May. MGA 717, La Fortuna; JASM 4363, Chamela; EJL 1465, Arroyo Chamela; EJL 1826, JASM 4426, EBCh; AR 967, Cuixmala.

*Trichilia americana* (Sessé & Moc.) Pennington. Shrub 0.5–3 m high. Fls white. Jun.–Aug. EJL 1735, JASM 4265, MGA 117, EBCh; EJL 1644, Arroyo Tapeixtes.

*Trichilia havanensis* Jacq. Shrub 1.5–5 m high. Fls white. Feb.–May. Frs bright red. EJL 2635, Quémario; LAPJ 1838, Playa El Negrito; MGA 646, Arroyo Chamela; ACS 10532, EJL 3357, Cuixmala.

*Trichilia hirta* L. Shrub or tree 2–8 m high. Fls white. Jun.; Sep.–Jan. EJL 1708A, EJL 2582, EBCh.

*Trichilia trifolia* L. subsp. *palmeri* (C. DC.) Pennington. Shrub or small tree 2–4 m high. Fls white. Aug.–Sep. EJL 490, JASM 3798, EBCh; EJL 3209, EJL 4061, Cuixmala.

### Menispermaceae

*Cissampelos pareira* L. Vine with semi-woody stems. Fls white to green. Jul.–Sep. EJL 691, SHB 1613, EBCh; MGA 92, Arroyo Tapeixtes; EJL 636, Rancho El Paraíso; EJL 3839, Cuixmala.

*Cocculus diversifolius* DC. Vine with herbaceous stems. Fls cream-white. Nov.–May. SHB 1872, Péruia; MGA 409, SHB 1322, Arroyo Chamela; BMR 125, Caleta Blanca.

*Disciphania mexicana* Bullock. Perennial vine with glaucous, herbaceous stems. Fls red-

dish-brown. Jun.–Jul. JASM 4259, EBCh; JASM 4198, Arroyo Tapeixtes; Ejl 3688, Ejl 3714, Ejl 3724, Cuixmala.

*Hyperbaena ilicifolia* Standl. Gordadura. Shrub or tree to 5 m high. Fls green. Oct.–Nov. MGA 550, Salinas Chamela; Ejl 607, Pueblo Careyes; Ejl 2883, Ejl 3582, Ejl 4092, Cuixmala; SHB 1306, El Tecuán.

### Moraceae

*Brosimum alicastrum* Sw. Mojote. Tree to 20 m high. Fls yellowish-green. Oct.–Jan. Ejl 606, Pueblo Careyes; Ejl 1705, JASM 3403, EBCh; Ejl 3284, Cuixmala. One of the characteristic species of Tropical Semideciduous Forest, this tree has many uses.

*Chlorophora tinctoria* (L.) Gaud. Moralete. Tree 6–8 m high. Fls greenish. Jul.–Sep; (Jan.). Ejl 1700, LAPJ 1684, SHB 1518, SHB 1592, SHB 1748, EBCh; Ejl 3965, Cuixmala.

*Dorstenia drakena* L. Herb 10–30 cm high. Fls greenish. Jul.–Oct. MGA 285, Arroyo Chamela; Ejl 1787, JASM 3850, EBCh; Ejl 3662, Cuixmala.

*Ficus cotinifolia* HBK. Tescalama; Cami-chinillo. Tree 12–18 m high. May–Aug. Ejl 871, Ejl 902, Ejl 965, Ejl 1759, EBCh; AR 958, Ejl 3545, Ejl 3725, Cuixmala.

*Ficus goldmanii* Standl. Tree to 18 m high. Oct. SHB 1115, Arroyo Chamela; Ejl 2872, Cuixmala.

*Ficus insipida* Willd. Salate. Tree 15–20 m high. Mar.–Jun. LAPJ 1839, Playa El Negrito; MGA 91-126, SHB 1140, Arroyo Chamela; Ejl 961, Ejl 963, Ejl 1086, LAPJ 222, EBCh; ACS 10548, BMR 185, Cuixmala.

*Ficus obtusifolia* HBK. Tree 6 m high, hemiparasitic on *Brosimum*. Jun. Ejl 2793, Hotel Careyes.

*Ficus pertusa* L. f. [= *F. padifolia* HBK.]. Tree 8–15 m high. Oct. Ejl 1467, Arroyo Chamela; Ejl 702, Cuixmala.

*Trophis racemosa* (L.) Urb. var. *ramon* (Schlecht. & Cham.) W. Burger. Tree 5–8 m high. Fls green. Jan. Ejl 1004, Arroyo Chamela; JASM 586, LAPJ 226, EBCh.

### Moringaceae

*Moringa oleifera* Lam. Small tree 2–4 m high. Fls yellow. Apr. SHB 1126, Chamela; MGA 420, Arroyo Chamela; JASM 1005, EBCh. Cultivated, escaping.

### Myrsinaceae

*Ardisia revoluta* HBK. Shrub 2–4 m high. Fls white or pink. Apr.–Nov. BMR 143, Ejl 4126, MGA 91-80A, Cuixmala.

### Myrtaceae

*Eugenia capuli* (Schlecht. & Cham.) Berg. Shrub 3–5 m. Fls white. May–Jun. Ejl 3350, MGA 91-159, Cuixmala.

*Eugenia pleurocarpa* Standl. Tree 4–5 m high. Fls white. Jul. Ejl 3496, Ejl 3652, Ejl 3781, Cuixmala.

*Eugenia rekoii* Standl. Shrub 2 m high. Fls? Frs Nov. Ejl 4101, Cuixmala.

*Psidium sartorianum* (Berg.) Ndz. Arrayán; Guayabillo. Tree 8–15 m high. Fls white. Sep. JASM 2710, SHB 992, EBCh; AR 976, Cuixmala.

### Nyctaginaceae

*Abronia maritima* Nutt. ex Wats. Prostrate perennial herb. Fls pink. Nov. BMR 90, Cuixmala.

*Boerhavia coccinea* Miller. Perennial herb. Fls reddish-purple. May. Ejl 3562, Cuixmala.

*Boerhavia diffusa* L. Perennial herb. Fls? Sep. JASM 3790, LAPJ 781, EBCh.

*Boerhavia erecta* L. Annual herb 0.5–1 m high. Fls purple. Feb.–Jul. Ejl 2402, LAPJ 652, LAPJ 1249, EBCh; Ejl 3434, Cuixmala.

*Commicarpus scandens* (L.) Standl. Perennial herb to 1 m high. Fls green. Oct.–Jan. Ejl 680, Río San Nicolás; SHB 1071, Km 62, Pto. Vallarta-B. de Navidad hwy.; Ejl 3931, Cuixmala.

*Guapira* cf. *macrocarpa* Miranda. Alejo. Tree 4–10 m high. Fls green. Jun. Ejl 2577, SHB 946, EBCh; Ejl 3450, Ejl 3451, Cuixmala.

*Mirabilis longiflora* L. Perennial herb 0.4–1.5 m high. Fls white. Aug.–Sep. JASM 3822, MGA 138, EBCh.

*Mirabilis* sp. Perennial herb 0.5–1 m high. Fls pink. Aug.–Feb. EJL 574, EBCh; EJL 3260, EJL 3443, EJL 4085, Cuixmala.

*Okenia hypogaea* Cham. & Schlecht. Prostrate perennial herb on dunes. Fls lavender. Aug.–Nov. MGA 962, Pérula; JASM 2008, Playa Las Rosadas; JASM 4419, Playa Palancares; EJL 672, Playa La Virgencita; CC 5161, EJL 3955, Cuixmala.

*Pisonia aculeata* L. Viney shrub 1–5 m high. Fls reddish. Jan.–May. EJL 991, SHB 1317, Arroyo Chamela; ACS 10530, BMR 149, EJL 3250, MGA 556, Cuixmala.

*Pisonia macranthocarpa* Donn. Sm. Vine. Frs in Jan. LAPJ 1551, 5 km NW of Chamela. Found in *Celaenodendron mexicanum* forest; this is the only collection I have seen.

*Salpianthus arenarius* Humb. & Bonpl. Subshrub 0.5–2.5 m high. Fls green with reddish calyx. Oct.–Apr. EJL 2388, Isla Cocinas; SHB 1133, Arroyo Chamela; EJL 953, JASM 670, EBCh; MGA 279, Playa Careyitos; ACS 10494, BMR 150, EJL 3175, Cuixmala.

*Salpianthus purpurascens* (Cav.) Hook. & Arn. Perennial herb 0.5–2 m high. Fls greenish. Jan.–Mar. EJL 911, EBCh; EJL 3175, EJL 3218, Cuixmala.

### Nymphaeaceae

*Nymphaea elegans* Hook. ? Aquatic herb. Fls white. Oct.–Jan. BMR 83, EJL 685, Quémaro; ACS 9020, El Tecuán.

### Ochnaceae

*Ouratea mexicana* (Humb. & Bonpl.) Engl. Shrub to 3 m high. Fls yellow. Apr.–Aug. EJL 993, Arroyo Chamela; SHB 1339, EBCh; BMR 135, EJL 3473, EJL 3527, Cuixmala.

### Oleaceae

*Schoepfia* cf. *schreberi* J. F. Gmel. Shrub to 3 m high. Fls red or green. EJL 2334, EJL 3596, Salinas Careyes.

*Schoepfia* sp. Tree 4 m high. Sterile in Mar. EJL 2780, EBCh.

*Ximenia pubescens* Standl.? Spiny shrub 1–2 m high. Fls red. Apr.–May. EJL 1016, EJL 1118, EJL 2276, EBCh; EJL 3551, Cuixmala. The fruits are edible.

### Oleaceae

*Forestiera* cf. *rhannifolia* Griseb. Shrub to 4 m high. Fls green. Nov.–Feb. EJL 2122, EJL 2193, SHB 1302, EBCh. This is a rare species, apparently confined to arroyos.

### Onagraceae

*Hauya elegans* DC. Tree 6 m. Fls? Frs Aug. EJL 1820, EBCh (Cerro Maderas). In our area known only from this collection.

*Ludwigia erecta* (L.) Hara. Erect, much-branched annual herb 0.8–2 m high. Fls yellow. Jan.–Aug. EJL 3189, EJL 3870, Cuixmala.

*Ludwigia leptocarpa* (Nutt.) Hara. Perennial herb to 1.5 m high. Fls yellow. Mar. ACS 10513, AR 1014, Cuixmala.

*Ludwigia octovalvis* L. Erect perennial herb 1–2 m high. Fls yellow. Jan.–Aug. EJL 2341, Hotel Careyes; ACS 10504, EJL 3187, EJL 3869, Cuixmala.

*Ludwigia peploides* (HBK.) Raven. Sprawling perennial herb, forming floating mats. Fls yellow. Nov. EJL 3986, Quémaro.

### Opiliaceae

*Agonandra racemosa* (DC.) Standl. Slender tree to 5 m high. Fls green. Jan.–Mar. SHB 1893, Arroyo Chamela; MGA 545, MGA 694, Salinas Chamela; EJL 2557, Cuixmala.

### Oxalidaceae

*Oxalis albicans* HBK. Erect herb 15 cm high. Fls yellow. Aug. EJL 1714, Quémaro.

*Oxalis frutescens* L. [= *O. neaei* DC.?]. Perennial herb. Fls yellow. EJL 1660, EBCh; CC 5163, Cuixmala.

*Oxalis microcarpa* Benth.? Perennial herb. Fls yellow. CC 5319, Cuixmala.

### Papaveraceae

*Argemone ochroleuca* Sweet. Spiny annual herb to ca 50 cm high. Fls yellow. Mar.–May. EJL 889, Pérula; SHB 1877, Arroyo Chamela; ACS 10506, Cuixmala.

### Passifloraceae

*Passiflora edulis* Sims. Glabrous vine. Fls? EJL 3129, Cuixmala. Cultivated and escaping.

*Passiflora filipes* Benth. Delicate, glabrous vine. Fls green with white corona. Oct.–Jan. SHB 1025, EBCh; Ejl 608, Arroyo Careyes; Ejl 3215, Ejl 4048, Cuixmala.

*Passiflora foetida* L. Glandular-pubescent vine. Fls white with purple corona. May–Nov. Ejl 3317, Quémario; Ejl 573, JASM 4181, EBCh; Ejl 643, Rancho El Paraíso; MGA 227, Playa Careyitos; Ejl 3201, Ejl 3346, Ejl 3459, Cuixmala. Two varieties, var. *acapulcensis* Killip (MGA 206, Playa Careyes), and var. *parvifolia* Killip (Ejl 4154, Cuixmala) have been reported from our area.

*Passiflora* aff. *goniosperma* Killip. Pubescent vine. Fls green. Jul.–Sep. Ejl 539, Ejl 1741, EBCh; MGA 90, Arroyo Tapeixtes; Ejl 3799, Cuixmala.

*Passiflora holosericea* L. Pubescent vine. Fls white with orange corona. May–Aug. JASM 2465, SHB 1871, Isla Pajarera; Ejl 3295, Ejl 3475, Cuixmala.

*Passiflora mexicana* Juss. Pubescent vine. Fls pink with yellow corona. Jun.–Oct. Ejl 673, Playa La Virgencita; Ejl 2568, Cuixmala.

*Passiflora* sp. nov. ined. MacDougal. Glabrous vine. Fls green. Aug.–Jan; May. Flowering practically throughout the year. Ejl 589, Ejl 1701, JASM 344, JASM 3886, EBCh; Ejl 3262, Ejl 3541, Ejl 4179, Cuixmala.

### Phytolaccaceae

*Agdestis clematidea* DC. Fetid vine. Fls white. Aug.–Oct. SHB 1261, SHB 1696, EBCh; Ejl 3487, Cuixmala.

*Petiveria alliacea* L. Herb or subshrub to 1 m high. Fls white. Sep.–Dec. Ejl 508, JASM 273, EBCh; ACS 11254, Cuixmala.

*Rivina humilis* L. Herb or subshrub 0.5–1.5 m high. Fls white to pale pink; stamens yellow. Feb.–Sep. JASM 535, MGA 883, EBCh; BMR 182, Ejl 3813, Cuixmala.

*Stegnosperma cubense* A. Rich. Garabato. Sprawling or vinelike shrub 1–2 m high. Fls white. Mar.–Nov. Ejl 2386, LAPJ 956, Isla Cocinas; LAPJ 956, EBCh; Ejl 3847, Cuixmala; JASM 1888, Tenacatita.

*Trichostigma octandrum* (L.) H. Walt. Shrub

with vinelike branches to 3 m or more long. Fls green. Dec.–May. Ejl 1003, SHB 1134, Arroyo Chamela; ACS 10617, Ejl 3176, Cuixmala.

### Piperaceae

*Peperomia claytonioides* Kunth. Perennial herb. Fls Jul.–Sep. Ejl 1196, JASM 3113, SHB 1219, EBCh.

*Peperomia* sp. Perennial herb. Collected sterile in Mar. Ejl 2372, EBCh.

*Piper abalienatum* Trel. Shrub 1–4 m high. Fls greenish. May–Jul. LAPJ 1354, SHB 1201, EBCh.

*Piper arboreum* Aublet subsp. *arboreum* [earlier reported as *P. tuberculatum* Jacq.]. Shrub 2–4 m high. Fls white to yellowish-green. Nov.–Mar. MGA 422, Río San Nicolás; ACS 10613, Ejl 3145, Ejl 3172, Ejl 3221, Ejl 3414, Ejl 3583, Cuixmala.

*Piper brevipedicellatum* Bornstein. Shrub 1.5–5 m high. Fls greenish. May–Jun.(Oct.) Ejl 611, Ejl 719, Ejl 720, EBCh; Ejl 3231, Cuixmala.

*Piper hispidum* Sw. Shrub to 3 m high. Fls Jan.–May. Cowan & Nieves 4733, Río Purificación; MGA 532, La Manzanilla.

*Piper pseudolindenii* C. DC. Shrub to 3 m high with slender green stems, in Tropical Semideciduous Forest. Fls yellow. Aug. Ejl 3488, Ejl 3647, Ejl 3693, Cuixmala.

*Piper rosei* C. DC. Shrub 2–4 m high. May–Jul. Ejl 3644, Cuixmala.

*Piper stipulaceum* C. DC. Shrub 2–5 m high. May–Oct. Frs Jul. JASM 754, MGA 1010, EBCh; Ejl 3666, Cuixmala.

### Plumbaginaceae

*Plumbago scandens* L. Shrub 0.5–1.5 m high. Fls white, sometimes reported as blue (LAPJ 1558, LAPJ 1561). Nov.–Apr. MGA 412, Arroyo Chamela; LAPJ 1561, EBCh; ACS 10536, BMR 152, Ejl 3200, Cuixmala.

### Polygalaceae

*Polygala monticola* St. Hil. var. *bryzoides* (St. Hil.) Steyer. Annual herb 15–25 cm high.

Fls white. Aug.–Sep. EJL 563, EBCh; ACS 11218, EJL 3822, Cuixmala.

*Polygala serpens* Blake. Perennial herb 10–20 cm high. Fls purple. Jun.–Oct. JASM 4056, EBCh; EJL 644, Rancho El Paraíso; EJL 3740, Cuixmala.

*Securidaca diversifolia* (L.) Blake. High-climbing woody vine. Fls lavender to purple. Apr.–May. SHB 1314, Km 62 of Pto. Vallarta-B. de Navidad hwy.; EJL 3599, Salinas Careyes; EJL 2794, Pueblo Careyes; BMR 120, Cuixmala.

### Polygonaceae

*Antigonon flavescens* S. Wats. Vine. Fls greenish-yellow. Apr.–Dec. JASM 2681, MGA 947, EBCh; MGA 95, Arroyo Tapeixtes; BMR 147, Cuixmala.

*Antigonon* cf. *leptopus* Hook. & Arn. Vine. Fls pink. Aug.–Nov. BMR 75, MGA 922, Quémaro; EJL 1218, Las Rosadas; sighted at Cuixmala.

*Coccoloba barbadensis* Jacq. Tree 6–8 m high. Fls cream-colored or greenish. May–Jun. EJL 910A, Playa Chamela Sector Naval; EJL 530, EBCh; MGA 500, Arroyo Tapeixtes; CC 5150, EJL 3476, Cuixmala.

*Coccoloba liebmannii* Lindau. Shrub 2–6 m high. Fls green. Aug.–Dec. EJL 892, JASM 4105, EBCh; sighted at Cuixmala.

*Coccoloba venosa* L.? Shrub or tree to 5 m high. EJL 1821, EBCh.

*Coccoloba* sp. nov. aff. *acuminata* Jacq. Tree 3–6 m high. Fls cream-colored. Aug. EJL 2233, EBCh; SHB 1826, Arroyo Tapeixtes; ACS 11256, EJL 2889, EJL 3276, EJL 4060, Cuixmala.

*Coccoloba* sp. Shrub to small tree 5 m high. Fls when leafless, May. EJL 3288, EJL 3543, Cuixmala.

*Podopterus cordifolius* Rose & Standl. Vine. Fls lavender. Mar.–Jun. JASM 4221, EBCh; EJL 3558, Cuixmala; EJL 2587, Hotel Angeles Locos de Tenacatita.

*Podopterus mexicanus* Humb. & Bonpl. Spiny shrub 1–2 m high. Fls white with purplish streaks. Apr. EJL 2407 Pérula; EJL 1249, LAPJ

1904, EBCh.

*Polygonum punctatum* Ell. Perennial herb to ca 40 cm high, rooting at nodes. Fls white. Jan.–Mar. ACS 10553, EJL 3115, Cuixmala.

*Polygonum* sp. Erect annual herb. Stems strigose, ocreae 1.75 cm long, lvs resinous, lanceolate, 15 cm long, 5 cm wide. Fls white. Sep. MGA 899, Río Nicolás.

*Polygonum* sp. Herb. Fls pinkish-white. Mar. EJL 2348, Pérula; EJL 3115, Cuixmala.

*Ruprechtia fusca* Fern. [= *R. standleyana* Cocucci]. Caña Asada. Tree to 7 m high. Fls green. Oct.–Nov. EJL 717, EJL 747, SHB 1012, EBCh; EJL 630, Arroyo Tapeixtes; EJL 3937, Cuixmala.

*Ruprechtia pallida* Standl. [previously identified as *R. costata* Meisner]. Tree to 4 m high. Fls pink? Jan.–May. Frs Apr.–May. JASM 4358, La Fortuna; EJL 996, Arroyo Chamela; EJL 880, EJL 890, JASM 4167, EBCh.

### Portulacaceae

*Portulaca oleracea* L. Herb. Fls yellow. May–Nov. LAPJ 1356, MGA 862, EBCh; EJL 3184, EJL 3367, Cuixmala.

*Portulaca pilosa* L. Perennial herb to 15 cm high. Fls pink. Aug.–Dec. EJL 1280, EBCh; EJL 3294, Cuixmala; EJL 1655, Arroyo Seco.

*Talinum paniculatum* (Jacq.) Gaertn. Perennial herb. Fls pink. Jul.–Sep. EJL 500, JASM 2458, EBCh; MGA 197, Arroyo Cajones; CC 5271, CC 5395, Cuixmala.

*Talinum triangulare* (Jacq.) Willd. Perennial herb. Fls pink. Jul.–Sep. EJL 499, LAPJ 1769, EBCh; ACS 11257, CC 5301, EJL 3623, EJL 3731, Cuixmala.

### Rafflesiaceae

*Bdallophyton americanum* (A. Br.) Harms. Saprophytic herb to 15 cm high. Fls purple. Aug. EJL 1788, JASM 4401, EBCh.

### Ranunculaceae

*Clematis dioica* L. Vine. Fls greenish. Jan. EJL 1691, EBCh; EJL 3238, Cuixmala.

### Rhamnaceae

*Colubrina heteroneura* (Griseb.) Standl. Tree

to 4 m high. Fls white. Sep.–Dec. EJL 547, SHB 1008, EBCh; ACS 11223, Cuixmala.

*Colubrina triflora* Brongn. Shrub or tree 2–8 m high. Fls green. Oct.–Dec; May. MGA 1029, SHB 1281, EBCh; EJL 3531, EJL 4090, Cuixmala.

*Gouania rosei* Wiggins. Pubescent vine. Fls white. Jul.–Sep. EJL 1382, EBCh; EJL 641, Rancho El Paraíso; EJL 620, Arroyo Careyes; EJL 2899, Cuixmala.

*Gouania stipularis* DC. Glabrous vine. Fls white. Oct. EJL 1436, EBCh; EJL 622, Arroyo Careyes.

*Karwinskia latifolia* Standl. Shrub to 3 m high. Fls yellowish-green. Jul.–Oct. MGA 910, Quémario; JASM 4083, SHB 985, EBCh.

*Ziziphus amole* (Sessé & Moc.) M. C. Johnst. Tree to 8 m high. Fls yellowish-green. Jul.–Sep. MGA 153, Río San Nicolás; SHB 2047, Laguna La Virgen; EJL 1851, JASM 3105, EBCh; MGA 193, Salinas Careyes; CC 5167, Cuixmala.

### Rhizophoraceae

*Rhizophora mangle* L. Mangle; Red Mangrove. Shrub to 4 m high or more. Fls green or yellow. Oct. EJL 667, Playa La Virgencita.

### Rubiaceae

*Allenanthus hondurensis* Standl. var. *parvifolia* L. Wms. Shrub or small tree 2–5 m high. Fls white. Aug.–Sep. EJL 698, SHB 990, EBCh; EJL 634, Rancho El Paraíso.

*Borreria densiflora* DC. Herb to 40 cm high. Fls white. Dec. JASM 346, EBCh.

*Bouvardia cordifolia* DC. Shrub 1.5 m high. Fls? Frs in Dec. EJL 2232, EBCh. Rare.

*Bouvardia* sp. nov. ined. D. Lorence. Shrub 1.5 m high. Fls greenish-white. Nov. EJL 721, EBCh. Known only from this collection.

*Chiococca alba* (L.) Hitchc. Vinelike shrub with branches to 4 m long. Fls white to yellow. Aug.–Jan. MGA 547, Salinas Chamela; JASM 3925, EJL 725, EBCh; EJL 623A, Arroyo Careyes; EJL 3860, Cuixmala.

*Crusea parviflora* Hook. & Arn. Erect annual herb 10–50 cm high. Fls white. Oct. EJL 2652,

EBCh.

*Diodia sarmentosa* Sw. Perennial herb forming mats 2 m in diam. Fls white. Sep.–Nov. MGA 324, Laguna La Virgencita; MGA 403, EBCh; MGA 940, Pueblo Careyes; EJL 4039, Cuixmala.

*Exostema caribaeum* (Jacq.) Roem. & Schult. Falsa quina. Tree to 8 m high. Fls white. Jul.–Nov. LAPJ 1026, SHB 996, EBCh; EJL 637, Rancho El Paraíso; EJL 3974, Cuixmala.

*Exostema mexicanum* A. Gray. Tree to 12 m high. Fls white. Sep.–Dec. JASM 2885, JASM 4108, EBCh.

*Guettarda elliptica* Sw. [= *G. macrosperma* Donn. Sm.]. Tree mostly 4–6 m high. Fls white. Jul.; Jan. SHB 966, SHB 1529, EJL 715, EBCh; CC 5400, Cuixmala.

*Hamelia versicolor* A. Gray. Aretillo (JLM). Shrub 1–2 m high. Fls orange-red. May–Dec. EJL 1607, Arroyo Chamela; MGA 742, EBCh; JLM 1314, Phillips 1169, Cuixmala.

*Hamelia xorullensis* HBK. Shrub to 3 m high. Fls yellow or orange? Jul.–Sep. JASM 2456B, EBCh. This species is apparently very rare in our area. MGA 177, collected 138 km N of EBCh on Km 198 of the Pto. Vallarta-B. de Navidad hwy., is the most recent collection known.

*Hintonia latiflora* (Sessé & Moc. ex DC.) Bullock. Campanillo; Botón Amarillo (CC). Shrub or tree 2–12 m high. Fls white. Jul.–Oct. LAPJ 1171, EBCh; SHB 1521–1526, Hotel Careyes; CC 5190, EJL 3717, Cuixmala. This tree has ornamental potential.

*Machaonia acuminata* Humb. & Bonpl. [= *M. velutina* Humb. & Bonpl.?]. Tree to 6 m high. Fls white. Aug.–Oct. EJL 1521, SHB 1433, EBCh.

*Mitracarpus villosus* (Sw.) Cham. & Schlecht. Weedy herb. Fls white. Sep. EJL 562, EBCh.

*Oldenlandia* sp. nov. Prostrate perennial herb forming mats in moist sand near river. Fls white. Jan.–Mar. ACS 10550, ACS 10597, EJL 3116, Cuixmala.

*Psychotria erythrocarpa* Schlecht. Shrub 1 m high. Fls? Pescador s.n., EBCh. This record was

reported by S. Bullock. D. Lorence identified the specimen, which I have not seen. EJL 3455, from Cuixmala, may also belong here.

*Psychotria horizontalis* Sw. Shrub to 3 m high. Fls white. Jul.–Sep. JASM 708, Laguna La Virgen; JASM 3687, EBCh; EJL 625, Arroyo Careyes; MGA 59, Cuixmala.

*Psychotria microdon* (DC.) Urb. Shrub to 4 m high. Fls white. Jul.–Sep. JASM 2704, SHB 1409, EBCh.

*Randia aculeata* L. Shrub to 2 m high. Fls white. Jun.–Sep. EJL 2180, JASM 3110, EBCh.

*Randia armata* (Sw.) DC. Erect multi-stemmed shrub with stems to 5 m long. Fls white. Jun. EJL 899, JASM 4216, EBCh; ACS 11170, EJL 3142, EJL 3490, Cuixmala.

*Randia malacocarpa* Standl. Slender shrub mostly 1–2 m high. Fls white. May–Jul. EJL 1126, Arroyo Chamela; JASM 4053, SHB 1349, EBCh; EJL 3355, EJL 3761, Cuixmala.

*Randia mollifolia* Standl. Shrub to 1.5 m high, sometimes spiny, with weak branches. Fls? Frs Dec. EJL 2231, EBCh; EJL 1613, Cerro Colorado.

*Randia tetracantha* (Cav.) DC. [= *R. albonervia* Brandege]. Shrub with long vinelike stems 3–6 m high. Fls white. Jun.–Aug. LAPJ 1753, SHB 1375, EBCh; EJL 3277, Cuixmala.

*Randia thurberi* S. Wats. Erect shrub 3–5 m high. Fls white. Jun.–Aug. SHB 1179, EBCh; EJL 2903, Cuixmala.

*Richardia scabra* L. Prostrate perennial herb. Fls white. Aug.–Mar. MGA 431, Río San Nicolás; EJL 1228, MGA 237, Arroyo Chamela; ACS 10521, EJL 3081, MGA 576, Cuixmala.

*Spermacoce tenuior* L. Stiffly erect annual herb 40 cm high. Fls white. May–Nov. EJL 3573, EJL 4031, Cuixmala.

*Staelia scabra* (Presl) Standl. Herb to 30 cm high. Fls pale lavender. Oct.–Dec. JASM 312, EBCh; EJL 619, Arroyo Careyes.

## Rutaceae

*Amyris* cf. *madrensis* S. Wats. Shrub 2–4 m high. Fls green. Jul. EJL 2273, EJL 2600, Arroyo Tapeixtes.

royo Tapeixtes.

*Esenbeckia berlandieri* Baill. subsp. *acapulcensis* (Rose) Kaastra [= *E. feddema* Kaastra]. Shrub or tree 2–8 m high. Fls white. Jul.–Sep. SHB 1291, EBCh; EJL 638, Rancho El Paraíso; ACS 11171, EJL 2898, EJL 2901, EJL 3273, Cuixmala.

*Esenbeckia nesiotica* Standl. Tree 3–7 m high. Fls white. Jun.–Jul. EJL 559, LAPJ 1945, EBCh; sighted at Cuixmala.

*Helietta lottiae* Chiang. Tree 4–5 m high. Fls yellowish. Mar.–Aug. LAPJ 370, 33.4 miles N of Chamela, near Río San Nicolás; JASM 4406, Arroyo Chamela; JASM 3083, EBCh.

*Megastigma* sp. Tree 7 m high. Fls? Frs 12 Dec 1970. LAPJ 371, “flat parts,” EBCh. Known only from this collection.

*Monniera trifolia* L. Perennial herb 30–40 cm high. Fls white. Jun.–Dec. JASM 3129, EBCh; MGA 91-244, Arroyo Careyes.

*Zanthoxylum arborescens* Rose. Tree 3–4 m high. Fls? JASM 3653, EBCh.

*Zanthoxylum caribaenum* Lam. vel aff. Tree 5–15 m high. Fls greenish-yellow. May–Jun. EJL 2281, JASM 4024, EBCh; EJL 3503, JASM 1587, Cuixmala.

*Zanthoxylum fagara* (L.) Sarg. Shrub or small tree 2–4 m high. Fls yellowish-green. May–Jul. Frs Jul.–Oct. EJL 1724, JASM 4088, SHB 1953, EBCh; EJL 3210, Cuixmala.

*Zanthoxylum* sp. Tree 4 m high. Fls? EJL 682, Quémaro.

## Salicaceae

*Salix gooddingii* Ball [= *S. nigra* Marsh.?]. Sauz. Tree 5–12 m high. Catkins yellow, fls white. Jan.–Apr.; Aug. BMR 173, EJL 3104, EJL 3168, EJL 3868, Cuixmala.

*Salix taxifolia* HBK. Shrub 1 m or more high. Fls cream-white. Jan. EJL 3232, Cuixmala.

## Sapindaceae

*Cardiospermum halicacabum* L. Perennial vine. Fls white to pink. Sep.–Jan. LAPJ 1534, MGA 852, EBCh; CC 5194, JLM 1357, Cuixmala.



*Cupania dentata* DC. [= *C. glabra* Sw.]. Tree 3–6 m high. Fls yellow-green. Jan.–May. MGA 705, La Fortuna; MGA 549, Salinas Chamela; JASM 602, EBCh; LAPJ 1319, Rancho El Paraíso; EJL 3335, Cuixmala.

*Matayba scrobiculata* (Kunth) Radlk. Shrub 2 m. Fls? Frs May. EJL 3597, Salinas Careyes.

*Matayba spondioides* Standl. Tree 8 m high. Fls? Frs Aug. JASM 3912, Playa El Negrito; AR 956, EJL 3803, Cuixmala.

*Paullinia cururu* L. Vine. Fls greenish-yellow. Jul. EJL 1837, MGA 86, EBCh; ACS 8659, ACS 11213, JLM 1327, Cuixmala.

*Paullinia fuscescens* HBK. Vine. Fls white. Mar.–Apr. EJL 1002, Arroyo Chamela; EJL 2394, Arroyo Tapeixtes; EJL 3358, Cuixmala.

*Paullinia sessiliflora* Radlk. in Rose. Vine. Fls cream-colored. Feb.–May. EJL 894, EJL 957, EBCh; ACS 10602, EJL 3328, Cuixmala.

*Paullinia tomentosa* Jacq. Vine. Fls white. Feb. JASM 967, “road to Barra de Navidad”.

*Sapindus saponaria* L. Tree 2–7 m high. Fls white. Jan.–Feb. SHB 914, EJL 1671, Arroyo Chamela; JASM 3977, EBCh; MGA 91-151, Cuixmala.

*Serjania brachycarpa* A. Gray. Vine. Fls? Frs Dec. EJL 1620, Cerro Colorado.

*Thouinia paucidentata* Radlk. Shrub or small tree 2–6 m high. Fls white to greenish. Mar.–Jul. EJL 903, LAPJ 1376, EBCh; MGA 91-190, Arroyo Careyes; MGA 91-207, Pueblo Careyes; EJL 3466, EJL 3713, Cuixmala.

*Thouinidium decandrum* (Humb. & Bonpl.) Radlk. Tree 5–12 m high. Fls white. Mar.–Jun. MGA 91-115, SHB 1146, Arroyo Chamela; ACS 10982, EJL 3691, Cuixmala.

### Sapotaceae

*Pouteria campechiana* (HBK.) Baehni. Tree 12 m high. Fls white. Mar. ACS 10615, EJL 3485, Cuixmala.

*Pouteria* sp. Shrub or tree. Juveniles only found. EJL 3275, Cuixmala. Also known from EBCh, Arroyo Colorado, in understory of Tropical Semideciduous Forest.

*Sideroxylon capiri* (A. DC.) Pittier subsp. *tem-*

*pisque* (Pittier) Pennington. Capiri; Tempisque. Tree 10–18 m high. Fls white. May–Jul. EJL 1081, Arroyo Chamela; EJL 3703, Cuixmala.

*Sideroxylon cartilagineum* (Cronq.) Pennington. Shrub or small tree 3–4 m high. Fls white. Apr.–May. EJL 962, JASM 2886, EBCh; EJL 3272, Cuixmala.

*Sideroxylon obtusifolium* (Roem. & Schult.) Pennington subsp. *buxifolium* (Roem. & Schult.) Pennington. Shrub or small tree 4 m high. Fls? Frs May. EJL 3467, Cuixmala. This is apparently the first record from Jalisco.

*Sideroxylon stenospermum* (Standl.) Pennington. Shrub or small tree to 6 m high. Fls cream-colored. May. LAPJ 867, EBCh; ACS 11220, EJL 3534, Cuixmala.

### Scrophulariaceae

*Bacopa monnieri* (L.) Wettst. Perennial herb. Fls white to lavender with yellow throat. Mar.–Nov. MGA 266, Arroyo Chamela; EJL 2834, Rancho Arroyo Zarco; EJL 1554, Rancho El Paraíso; ACS 10575, BMR 139, Cuixmala.

*Capraria frutescens* (Mill.) Britten. Perennial herb 50–80 cm high. Fls white. Nov.–Jan. MGA 447, Arroyo Chamela; EJL 1573, EBCh; EJL 3086, EJL 4096, Cuixmala.

*Lindernia* sp. Annual herb. Fls with white limb and pale lavender tube. Mar.–May. ACS 10502, EJL 3013, EJL 3180, EJL 3395, Cuixmala.

*Mecardonia vandellioides* (HBK.) Pennell. Prostrate annual herb with stems 14–45 cm long. Fls yellow. Jan.–May. EJL 3124, EJL 3185, EJL 3406, Cuixmala.

*Russelia tenuis* Lundell. Perennial herb 0.5–1.5 m high. Fls red. Aug.–Mar. JASM 3831, EBCh; EJL 1633, Cerro Colorado; ACS 10538, ACS 10601, EJL 3248, EJL 3775, Cuixmala.

*Schistophragma pusilla* Benth. Annual herb 10–30 cm high. Fls purple. Aug.–Oct. EJL 1421, MGA 101, EBCh; ACS 11203, Cuixmala.

*Scoparia dulcis* L. Annual herb 15–75 cm high. Fls greenish-white. Oct.–Mar; probably flowering throughout the year. EJL 2408, Río San Nicolás; EJL 2356, EBCh; EJL 2636, Arroyo Chamela; ACS 10512, EJL 3101,

## Cuixmala.

*Stemodia durantifolia* (L.) Sw. Annual herb 15–40 cm high. Fls purple. Oct.–Apr. MGA 269, Arroyo Chamela; EJL 893, EJL 2197, EBCh; ACS 10576, EJL 3106, Cuixmala.

**Simaroubaceae**

*Recchia mexicana* Moc. & Sessé. Parácata. Tree 4–10 m high. Fls cream-colored. Feb.–Apr. LAPJ 587, SHB 1305, EBCh; EJL 3158, Cuixmala.

**Solanaceae**

*Capsicum annuum* L. var. *glabriusculum* (Dun.) Heiser & Pickersgill. Shrub 0.5–1 m high. Fls white. Aug.–Sep. EJL 711, JASM 2691, EBCh; EJL 659, Rancho El Paraíso; EJL 3776, EJL 4045, Cuixmala.

*Datura discolor* Bernh. Toloache (CC). Erect annual herb 25–80 cm high. Fls white to pale lavender. Aug.–Apr. EJL 626, Playa El Negrito; EJL 2664, 8.4 km E of Juan Gil; EJL 1466, Arroyo Chamela; EJL 2373, EBCh; MGA 844, Pueblo Careyes; BMR 142, CC 5252, EJL 3494, Cuixmala.

*Lycianthes ciliolata* (Martens & Gal.) Bitter. Chilillo (JLM). Annual herb to 80 cm high. Fls white with green markings. Jul. EJL 3655, JLM 1334, Cuixmala.

*Lycianthes lenta* (Cav.) Bitter, vel aff. Scandent subshrub. Fls pale lavender with green stripe on back of each corolla lobe. May–Jul. SHB 1219, SHB 1681, EBCh; EJL 2799, Arroyo Careyes; ACS 10509, EJL 3426, Cuixmala.

*Lycianthes* cf. *moziniana* (Dun.) Bitter? Vine. Fls pale lavender. MGA 21, SHB 1209, EBCh.

*Lycopersicon esculenta* Mill. Herb 75 cm high. Fls pale yellow. Apr. EJL 2850, Arroyo Careyes. Cultivated and escaping.

*Nicandra physalodes* (L.) Gaertn. Annual herb 70 cm high. Fls white-lavender. May–Sep. JASM 4360, MGA 894, Río San Nicolás.

*Nicotiana glauca* Grah. Shrub 2.5 m high. Fls yellow. May–Aug., probably throughout the year. EJL 3423, Cuixmala.

*Nicotiana plumbaginifolia* Viviani. Erect an-

nual herb 1 m high. Fls white, tube bronze-green. Mar.–May. EJL 2395, Arroyo Tapeixtes; ACS 10544, EJL 3382, Cuixmala.

*Nicotiana tabacum* L. Herb 1–2.5 m high. Fls pink. Mar.–May. ACS 10599, EJL 3425, Cuixmala. Escaping.

*Physalis cordata* Mill. Herb 30 cm high. Fls yellow. Jan. CC 5257, EJL 3153, Cuixmala.

*Physalis lagascae* Roem. & Schult. Annual herb 30 cm high. Fls pale yellow with dark brown spots at base of petals. Oct.–Nov. EJL 2853, EJL 4168, Cuixmala.

*Physalis leptophylla* Rob. & Greenm. Tomatillo. Herb 20–40 cm high. Fls pale yellow. Nov.–Dec. LAPJ 264, EBCh.

*Physalis maxima* Mill. Herb to 1 m high. Fls white or yellow with purple spots at base of petals. May–Oct. EJL 2610, Río San Nicolás; EJL 528, EJL 1536, EBCh; AR 1020, EJL 3528, EJL 4170, Cuixmala.

*Physalis mimulus* Waterfall. Annual herb. Fls pale yellow with brownish spots at base of petals. Nov. EJL 3961, Cuixmala.

*Physalis minuta* Griggs. Annual herb 30 cm high. Fls pale yellow. Oct. MGA 1263, Cuixmala.

*Solanum americanum* Mill. Perennial herb 20–30 cm high. Fls white. Mar.–May. ACS 10519, EJL 3397, Cuixmala.

*Solanum campechiense* L. Annual herb 50 cm high. Fls white to pale lavender. Mar.–Jul. EJL 2347, Pérula; EJL 2563, EJL 3392, EJL 3635, Cuixmala.

*Solanum deflexum* Greenm. Annual herb 15–45 cm high. Fls? Frs Oct. EJL 1430, MGA 84, EBCh.

*Solanum diphyllum* L. Shrub 1–2 m high. Fls white. Apr.–Jul. BMR 174, EJL 2559, Cuixmala.

*Solanum erianthum* D. Don. Shrub 1 m high. Fls white. Apr. MGA 91-74, Cuixmala.

*Solanum grayi* Rose var. *grandiflorum* Whalen. Erect annual herb 1 m high. Fls white. Feb.–May. ACS 10517, EJL 3393, MGA 91-9, Cuixmala.

*Solanum hazenii* Britton. Shrub 1–3 m high. Fls white. Jul.–Sep. EJL 1211, Chamela; EJL 517, EBCh; MGA 791, Pueblo Careyes; CC 5236, EJL 3656, JLM 1320, Cuixmala.

*Solanum lignescens* Fern. Perennial herb or subshrub 40–50 cm high. Fls white. Jun.–Sep. MGA 9, SHB 1214, EBCh; Arroyo Tapeixtes.

*Solanum madrense* Fern. Spiny shrub 2 m high. Fls white. Jun. EJL 2570, Cuixmala.

*Solanum ochraceo-ferrugineum* (Dun.) Fern. Shrub 1.5–2.5 m high. Fls white. Jan.–Feb. LAPJ 597, LAPJ 1119, EBCh.

*Solanum refractum* Hook. & Arn. Spiny vine in trees 4–5 m high. Fls white. Jul.–Aug. EJL 1229, Arroyo Chamela; JASM 3674, EBCh; EJL 3261, Cuixmala.

*Solanum tequilense* A. Gray [*S. candidum* Lindl.?]. Spiny shrub 1 m high and wide. Fls white. May. EJL 3413, Cuixmala.

### **Sterculiaceae**

*Ayenia filiformis* S. Wats. Perennial herb 15–30 cm high. Fls cream-colored with red streaks. Oct.–Nov. EJL 697, JASM 3932, JASM 3969, EBCh.

*Ayenia micrantha* Standl. Shrub 1–3 m high. Fls yellow or green and pink. Aug.–Oct. EJL 690, JASM 4095, EBCh; MGA 110, Arroyo Tapeixtes; EJL 3454, EJL 3934, Cuixmala.

*Ayenia wrightii* Robinson [= *A. manzanilloana* Rose]. Perennial herb 30–50 cm high. Fls pink. Oct.–Dec. MGA 304, 6.1 km E of Juan Gil; MGA 1047, Laguna La Virgen; EJL 1426A, EBCh; EJL 1612, Cerro Colorado.

*Byttneria aculeata* Jacq. Shrub with sprawling or vinelike, prickly stems. Fls green or purple. Jul.–Sep. MGA 243, Arroyo Chamela; EJL 584, JASM 2471, MGA 121, EBCh; MGA 199, Arroyo Cajones; EJL 2900, EJL 3446, Cuixmala.

*Byttneria catalpifolia* Jacq. Vine. Fls green. Sep. Frs Oct.–Jan. ACS 11168, EJL 701, EJL 3246, EJL 4130, Cuixmala.

*Guazuma ulmifolia* Lam. Guácima. Shrub or small tree 2–8 m high. Fls green or cream-colored, base of petals and filaments red. May–Sep. JASM 545, EBCh; BMR 144, EJL 3204,

EJL 3363, EJL 4136, MGA 562, Phillips 1173, Cuixmala.

*Helicteres baruensis* Jacq. Shrub 1–2.5 m high. Fls green. Sep.–Oct. EJL 1460, La Rumorosa; SHB 1005, EBCh; ACS 8681, Cuixmala.

*Melochia nodiflora* Sw. Shrub to 2 m high. Fls pink. Oct. EJL 2677, Pueblo Careyes.

*Melochia pyramidata* L. Perennial herb 25 cm high. Fls lavender. Sep.–Nov. SHB 1674, EBCh; EJL 3998, Cuixmala.

*Melochia tomentosa* L. Shrub 1–2.5 m high. Fls lavender. May–Oct. EJL 521, EBCh; EJL 3543A, Cuixmala.

*Physodium adenodes* (Goldberg) Fryxell var. *adenodes* comb. nov. ined. [= *P. corymbosum* Presl]. Shrub 1.5–4 m high. Calyx red, corolla yellow. Jan.–Feb. SHB 1080, EBCh; EJL 3245, MGA 91-35, Cuixmala. This very showy shrub with bright red, lantern-like calyces could have ornamental potential if the problem of its somewhat rangy habit could be overcome.

*Waltheria indica* L. sens. lat. Perennial herb or subshrub 15–75 cm high. Fls yellow. Sep.–Oct. EJL 561, EBCh; EJL 2870, EJL 3306, Cuixmala.

### **Theophrastaceae**

*Jacquinia pungens* A. Gray. Armolillo; Guayaca (CC); Yaquate. Shrub or small tree 1–4 m high. Lvs spine-tipped. Fls orange-red. Oct.–Jan. MGA 1055, Laguna La Virgen; SHB 1064, EBCh; BMR 126, Caleta Blanca; CC 5324, EJL 2902, Cuixmala. The flowers yield a yellow dye. Standley (1926: 1105) reports that the fruits are used to stupefy fish.

### **Thymeleaceae**

*Daphnopsis* sp. Shrub 3 m high. Sterile in Oct. EJL 1389, EBCh. The leaves of this species do not match any at F, MEXU, MO, or US. The Chamela material should be compared with a species recently described from Baja California, which it resembles superficially. Our species probably has a very brief flowering period, as many visits to the only known locality, on the higher part of the EBCh, have been made to no avail. A collection with fruits has been lost.

**Tiliaceae**

*Corchorus aestuans* L. Annual herb to 75 cm high. Fls yellow. Aug.–Nov. MGA 270, Quémario; MGA 924, Pueblo Careyes; EJL 2871, EJL 3871, EJL 4102, Cuixmala.

*Corchorus hirtus* L. Erect annual herb. Fls yellow. Sep. ACS 8667, EJL 3613, Cuixmala.

*Corchorus siliquosus* L. Herb. Fls yellow. Sept. ACS 11190, Cuixmala.

*Heliocarpus pallidus* Rose [earlier reported as *H. occidentalis* Rose]. Majahua. Tree 4–8 m high. Fls yellowish-green. Oct.–Nov. EJL 663, SHB 1010, EBCh; EJL 2890, EJL 3999, EJL 4037, Cuixmala.

*Luehea candida* (DC.) Mart. Tree 4–8 m high. Fls white. Aug.–Sep. EJL 496, SHB 1229, EBCh; EJL 4064, Cuixmala.

*Triumfetta* cf. *bogotensis* DC. Perennial herb to 1 m high. Fls yellow. Nov. EJL 4073, Cuixmala.

*Triumfetta hintonii* Sprague [earlier reported as *T. acracantha* Hochr.]. Subshrub 0.5–1.5 m high. Fls yellow. Oct. EJL 1437, EJL 2121, EBCh; EJL 612, Arroyo Careyes; EJL 4057, Cuixmala.

*Triumfetta paniculata* Hook. & Arn. Shrub 2 m high. Fls yellow. Nov. EJL 4103, Cuixmala.

*Triumfetta semitriloba* Jacq. Shrub 1 m high. Fls yellow. Jan. EJL 3251, Cuixmala.

**Turneraceae**

*Turnera diffusa* Willd. Shrub 0.4–1 m high. Fls yellow. Jun.; Oct.–Jan. EJL 1463, La Rumorosa; EJL 1695, EBCh; MGA 91-174, Caleta Blanca; EJL 4160, Cuixmala.

*Turnera velutina* Presl [earlier misidentified as *T. ulmifolia* L.]. Low perennial herb. Fls yellow. Jun.–Jan. EJL 3305, MGA 61, MGA 91-174, Cuixmala.

**Ulmaceae**

*Celtis caudata* Planch. Tree 8–15 m high. Fls greenish-yellow. Jul. Frs in Jan. EJL 1688, SHB 1743 (Eje Central m. 1000), EBCh. This is a rare plant in our area.

*Celtis iguaneus* (Jacq.) Sarg. Granjena. Shrub,

sometimes with long vinelike branches, or tree 1–4 m high. Fls green. May–Jul. MGA 903, Río San Nicolás; JASM 4218, SHB 1736, EBCh; MGA 201, Arroyo Cajones; EJL 3349, Cuixmala. The fruit is edible but not pleasant.

*Phyllostylon rhamnoides* (Poisson) Taubert. Tree 4–8 m high. Fls? Frs dry, winged. Collected only in sterile condition thus far except for one January fruiting collection. LAPJ 742, 45 km N of Río Chamela bridge; EJL 3520, Cuixmala.

*Trema micrantha* (L.) Blume. Shrub or tree 2–5 m high. Fls greenish. Sep.–Nov. MGA 415, Arroyo Chamela; JASM 2897, EBCh; SHB 1753, Pueblo Careyes; EJL 4089, Cuixmala.

**Umbelliferae**

*Eryngium nasturtiifolium* Juss. ex Delar. f. Prostrate annual herb in moist gravel along rivers. Fls green. Mar.–May. MGA 723, Arroyo Chamela; ACS 10507, EJL 3179, EJL 3383, Cuixmala.

**Urticaceae**

*Discocnide mexicana* (Liebm.) Chew [= *Laportea mexicana* (Liebm.) Wedd.]. Pole-like shrub 1.5–3 m high. Fls greenish or reddish. May–Jul. EJL 483, Arroyo Chamela; EJL 3497, Cuixmala.

*Myriocarpa* sp. Shrub 2–3 m high. Flowers yellowish. Jun. EJL 3506, MGA 91-156, Phillips 1165, Cuixmala.

*Pouzolzia palmeri* S. Wats. Shrub with arching branches 2–3 m long. Fls white. Jun.–Jul. SHB 1187, EBCh; MGA 11, Arroyo Tapeixtes; MGA 91-224, Cuixmala.

*Urera caracasana* (Jacq.) Griseb. Urtiguilla. Shrub or small tree 2–4 m high. Fls white. Mar.–Jun. EJL 1746, MGA 752, EBCh; MGA 91-106, MGA 91-194, Arroyo Careyes; CC 5288, Cuixmala.

**Verbenaceae**

*Avicennia germinans* (L.) L. [= *A. nitida* Jacq.]. Mangle; Mangle Negro. Shrub or tree 2–4 m high or more. Fls white to greenish. May–Jun. EJL 886, EJL 1064, Pérula; EJL 668, Playa La Virgencita; MGA 762, Playa Careyitos.

*Bouchea dissecta* S. Wats. Annual herb. Fls?

Frs Nov. EJL 4078, Cuixmala.

*Bouchea flabelliformis* M. E. Jones. Herb 0.4–1 m high. Fls blue or lavender. Sep.–Oct. EJL 2606, Río San Nicolás; EJL 1393, JASM 3799, EBCh.

*Bouchea prismatica* (L.) Ktze. Herb 20–60 cm high. Fls lavender or purple. Jul.–Nov. EJL 723, JASM 3021, EBCh.

*Citharexylum affine* D. Don. Tree 4 m with viny branches. Fls lavender. May–Jul. LAPJ 1780, Arroyo Chamela; EJL 2808, MGA 91-234, Arroyo Careyes; EJL 3421, Cuixmala.

*Citharexylum donnell-smithii* Greenm. var. *pubescens* Mold. Shrub or tree to 7 m high. Fls? LAPJ 1125, EBCh.

*Citharexylum hirtellum* Standl. Tree 3–5 m high. Fls? Frs Aug.–Sep. EJL 1236, Cerro La Tambora; EJL 1796, LAPJ 955, EBCh; MGA 148, Arroyo Tapeixtes.

*Citharexylum standleyi* Mold. var. *mexicanum* Mold. Shrub or small tree 4–5 m high. Fls white. Jul. LAPJ 1782, between Chamela and EBCh, Km 62 of Pto. Vallarta-B. de Navidad hwy; JASM 4231, SHB 1189, EBCh.

*Lantana camara* L. var. *parviflora* Mold. Shrub 0.5–1.5 m high. Fls orange and red. Apr.–Nov. EJL 3312, Quémáro; LAPJ 728, EBCh; BMR 169, EJL 3943, Cuixmala.

*Lantana canescens* HBK. [= *L. microcephala* A. Rich.]. Shrub 1–2 m high. Fls white with yellow throat. Jan.–Jul. JASM 3970, EBCh; EJL 3748, Cuixmala.

*Lantana frutilla* Mold. var. *velutina* Mold. Shrub. Fls? Jul. LAPJ 1810, EBCh.

*Lantana jaliscana* Mold. Shrub 1 m high. Fls white. Dec. JASM 356, the type, EBCh.

*Lantana langlassei* Mold. Shrub 1.5 m high. Fls? Frs in Sep. EJL 535, EBCh.

*Lippia alba* (Mill.) N.E. Br. Mas Trago. Decumbent shrub 1 m high. Fls lavender with yellow throat. Apr.; Aug.–Oct. EJL 1471, EJL 1845, Arroyo Chamela; BMR 172, Cuixmala.

*Lippia graveolens* HBK. Orégano de Monte. Shrub 1–2 m high. Fls white. Oct.–Feb. EJL 1523, JASM 479, EBCh; EJL 4162, Cuixmala.

*Lippia mcvaughii* Mold. Tree 2–7 m high. Cuero de Venado. Fls white with yellow throat. Nov.–Feb. JASM 982, SHB 1283, EBCh.

*Phyla nodiflora* (L.) Greene. Prostrate perennial herb with stems to 1 m long; rooting at the nodes and forming colonies. Fls white with pink throat. Jan.–Apr. ACS 10551, BMR 164, EJL 3256, Cuixmala.

*Phyla scaberrima* (Juss.) Mold. [= *Lippia dulcis* Trev.?]. Perennial herb 40–60 cm high. Fls white. Apr.–May. EJL 2411, Río San Nicolás, EJL 3400, Cuixmala.

*Priva lappulacea* (L.) Pers. Weedy, erect annual herb to 50 cm high. Fls white to lavender. Sep. EJL 502, EBCh.

*Stachytarpheta incana* Mold. Subshrub 1.5 m high. Fls blue-purple. Aug. EJL 3823, Cuixmala.

*Verbena litoralis* HBK. Annual or perhaps perennial herb 50 cm or more high. Fls white to pale lavender. May. EJL 3424, Cuixmala.

*Vitex hemsleyi* Briq. Tree 4–8 m high. Fls blue. Jun.–Jul. JASM 4229, EBCh; MGA 91-110, Arroyo Careyes; EJL 3361, Cuixmala.

*Vitex mollis* HBK. Aquilote; Obalan. Tree commonly 4–8 m but sometimes to 15 m high. Fls white and lavender. Mar.–Jul. SHB 1344, Arroyo Chamela; JASM 372, EBCh; EJL 3482, Cuixmala.

## Violaceae

*Hybanthus attenuatus* (Humb. & Bonpl.) G.K. Schulze. Erect annual herb 20–50 cm high. Fls blue or lavender to white. Jul.–Sep. EJL 1748, LAPJ 1387, EBCh; LAPJ 1803, Pueblo Careyes; EJL 3786, EJL 3829, Cuixmala.

*Hybanthus mexicanus* Ging. Shrub 1–3 m high. Fls white. Jun.–Dec. EJL 564, EJL 1093, SHB 1279, EBCh; MGA 91-189, Arroyo Careyes; JLM 1365, Cuixmala.

*Hybanthus serrulatus* Standl. Perennial herb or subshrub to 1 m high, sometimes sprawling. Fls greenish-yellow. Oct.–May. EJL 1605, Arroyo Chamela; MGA 309, 6.1 km E of Juan Gil; EJL 1577, EBCh; EJL 2894, EJL 3481, Cuixmala.

**Vitaceae**

*Ampelocissus acapulcensis* (HBK.) Planch. Vine. Fls red. Feb.–May. SHB 1875, 6 km NE of Juan Gil toward Ranchitos; JASM 3983, EBCh; EJL 3409, EJL 3518, Cuixmala.

*Ampelopsis mexicana* Rose. Vine. Fls greenish-yellow. Mar.–Jul. EJL 1040, JASM 4232, EBCh.

*Cissus rhombifolia* Vahl. Vine. Fls green or yellow. Jul.–Oct. EJL 1235, Cerro La Tambora; EJL 1859, MGA 88, EBCh; EJL 4018, Cuixmala; EJL 1380, Hotel Angeles Locos de Tenacatita.

*Cissus sicyoides* L. Vine. Fls green. Sep.–Jul. EJL 1470, Arroyo Chamela; LAPJ 1790, Laguna La Virgen; EJL 873, SHB 1218, EBCh; BMR 162, EJL 3151, Cuixmala.

*Cissus trifoliata* L. Vine. Fls green. Aug.–Oct. MGA 917, Quémaro; JASM 3823, San Mateo; EJL 1478, Arroyo Chamela.

*Cissus* sp. Parilla. Vine. EJL 2905, Cuixmala. A simple-leaved species with white venation on dark purplish-green leaves which are red beneath. Found in understory of Tropical Deciduous Forest, always sterile.

**Zygophyllaceae**

*Guaiacum coulteri* A. Gray. Guayacán. Tree 4–8 m high. Fls blue-purple. Apr.–Jun (–Jul). EJL 2571, San Mateo; EJL 482, EBCh; EJL 616, MGA 91-187, Arroyo Careyes; EJL 3517, Phillips 1164, Cuixmala.

*Kallstroemia grandiflora* Torr. ex A. Gray. Annual herb to 40 cm high. Fls golden-orange. Jul.–Dec. EJL 2609, Río San Nicolás; EJL 2824, San Mateo; EJL 2595, MGA 937, Pueblo Careyes.

*Kallstroemia maxima* (L.) Hook. & Arn. Annual herb. Fls pale golden yellow, stamens bright orange. Aug.–Apr. EJL 741, SHB 983, EBCh; BMR 165, EJL 3956, Cuixmala.

*Kallstroemia pubescens* (G. Don) Dandy in Keay [= *K. caribaea* Rydb. in Vail & Rydb.]. Annual herb. Fls yellow. Jul.–Aug. JASM 3716, Chamela; LAPJ 1388, EBCh.

*Tribulus cistoides* L. Annual herb. Fls yellow. Jun.–Nov. EJL 745, EJL 2578, JASM 3785,

EBCh; EJL 3563, Cuixmala.

## MONOCOTYLEDONS

**Agavaceae**

*Agave angustifolia* Haw. Shrub 1–1.5 m high. Infl paniculate. Fls yellowish. Oct. McVaugh 25276, near Río San Nicolás, SE of Tomatlán; EJL 907, EBCh; EJL 603, Rancho Arroyo Zarco; EJL 3292, Cuixmala.

*Agave colimana* H. S. Gentry. Shrub mostly 0.5–1 m high. Infl spicate. Fls green. Jan.–Mar. EJL 908, EBCh; H. Gentry 23540, Rancho El Paraíso; EJL 3304, Cuixmala.

*Manfreda chanelensis* Lott & Verhoek. Perennial herb. Infl spicate, 1–1.5 m high. Fls green. Dec. Rare. EJL 1663, EBCh; EJL 2817, Arroyo Careyes; EJL 3271, Cuixmala.

*Yucca* sp. Shrub. EJL 2392, Arroyo Tapeixtes. Sighted and photographed at Arroyo Careyes and Cuixmala. This large and conspicuous plant is uncommon in the understory of Tropical Deciduous Forest. Found mostly along watercourses, it reaches perhaps 8 m in height and has a woody trunk. It has not yet been collected in flower, nor have remnants of old inflorescences ever been found on it, despite careful search. Because it is known from various sites in our area, most of them well away from disturbance, I have no doubt that it is native. The leaves do not match descriptions of other *Yucca* species in McVaugh (1989).

**Alismataceae**

*Echinodorus subalatus* (Mart.) Griseb. Perennial aquatic herb to ca 50 cm high. Fls white. Oct.–Apr. EJL 2701, Quémaro; EJL 605, Rancho Arroyo Zarco; BMR 177, BMR 190, EJL 4114, Cuixmala.

*Sagittaria lancifolia* L. subsp. *media* (Micheli) Bogin. Aquatic herb. Fls white. Jul. JASM 1127, Laguna La Virgen.

**Araceae**

*Philodendron warscewiczii* Schott [earlier misidentified as *P. radiatum* Schott]. Vinelike epiphyte. Fls? SHB 1101, EBCh; EJL 3268, Cuixmala.

*Pistia stratiotes* L. Floating aquatic herb. Fls?

Oct.–May. EJL 2633, Arroyo Chamela; EJL 3387, Cuixmala.

*Xanthosoma hoffmannii* Schott. Perennial herb 0.8 m high. Fls greenish. Aug.–Oct. EJL 1417, EBCh; AR 993, EJL 3783, Cuixmala.

### Bromeliaceae

*Aechmaea bracteata* (Sw.) Griseb. var. *pacifica* Beutelspacher. Epiphyte 1 m high or more. Fls lavender. Jan. EJL 1680, SHB 1151, EBCh.

*Aechmaea mexicana* Baker. Epiphyte 60–80 cm high. Fls red or purplish. Jan.–Feb.? Beutelspacher s.n. (MEXU), Chamela, near EBCh, cited in McVaugh (1989:9). This species was not found by Magaña in intensive Bromeliad collecting in the Chamela area.

*Billbergia pallidiflora* Liebman. Epiphyte 0.8–1 m high. Fls green. Aug. EJL 1007, MGA 114, EBCh.

*Bromelia palmeri* Mez. Shrub with lvs 0.5–1.2 m long. Fls yellowish-green. Jun.–Aug. JASM 3045, Arroyo Chamela; SHB 1221, EJL 1008, EBCh.

*Bromelia pinguin* L. Shrub with lvs 0.3–1.6 m long. Fls pinkish-purple. Jul. BMR 99, Quémaro; MGA 416, Arroyo Chamela; LAPJ 1375, “near Chamela”; JASM 3613, Las Rosadas.

*Bromelia plumieri* (E. Morren) L. B. Smith. Jocuistle; Piñuela. Shrub with lvs 0.6–2.5 m long. Fls lavender. May–Aug. EJL 583, EJL 1065, JASM 3096, EBCh.

*Bromelia* sp. nov. Shrub with lvs to 3 m long. Fls pink. May. EJL 3569, EJL 3667, Cuixmala. The inflorescence is ellipsoid, not sunk in the center of the leaf-rosette as in *B. plumieri*, and is erect but not on a definite scape as in *B. palmeri*.

*Catopsis nutans* (Sw.) Griseb. Epiphyte 20–35 cm high. Fls yellow. Oct.–Dec. JASM 4171, EBCh.

*Hechtia laevis* L.B. Smith. Shrub to 1 m high in flower. Fls white. Jul.–Aug.? EJL 909, JASM 3834, JASM 4090, EBCh; CC 5392, Cuixmala. Very poorly known but thought to be endemic to Colima and Jalisco.

*Tillandsia balbisiana* Schult. f. in Roem. &

Schult. Epiphyte 15–45 cm high in flower. Fls purple or violet. Oct.–Jan (–May?). LAPJ 384, near Río San Nicolás; EJL 1626, EBCh; MGA 501, Arroyo Tapeixtes.

*Tillandsia bartramii* Elliott. Epiphyte 18–35 cm high. Fls pink or purple. May. McVaugh 25232, Chamela; EJL 1039, EJL 1625, MGA 404, EBCh.

*Tillandsia caput-medusae* E. Morr. Epiphyte 15–35 cm high. Fls purple or violet. Mar.–May. Magaña 324, Magaña 332, road to Juan Gil. Easily confused with *T. balbisiana*.

*Tillandsia dasylyriifolia* Baker [earlier misidentified as *T. makoyana* Baker]. Epiphyte to 1 m high in flower. Fls purple or white? Fl almost throughout the year? Magaña 308, SHB 908, EBCh; Magaña 209, Arroyo Tapeixtes.

*Tillandsia diguettii* Mez & Roland-Gosselin ex Mez. Epiphyte 10–15 cm high. Fls purple. May. Endemic to Jal and Col. JASM 3568, EBCh; MGA 300, Arroyo Tapeixtes; EJL 3307, Magaña 225, Cuixmala. Part of McVaugh 25214 (MICH), a mixed collection, was reported in Smith and Downs (1977) as *T. pruinosa* Sw.

*Tillandsia fasciculata* Sw. var. *venosispica* Mez. Epiphyte 40–60 cm high in flower. Fls green. Aug.–Dec. EJL 1253, McVaugh 25217, SHB 1240, EBCh; MGA 301, Arroyo Tapeixtes; Magaña 303, Salinas Careyes; ACS 11222, Cuixmala.

*Tillandsia ionantha* Planch. var. *ionantha*. Epiphyte 4–10 cm high in flower. Fls purple. May–Jul. EJL 486, JASM 3566, Magaña 46, EBCh; EJL 3525, Cuixmala.

*Tillandsia jalisco monticola* Matuda. Epiphyte 40–60 cm high in flower. Fls purple. Oct.–Dec. Magaña 322, Magaña 333, road to Juan Gil. Rare in our area.

*Tillandsia juncea* (Ruiz & Pav.) Poir. ex Lam. Epiphyte 35–50 cm high in flower. Fls purple. Oct. MGA 123, EBCh (Arroyo Maderas); EJL 2687, Arroyo Careyes; EJL 3265, Cuixmala.

*Tillandsia paucifolia* Baker [= *T. circinnata* of authors]. Epiphyte, forming chains several m long. Fls purple. Nov.–May. EJL 1073, JASM 3569, LAPJ 620, EBCh; EJL 3452, Cuixmala.

*Tillandsia polystachia* (L.) L. Epiphyte 50 cm high in flower. Fls purple. (Aug.–) Dec.–May. EJL 1036, SHB 1143, EBCh.

*Tillandsia pseudobaileyi* C.S. Gardner. Epiphyte. Fls purple. May. EJL 2343, Magaña 12, SHB 1150, EBCh.

*Tillandsia recurvata* (L.) L. Ball moss; Heno chico. Epiphyte 12–15 cm high. Fls violet. Dec. Magaña 14, SHB 1142, EBCh.

*Tillandsia schiedeana* Steudel. Epiphyte 9–20 cm high. Fls pink. Mar.–Jul. EJL 707, JASM 3567, EBCh; EJL 3523, EJL 4041, Cuixmala.

*Tillandsia setacea* Sw. Epiphyte 20–40 cm high. Fls pink or purple. May–Jul. LAPJ 1264, Magaña 17, EBCh; EJL 3515, Cuixmala.

*Tillandsia usneoides* (L.) L. Spanish moss; Heno. Epiphyte, forming chains several m long. Fls green. Aug.–Sep. LAPJ 687, EBCh; EJL 4128, Cuixmala.

*Tillandsia* sp. Epiphyte growing on rocks or on top of soil but not rooted in it, 1–1.5 m high in flower. Fls dark lavender. May. EJL 1632, SHB 1908, SHB 1945, Cerro Colorado.

### Cannaceae

*Canna glauca* L. Perennial herb. Fls pale yellow. Nov.–Mar. EJL 2352, Pérula; EJL 4109, Cuixmala.

*Canna indica* L. Perennial herb. Fls lemon-yellow with orange speckles. Aug. EJL 3909, Cuixmala.

### Commelinaceae

*Commelina diffusa* N. L. Burm. Perennial herb. Fls blue. Aug.–Apr. MGA 429, Río San Nicolás; MGA 721, Arroyo Chamela; MGA 120, EBCh; EJL 3194, Cuixmala.

*Commelina erecta* L. Perennial herb 50–80 cm high. Fls blue and white. Jul.–Feb. (May). EJL 2622, Quémario; MGA 833, Arroyo Chamela; EJL 728, EJL 1255, EBCh; MGA 91-237, Arroyo Careyes; EJL 3291, EJL 3437, MGA 91-30, Cuixmala.

*Commelina leiocarpa* Benth. [= *Phaeosphaerion leiocarpum* (Benth.) Hassk.]. Perennial herb with stems to 2 m long or more, often reclining on shrubs. Fls blue. Nov. Frs black, Mar. MGA 1059, Laguna La Virgen; EJL 2355,

EBCh; EJL 3457, Cuixmala.

*Tinantia longipedunculata* Standl. & Steyer. Herb 50 cm high. Fls pale blue. Aug. Frs white, Aug. EJL 1254, EJL 1434, EBCh; EJL 3774, Cuixmala.

*Tradescantia* sp. nov. Herb. Fls white. Aug. JASM 3670, EBCh.

*Tripogandra palmeri* (Rose) Woodson. Erect annual herb. Fls blue. Sep. MGA 885, EBCh.

### Cyperaceae

*Cyperus articulatus* L. Perennial herb 0.75–1.5 m high. May–Aug. BMR 176, CC 5154, EJL 3341, Cuixmala.

*Cyperus canus* Presl. Perennial herb 1.2 m high. Mar. ACS 10542, Cuixmala.

*Cyperus compressus* L. Annual herb 15–30 cm high. Nov.–Mar. EJL 1563, Arroyo Chamela; ACS 8664, ACS 10535, EJL 3388, EJL 3916, Cuixmala.

*Cyperus entrerianus* Boeck. Clump-forming perennial herb. Nov. EJL 3980, Quémario.

*Cyperus fugax* Liebm. [= *C. polystachyos* f. *fugax*]. Annual herb 5–15 cm high. Sep. EJL 569, EBCh; ACS 11200, Cuixmala.

*Cyperus hermaphroditus* (Jacq.) Standl. Perennial herb 15–50 cm high. Oct.–Nov. EJL 1508, EBCh; EJL 4050, Cuixmala.

*Cyperus iria* L. Annual herb 10–40 cm high. Aug.–Nov. EJL 3984, Quémario; EJL 2833, Rancho Arroyo Zarco; EJL 3915, Cuixmala.

*Cyperus ligularis* L. Clump-forming perennial herb to 1 m high. Jan. EJL 511, EJL 1250, EJL 2199, EBCh; ACS 9027, Hotel Careyes; ACS 11242, Cuixmala.

*Cyperus odoratus* L. Annual herb 5–60 cm high. Jan.–May. ACS 10499, ACS 10598, EJL 3177, EJL 3415, Cuixmala.

*Cyperus regiomontanus* Britton. Perennial herb 40 cm high. Sep.–Nov. ACS 11174, EJL 3949, EJL 3962, Cuixmala.

*Cyperus rotundus* L. Perennial herb 30 cm high. Mar. ACS 10549, Cuixmala.

*Cyperus sordidus* Presl. Perennial herb 20–50 cm high. Aug.–Jan. EJL 653, Rancho El



Paraíso; ACS 8658, AR 1008, EJL 3300, Cuixmala; EJL 1654, Arroyo Seco.

*Cyperus surinamensis* Rottb. [distributed as *C. cf. ochraceus* Vahl]. Perennial herb 15–60 cm high. Jan.–Mar. ACS 10552, ACS 10591, EJL 3110, Cuixmala.

*Cyperus tenerrimus* Presl. Perennial herb 10–25 cm high. Jul.–Oct. EJL 1275, EBCh; EJL 628, Arroyo Tapeixtes; ACS 11255, Cuixmala.

*Eleocharis cellulosa* Torr. Herb. Apr. J. v. Rooden 716 (MEXU), Arroyo Chamela. This specimen was identified and reported by A. Novelo (MEXU).

*Eleocharis mutata* (L.) Roem. & Schult. Perennial herb 75 cm high. Nov. EJL 4116, Cuixmala.

*Fimbristylis miliacea* (L.) Vahl. Perennial herb 20–30 cm high. Jan. EJL 3113, Cuixmala.

*Fimbristylis* sp. Perennial herb. Nov. EJL 1559, Rancho El Paraíso.

*Kyllinga odorata* Vahl. Perennial herb 10–30 cm high. Jan. EJL 3111, Cuixmala.

### Dioscoreaceae

*Dioscorea chamela* McVaugh. Vine. Fls green or purple-tinged. Nov.–Jan. McVaugh 25083, EBCh.

*Dioscorea convolvulacea* Schlecht. & Cham. Vine. Stam fls green. Dec.–Feb. EJL 2175, JASM 3988, EBCh.

*Dioscorea liebmannii* Uline. Vine. Fls green. Aug.–Sep. SHB 1031, SHB 1077, SHB 1660, SHB 1773, EBCh; EJL 3821, Cuixmala.

*Dioscorea mexicana* Scheidw. Vine. Fls maroon. May. EJL 3544, Cuixmala.

*Dioscorea remotiflora* Kunth. Vine. Fls pale green. Aug. EJL 3838, Cuixmala.

*Dioscorea subtomentosa* Miranda. Spiny vine. Fls dark purple. Mar.–Jun. EJL 1105, JASM 994, SHB 1723, EBCh; EJL 3532, Cuixmala.

*Dioscorea* sp. Vine. Fls green. Nov. SHB 1845, EBCh.

*Dioscorea* sp. [distributed as *D. polygonoides* Humb. & Bonpl. ex Willd.]. Vine. Fls green.

Oct.–Nov. EJL 1546, JASM 3134, EBCh.

*Dioscorea* sp. Vine. Fls Jan.–Feb. EJL 1679, SHB 1067, SHB 1081, SHB 1639, EBCh.

### Gramineae

Note: All R. Guzmán, and McVaugh or Rzedowski & McVaugh specimens cited below were taken from McVaugh (1983), as cited. I have seen none of them.

*Antheophora hermaphrodita* (L.) Ktze. Fre-sadilla. Annual (or perennial ?) herb 30–60 cm long. Oct.–Nov. EJL 1499, EBCh; EJL 1561, Rancho El Paraíso.

*Aristida jorullensis* Kunth. Annual herb 20–60 cm high. Nov. EJL 1560, McVaugh 26283, Rancho El Paraíso.

*Aristida ternipes* Cav. Perennial herb 0.5–1 m high. Oct. EJL 1524, EBCh.

*Arundo donax* L. Carrizo. Perennial cane 3–6 m high. Aug.–Jan. R. Guzmán 289, Playa La Fortuna; EJL 3140, Cuixmala.

*Bambusa paniculata* (Munro) Hack. Perennial cane up to 8–9 m tall. R. Guzmán 270, Playa el Tamarindo (Bahía de Tenacatita). McVaugh (1983:75) cites this collection and another from La Manzanilla, both very near our area.

*Bouteloua repens* (HBK.) Scribn. & Merr. Perennial herb 20–60 cm high. Aug.–Nov. EJL 1530, EBCh.

*Cenchrus brownii* Roem. & Schult. Huizapol. Annual or perennial herb 10–60 cm high. Nov.–May. EJL 3536A, EJL 3995, EJL 4069, Cuixmala.

*Cenchrus ciliaris* L. Buffel. Perennial herb 50–70 cm high. Oct.–May. R. Guzmán 218, Playa Chamela; EJL 1507, EBCh; EJL 3605, Cuixmala.

*Cenchrus incertus* M. A. Curtis. Grassbur. Annual or perennial herb 20–80 cm high. Flowering throughout the year. R. Guzmán 342, El Tecuán, 3 km W of Agua Caliente.

*Chloris gayana* Kunth. Perennial herb 0.5–1 m high. May. EJL 3592, Cuixmala.

*Chloris virgata* Swartz. Perennial herb to 1 m high. May. EJL 3537, Cuixmala.

*Cynodon dactylon* (L.) Pers. Bermuda Grass; Pata de Gallo (McVaugh). Creeping perennial

herb 10–40 cm high. Aug.; probably flowering throughout the year. JASM 3761, Chamela.

*Cynodon nlemfuensis* Vanderyst. Stargrass; Alicia (McVaugh). Perennial herb 30–40 cm high. May. EJL 3469, Cuixmala.

*Dactyloctenium aegyptium* (L.) Beauv. Annual herb 15–30 cm high. Aug., but probably flowering throughout the year. Rzedowski and McVaugh 1411, NW of Chamela; EJL 1272, EBCh.

*Digitaria bicornis* (Lam.) Roem. & Schult. Annual herb 30–50 cm high Nov.–May. McVaugh 26265, Rancho El Paraíso; ACS 10593, EJL 3450, EJL 3468, EJL 3957, Cuixmala.

*Digitaria ciliaris* (Retz.) Koeler. Annual herb 0.2–1 m high. May, but probably throughout the year. EJL 3385, Cuixmala.

*Echinochloa colonum* (L.) Link. Annual herb 0.3–0.8 m high. Sep.–Jan, probably throughout the year. EJL 1549, Rancho El Paraíso; ACS 11162, EJL 3076, EJL 3981, Cuixmala.

*Eleusine indica* (L.) Gaertn. Pie de Gallo (McVaugh). Annual or perennial herb 0.2–1 m high. Mar.–May. ACS 10594, EJL 3461, Cuixmala.

*Eragrostis ciliaris* (L.) R. Br. Annual herb 10–40 cm high. Oct.–May EJL 1510, EBCh; ACS 10588, EJL 3535, Cuixmala.

*Eragrostis dominguensis* (Pers.) Steudel. Perennial herb. Nov. EJL 1570, Arroyo Chamela. This collection was determined by S. Koch and confirmed by G. Davidse; the species is not included in McVaugh (1983).

*Eragrostis pectinacea* (Michx.) Nees var. *pectinacea*. Annual herb. Nov. EJL 3929, Cuixmala.

*Eragrostis prolifera* (Sw.) Steudel. Clump-forming perennial herb 1.5 m high. Nov. EJL 3959, Cuixmala.

*Eragrostis tenella* (L.) Beauv. ex Roem. & Schult. var. *tenella*. Annual herb 10–20 cm high. Nov.–May. EJL 1571, Arroyo Chamela; EJL 3615, EJL 3925, Cuixmala.

*Gouinia virgata* (Presl) Scribn. Erect, clump-forming perennial herb to 1.5 m high. Oct.–

Nov. EJL 1502, EJL 1583, EBCh; EJL 3960, EJL 4131, Cuixmala.

*Heteropogon contortus* (L.) Beauv. ex Roem. & Schult. Perennial herb 30–60 cm high. Nov. EJL 1557, Rancho El Paraíso.

*Hilaria ciliata* (Scribn.) Nash. Perennial herb 20–50 cm high. Aug.–Dec. R. Guzmán 582, Playa de Tecuán.

*Hymenachne amplexicaulis* (Rudge) Nees. Perennial herb 0.3–1 m high. May–Sep. ACS 11183, EJL 3379, Cuixmala.

*Ixophorus unisetus* (Presl) Schlecht. Annual herb 20–50 cm high. Nov, but probably flowering throughout the year. EJL 1569, Arroyo Chamela.

*Jouvea pilosa* (Presl) Scribn. Sprawling perennial herb. Oct.–Jan. AR 1017, EJL 3299, EJL 3951, Cuixmala. *J. straminea* Fourn. has been reported (McVaugh, 1983:203) from Playa Tenacatita and should be sought at Cuixmala.

*Lasiacis ruscifolia* (HBK.) Hitchc. var. *ruscifolia*. Clambering perennial herb 1–5 m long. Fls green. Dec. EJL 1509, JASM 403, EBCh; EJL 4003, EJL 4038, Cuixmala.

*Leptochloa filiformis* (Lam.) Beauv. Coarse annual herb 0.2–1.25 m high. Sep.–Mar. EJL 1272, EJL 1503, EBCh; ACS 8662, ACS 10587, EJL 3957, Cuixmala.

*Leptochloa uninervia* (Presl) Hitchc. & Chase. Annual herb 30–40 cm high. May. EJL 3351, Cuixmala.

*Leptochloa virgata* (L.) Beauv. Perennial herb to 1 m high. Oct. EJL 1540, EBCh.

*Opizia stolonifera* Presl. Rhizomatous, mat-forming perennial forming thick mats, 10–30 cm high. Nov. EJL 3993, Cuixmala.

*Oplismenus burmannii* (Retz.) Beauv. var. *nudicaulis* (Vasey) McVaugh [= *O. affinis* Scholz var. *affinis*]. Annual herb 20–40 cm high. Oct.–Dec. EJL 1496, LAPJ 263, McVaugh 25122, EBCh; EJL 4032, Cuixmala.

*Oplismenus setarius* (Lam.) Roem. & Schult. Perennial herb. Oct. EJL 1533, JASM 3132, EBCh. This name is not used in McVaugh (1983).

*Oryza latifolia* Desv. Perennial herb to 2 m high. Nov. EJL 3979, Quémaro; EJL 4108, Cuixmala.

*Panicum arizonicum* Scribn. & Merr. [= *Brachiaria arizonica* (Scribn. & Merr.) S. F. Blake]. Annual herb 30–60 cm high. Aug.–Sep. ACS 8670, ACS 8672, EJL 3795, Cuixmala.

*Panicum fasciculatum* Sw. var. *reticulatum* (Torr.) Beal [= *Brachiaria fasciculata* (Sw.) Parodi]. Annual herb 30–60 cm high. May–Oct. EJL 1260, EJL 1270, EJL 1494, EBCh; ACS 11163, EJL 3603, Cuixmala.

*Panicum hirticaule* Presl. Annual herb 0.5–1 m high. May–Sep. ACS 8663, EJL 3604, Cuixmala.

*Panicum maximum* Jacq. Perennial herb 1–2.5 m high. Nov.–May. EJL 1562, Arroyo Chamela; EJL 3448, Cuixmala.

*Panicum purpurascens* Raddi. Coarse perennial herb with weak stems 2 m high. Nov. EJL 3963, Cuixmala.

*Panicum reptans* L. [= *Brachiaria reptans* (L.) Gardn. & Hubb.]. Annual herb 10–50 cm high. May–Nov. ACS 11161, EJL 3460, EJL 4138A, Cuixmala.

*Panicum trichodes* Sw. Annual herb 30–90 cm high. Oct.–Jan. EJL 1495, EJL 1501, EJL 2651, JASM 3931, EBCh; EJL 3120, Cuixmala.

*Paspalidium geminatum* (Forsk.) Stapf. Clump-forming perennial herb to 1 m high, in wet places. Nov. EJL 4117, Cuixmala.

*Paspalum conjugatum* Berg. Creeping perennial herb 25–30 cm high. May. EJL 3398, Cuixmala.

*Paspalum ligulare* Nees. Perennial herb. Nov. EJL 1558, Rancho El Paraíso. This species is not mentioned in McVaugh (1983).

*Paspalum longicuspe* Nash. Aquatic perennial herb. Nov. LAPJ 1933, Laguna La Virgen.

*Paspalum paniculatum* L. Perennial herb 1–1.5 m high. Jan EJL 3077, Cuixmala.

*Phragmites australis* (Cav.) Trin. ex Steudel. Carrizillo. Perennial cane 2–3 m high. AR 1016, EJL 3477, Cuixmala.

*Rhynchelytrum repens* (Willd.) C. E. Hubb. [=

*R. roseum* (Nees) Stapf & Hubb. in Prain]. Perennial (or annual?) herb mostly 50–80 cm high. EJL 2851, Pueblo Careyes; JLM 1387, Cuixmala. A common roadside weed, its purplish-red to pink panicles are very attractive.

*Setaria liebmannii* Fourn. Annual herb to 1 m high. Aug.–Nov. EJL 1274, EJL 1501A, EJL 1752, EBCh; ACS 8673, EJL 3946, Cuixmala.

*Sorghum bicolor* (L.) Moench subsp. *arundinaceum* (Desv.) de Wet & Har. Sorgo; Milo. Annual herb. Fls greenish-yellow. Aug. JASM 3077, EBCh. Cultivated, escaping.

*Sorghum halepense* (L.) Pers. Johnson grass; Zacate Johnson. Annual or perennial herb 0.5–1.5 m high. May. EJL 3449, Cuixmala.

*Sporobolus pyramidatus* (Lam.) Hitchc. Tuft-forming perennial herb 20–50 cm high. May. EJL 3587, Cuixmala.

*Sporobolus splendens* Swallen. Clump-forming perennial herb 1.5–2.5 m high. Nov. EJL 3935, Cuixmala.

*Tripsacum dactyloides* (L.) L. Clump-forming perennial herb 2 m high. Nov. EJL 4071, Cuixmala.

### Iridaceae

*Cypella mexicana* Morton & Foster. Perennial herb 15–20 cm high. Fls purple. Jul.–Aug. EJL 2821, Quémaro.

### Lemnaceae

*Lemna aequinoctialis* Welwitsch [misidentified earlier as *L. perpusilla* Torrey]. Floating aquatic herb. Fls? Mar. EJL 2396, in part, Pérula; JASM 4266, Chamela area; EJL 4115, Cuixmala.

*Lemna* sp. Floating aquatic herb. Pato; Flora de Agua. Jan. EJL 3257, Cuixmala.

*Wolffia brasiliensis* Weddell [= *W. papulifera* Thompson; EJL 2396, in part, was also earlier misidentified as *W. columbiana* Karsten]. Floating aquatic herb. Fls? Jul. EJL 2304, JASM 4266A, EBCh.

### Liliaceae

*Crinum erubescens* Solander in Ait. Perennial herb to 1 m high. Fls white. May. EJL 3343, Cuixmala.

*Echeandia sinaloensis* Cruden. Perennial herb to 25 cm high. Fls white. Jul.–Aug. LAPJ 745, near Río San Nicolás?; EJL 3756, Rancho San Borja road; EJL 3845, Cuixmala.

*Hymenocallis proterantha* Bauml. Perennial herb to 50 cm high. Fls white. Aug. EJL 1262, EBCh.

### Marantaceae

*Calathea atropurpurea* Matuda. Perennial herb to ca 50 cm high. Fls white or purple. Jul. EJL 469, 5 km SW of Villa de Purificación. Slightly outside our current collecting zone but to be sought here in Tropical Deciduous Forest, probably at elevations of 300 m or more.

*Maranta arundinacea* L. Arrowroot; Platanillo. Perennial herb to 1 m high. Fls white. Aug.–Sep. EJL 523, JASM 745, EBCh; ACS 8676, EJL 3760, Cuixmala. This species is sometimes cultivated for the edible starch in its rhizomes.

*Thalia geniculata* L. Platanillo. Aquatic perennial herb 1–3 m high. Fls purple. Oct. EJL 2698, Quémario; sighted at Cuixmala.

### Orchidaceae

*Barkeria palmeri* (Rolfe) Schltr. Epiphyte. Fls light lavender. Feb. SHB 1304, EBCh.

*Brassavola cucullata* (L.) R. Br. Epiphyte. Fls: Sepals and petals yellowish-brown, lip white (McVaugh, 1989:41). Our specimen was collected sterile in December. EJL 2236, EBCh (Cerro Maderas).

*Campylocentrum porrectum* (Reichb. f.) Rolfe. Epiphyte. Fls yellowish. Oct. EJL 1740, EJL 2691, EBCh.

*Clowesia* sp. nov. Aguirre. Epiphyte. Fls green. Aug.–Sep. EJL 1268.

*Encyclia trachycarpa* (Lindl.) Schltr. [= *Encyclia adenocarpon* (Lex.) Schltr.]. Epiphyte. Fls, sepals, and petals greenish or yellowish green, lip white with purple streaks. May–Jun. EJL 1068, EJL 1071, JASM 4040, EBCh. EJL 1071 was reported as *E. trachycarpa* (Lindl.) Schlecht. by Ing. Hágater in 1983, and EJL 1068 as *E. adenocaula* (La Llave & Lex.) Schlecht.

*Erycina echinata* (HBK.) Lindl. Epiphyte. Fls yellow. Mar.–May. R. Hernández m. 2377,

Chamela; JASM 4018, EBCh; sighted at Cuixmala.

*Oncidium carthagenense* (Jacq.) Sw. var. *andreaeanum* Cogn. [= *O. andreaeanum* (Cogn.) Garay ?]. Epiphyte. Fls green outside, keel white, throat greenish-yellow. Mar.–Apr. SHB 1330, EBCh; Hágater 5592 (AMO), Careyes [“Carelles”], selva caducifolia baja sobre farallón. This is probably Punta Farallón.

*Oncidium cebolleta* (Jacq.) Sw. Epiphyte. JASM 4019, EBCh.

*Oncidium* sp. Epiphyte. Fls? Apr. SHB 1122, EBCh.

*Schomburgkia galeottiana* Rich. & Gal. [= *Myrmecophila chionodora* (Rchb. f.) Rolfe?]. Epiphyte. Fls lavender. Oct.–Nov. JASM 880, Playa Las Truchas; EJL 1590, EBCh; EJL 600, Rancho Arroyo Zarco; Dieterle 4145, near Rancho El Paraíso.

*Spiranthes* sp. Terrestrial perennial herb. Sighted near Arroyo Colorado, EBCh, (EJL) and Arroyo Tapeixtes (Magaña).

### Palmae

*Orbignya cohune* (Mart.) Standl. Coyaco. Tree to 30 m high. I have searched for this large, stately palm and have found but one individual in the Rancho Cuixmala area, at the edge of a field in Emiliano Zapata, an ejido just E of Rancho Cuixmala near the Puerto Vallarta-Barra de Navidad highway. This tree was photographed but not collected. I have queried many long-time inhabitants of the area about its frequency in the past and believe that this species was once present, though not dominant, in the valley of the Río Cuitzmala.

### Pontederiaceae

*Eichhornia crassipes* (Mart.) Solms. Water hyacinth; Lirio acuático. Floating aquatic herb. Fls lavender. Nov.–May. BMR 82, Quémario; ACS 10543, Cuixmala.

*Heteranthera limosa* (Sw.) Willd. Aquatic herb 10–30 cm high. Fls blue or lavender. Oct.–Nov. EJL 686, EJL 3985, Quémario; EJL 4112, Cuixmala.

### Smilacaceae

*Smilax spinosa* Mill. Colcomeca (McVaugh).



Perennial vine. Fls? Sep.–Nov. according to McVaugh (1989:353). EJL 1517, EBCh; EJL 3217, Cuixmala.

### Typhaceae

*Typha domingensis* Pers. Cat-tail; Tule. Perennial aquatic herb to 2 m high or more. Fls brownish. May–Aug. EJL 2840, Playa El Negro; EJL 3617, Cuixmala.

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