ARBORETUM LIMÓN

50 tree species

JUNGLE ECO RESERVE

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Native Arboreal Species Reported in the Arboretum Area

1. *Hymenolobium mesoamericanum* H.C. Lima

Familia: Fabaceae
Sinónimos:
Nombres Comunes:

TREE 1

Description: The tree is 10 to 40 meters high. Cylindrical trunk. Grey or brown outer bark, sometimes exfoliating in small plaques. Terminal twigs covered with short soft hair. Leaves imparipinnate, and alternate, usually concentrated at the tips of the twigs, with 8 to 35 leaflets, opposite on the leaf stem. Leaflets are 2.5 to 7 cm long and 1.3 to 3 cm wide. The leaflets are below covered with short soft hair. Leafstalks 2 to 4 cm long and pulvinate at the base. Deciduous or persistent stipules. Stalk with a pair of filiform stipules at the base of the leaflets. Cluster of flowers in axillary panicles. Pink flowers. Fruits in oblong flattened pods, 14 to 18 cm long and 3 to 5 cm wide, green, turning brown when ripe.
Ecological Information: The species grows in low and medium altitudes in the humid or very humid forests of the provinces of Bocas del Toro, Colon, Panama and the region of Kuna Yala. Flowers and fruits are from July to November. The trees let their leaves fall during periods when they are flowering, but they replace the leaves rapidly.
Uses: The wood is used as construction material.

2. Alseis blackiana Hemsl.

Family: Rubiaceae
Family: Anacardiaceae
Common names: Espavé

Description: One of the largest and most conspicuous trees of the area, reaching over 2 m in trunk diameter and 40 m tall. No buttresses, but the base of the trunk is often swollen at the roots; big trunks are sometimes hollow. The bark of big trees is dark brown, gray, or black, usually with vertical fissures; the inner bark is reddish. Leaves are simple, alternate, long and narrow, oval-shaped, and densely bunched at the end of branches; the upper veins tend to be yellowish in older leaves. On the ground beneath big trees in the forest, there are usually great piles of blackish leaves. Be aware that leaves on young plants are much longerthan those on adults.

Flowers and fruits: Flowers are small, whitish, produced above leaves from December to February. The fruit is shaped like a kidney, resembling the cashew, matures from March to May, and is dispersed by birds or mammals. Juveniles in urban areas and farmland often appear far from any adult, showing that common birds readily carry the seed.

Distribution: One of the most abundant trees in the vicinity of Panama City and Gamboa, on both sides of the Canal, and much of the Pacific slope of Panama; in some areas, it forms nearly pure stands, and it can be especially abundant along streams. But it is a tree of secondary forest and disturbed areas, and there are seldom juveniles in mature forest.

3.Anacardium excelsum (Bert. & Balb. ex Kunth) Skeels

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How to recognize: No other huge tree in the area is as abundant as the espavé, so it is easy to learn its largish leaves, large trunk, dark bark, and lack of buttresses. In the forest, a useful trait is the heavy leaf fall under the crown.

Uses: Owing to its abundance and large size, the timber of espavé is frequently sold in markets in Panama, and has many uses, including dugout canoes. The fruit, although resembling cashew, is not edible, but the nut is toasted and consumed locally. Many species in the family Anacardiaceae have toxic oils, and like cashew, uncooked nuts of the espavé are poisonous, but leaves of this species are not toxic.

4. ***Calophyllum longifolium Willd.***

Family: <u>Clusiaceae</u>
Common names: María, Santa María

Description: A tall canopy tree with a straight, cylindrical trunk, only slightly swollen at the base. Bark on adult trees is gray, with clear vertical fissures. Leaves are simple,opposite, and have unusual venation. Secondary veins are extremely densely spaced, straight and parallel, and no smaller veins are visible. Saplings have no branches, with very large leaves emerging straight from the stem. Breaking a leaf reveals small droplets of yellow latex, but they appear slowly and do not drip out.

Flowers and fruits: Flowers are white or yellowish, 2-3 cm across, in the canopy, produced from March to May and sometimes again in November. Fruits are single globular berries, fairly large, with a hard pulp that bats readily take.

Distribution: Widespread on the Caribbean half of the isthmus, but patchy. Very common in the old forest at Barro Colorado at Sherman, and in a couple sites in Soberania. Otherwise, found in small numbers from Gamboa to the Caribbean, and on the Santa Rita Ridge. Not seen around Panama City to Summit Gardens, and not seen along roads or in open areas.

How to recognize: As a tall tree, the fissured bark is a good character, but check for leaves too, as there are always some on the ground. The remarkable leaves are unmistakable, except that there are two other species around with the same dense venation.

Uses: The wood is good quality, used widely, and sold commercially. The latex is also used for making resins and medicinally.

5. *Cecropia insignis Liebm.*

Family: Urticaceae
Common names: Guarumo

Description: *Cecropia insignis* is one of four common species in this genus. All four have large leaves shaped like umbrellas, and have light-colored trunks with conspicuous scars where old leaves fell off. They are easy to recognize as a group, but the four can only be separated by studying the leaves closely. This species has broad lobes, only 6-8 per leaf, and a rough, scaly feel to the upper side of the leaf. Dried fallen leaves of *C. insignis* do notcurl up as they do in the other three *Cecropias*.

Flowers and fruits: All *Cecropia* produce green fruits shaped like fingers, and they are very popular among birds and bats. Flower stalks look just like the fruits, but are yellowish (no petals are visible).

Distribution: All *Cecropia* species occur exclusively where there is plenty of light, along roadsides, in yards, or in natural canopy gaps in the forest. This species is most common in clearings inside forest, and is not common along roads or in towns. It is common and easy

to find at Soberania, Barro Colorado, and Fort Sherman, but not near the Pacific coast, and is not found on the higher mountains.

How to recognize: It is difficult to distinguish *insignis* from *Cecropia longipes* and *Cecropia peltata* y *Cecropia obtusifolia*, on the other hand, has a leaf with many more lobes than the other three. A fifth species, *Cecropia garciae* is only common in this area along outer Pipeline Rd. and the Santa Rita ridge. It is very white under the leaves.

6. *Chrysophyllum argenteum* Jacq.

Family: Sapotaceae
Sinonimus: *Chrysophyllum panamense, Cynodendron panamense*
Common names: Caimito de mono

Description: Tree 10 to 25 m high. Umbrella cup with lustrous foliage. Trunk with small board roots at the base. Brown or gray outer bark. Terminal twigs with apical ends of ferruginous gold color. The detachment of any part of the plant produces the flow of a milky exudate. Leaves simple and alternate, 6 to 14 cm long and 3 to 6 cm wide, oblong, obovate or elliptical, with acuminate or cuspid apex, entire edges and acute or rounded base. Petioles 0.3 to 1 cm long, ferruginous gold color and grooved on top. Cream or yellowish flowers in axillary fascicles. Fruits in globose berries, 1.8 to 3 cm long, green, turning red or black when ripe. Seeds with a longitudinal scar.

Ecological Data: The species grows at low and medium elevations, in humid or very humid forests of the provinces of Bocas del Toro, Chiriquí, Colón, Panamá and Veraguas.It blooms and fructifies from June to March. The flowers visited by bees and other insects. The seeds are dispersed by animals.

Similar Species: Due to the similarity of the leaves and the fruits, it can be confused with *Chrysophyllum cainito*, but in *C. cainito* the leaves have chestnut brown and bright undersides.

Uses: Wood is used for fence posts and tool handles. The pulp of ripe fruits is edible and very sweet.

7. Chrysophyllum cainito L.

Family: Sapotaceae
Common names: caimito

Description: Large forest tree, sometimes with a wide crown emerging above the main canopy. Trunk is slightly buttressed or irregular when large. Leaves are alternate, arranged regularly along branches, in a flat plane. The underside of the leaves is a striking, velvety, somewhat iridescent red, created by dense, soft hair. The twig zig-zags between leaves (like the Annonaceae), and also has soft, red pubescence. Like all Sapotaceae, broken leaves, or cut bark, produces dripping, white latex.

Flowers and fruits: Flowers... Fruits are large, plum-sized or larger, bluish, with a soft flesh that has a great, spicy flavor. Monkeys take them.

Distribution: Found frequently in forests near Panama City, near Gamboa, and on Barro Colorado, where it is conspicuous but not especially numerous in the old-growth. Present, but rare in Soberania and Sherman, and not known in the wetter or higher elevation forests of Santa Rita or the mountains. Occasionally found outside the forest, but mostly a forest tree. Croat says this tree was introduced from the Caribbean; if so, it must have been brought several thousand years ago, given its frequent in mature forest and scarcity in settlements and farmland.

How to recognize: With a leaf in hand, this species should not be confused - the other leaves with red undersides have a much different texture. Only luehse *Luehea seemannii* of the red-leaved group is a tall tree, and it can be mistaken for caimito at a distance, or if leaves are not carefully checked.

Uses: The fruit is popular, and can be purchased that the agriculture market in Panama City.

8. Cordia bicolor A. DC.

Family: Boraginaceae
Common names: Muñeco


Description: Tree 10 to 20 m high. Rounded or umbelled cup. Straight and cylindrical trunk. Greyish outer bark. Twigs bifurcated in dichotomous form and with a leaf comingout at the point of the bifurcation. Leaves simple and alternate, rough in the bundle, 8 to 18 cm long and 3 to 8 cm wide, ovate or elliptical, with acuminate or acute apex, entire edges and obtuse or rounded base. The juvenile plants have lanceolate leaves with jagged edges. Petioles 0.3 to 0.8 cm long, pubescent. White flowers. Fruits in drupes, 0.8 to 1.3 cm long and with chalice remains at the base, green, turning yellow when ripe.

Ecological Data: The species grows at low and medium elevations, in humid or very humid forests of the provinces of Chiriquí, Colón, Panamá, Veraguas and the Guna Yala region. Drops its leaves during the dry season, but replaces them at the beginning of the rainy season. It blooms and fructifies from March to July. The flowers are visited by bees, butterflies and other insects. On the forest floor the seed coat is pierced by insects 'presumably coleoptera'.

Similar Species: Due to the similarity of the leaves, it can be confused with *Cordia panamensis*, but in *C. panamensis* the leaves are larger and the fruits mature white. *Cordia lasiocalyx* has the same type of branching, but the leaves are not rough to the touch and have a long acuminate apex.

Uses: Wood is used in rural constructions and for fence posts.

9. *Cordia panamensis* Riley

Family: Boraginaceae
Common names: Niguita, muñeco, lengua de vaca


Description: Tree 5 to 10 m tall. Trunk with whorled and arched branches. Gray outer bark. Terminal twigs bifurcated in dichotomous form and with a leaf leaving the point of the bifurcation. Leaves simple and alternate, sometimes subopposed, 10 to 30 cm long and5 to 15 cm wide, ovate or elliptical, with acuminate apex, entire edges sometimes darkly dentate and rounded or slightly rounded base. The leaves are rough to the touch. Petioles 0.5 to 1.5 cm long, pubescent. All the young parts of the plant are pubescent. White flowers. Fruits in drupes, 0.5 to 1 cm long and with chalice remains at the base, green, becoming white and sticky when ripe.

Ecological Data: The species grows at low elevations, in dry or humid forests throughout the country. Drops its leaves during the dry season, but replaces them at the beginning of the rainy season. It blooms and fructifies from April to October. The flowers are visited by bees and butterflies.

Similar species: Due to the similarity of the leaves, it can be confused with Cordia bicolor, but in C. bicolor the leaves are smaller and the fruits mature yellow.

Uses: Wood is used for fence posts and in the manufacture of tool handles. The ripe fruits are edible.

10. *Cupania latifolia* Kunth

Family: Sapindaceae
Common names: gorgojero, gorgojo

Description: A medium-sized tree with a straight but fluted trunk, slightly swollen into irregular buttresses at the base. Leaves are alternate, compound, with 3-11 leaflets that usually alternate with one another (although basal leaflets can be opposite). There is a terminal leaflet, but it is angled to one side. At the base of the terminal leaflet there is a short stalk angling away from the leaflet -- it appears to be a growing bud, but it is not. Leaflets have somewhat toothed margins, but teeth are wavy and irregular. The base of the petiole is swollen, brown in color, flattened

Flowers and fruits: Flowers are small and white, produced in June and July. Fruits are round, brown capsules that split open to reveal a black seed with a red aril; they mature from September to November.

Distribution: Widespread in lowland forests, both secondary and mature, from Gamboa to Sherman and in the upper Chagres, but never common. Not seen along roads or in open areas.

How to recognize: See C. sylvatica for a discussion of the genus *Cupania*. The several species are easy to distinguish -- *C. latifolia* is the one with wavy margins or blunt teeth on the leaflets, and with neither dense pubescense, a white leaf undersurface, nor a deeply fluted stem.

11. *Cupania rufescens* Triana & Planch.

Family: Sapindaceae
Common names: Gorgojero, gorgojo

Description: A medium-sized tree usually with a straight trunk, but often branched low. Leaves are alternate, compound, and the leaflets are placed alternately relative to each other. The leaflet number is usually even, but the final leaflet is angled slightly to one side, appearing terminal. At the base of the final leaflet is a short stalk, angled away from the leaflet. All leaf parts and small branchlets are covered with dense, red hairs.

Flowers and fruits: Flowers are produced in terminal clusters during the dry season.

Distribution: Found on the Pacific half of the isthmus, from BCI south, where it can be quite common along around roads, and very common around Gamboa in open areas or at the forest edge. Not common inside the forest, although widespread.

How to recognize: See *C. sylvatica* for a discussion of the genus *Cupania* and the similar *Matayba*. Like its relatives, *C. rufescens* has compound leaves with alternating leaflets, and a final leaflet that is angled slightly, along with a point at the base of the final leaflet. But the dense red hairs set this species apart in central Panama.

12. *Enterolobium schomburgkii* (Benth.) Benth.

Family: Fabaceae
Common names: Corotú de montaña, dormilón, harino

Description: Tree 20 to 35 m high. Straight and cylindrical trunk. Gray or yellowish outer bark. All the young parts of the plant have tomentose ferruginous hairs. Leaves bipinnate and alternate, with 10 to 28 pairs of pinnae, opposite or subopposed. Pinnae with 40 to 60 pairs of small leaflets, 3 to 6 mm long and 0.5 to 1 mm wide, oblong, with acute or roundedapex, entire edges and rounded base. Petioles 1.5 to 3 cm long and pulvinados in the base, with a gland in the upper middle part. Spine with glands between the pairs of pins. White flowers and grouped in globular heads. Fruits in reniform legumes, 12 to 18 cm long, sometimes in the form of a 'human ear', green, turning reddish brown when ripe.

Ecological Data: The species grows at low elevations, in humid forests of the provinces of Chiriquí, Colón, Panamá and Veraguas. Common in forests around the town of Gamboa in the Panama Canal. Drops its leaves completely during the dry season, but replaces them at the beginning of the rainy season. It blooms and fructifies from March to May. The flowers are visited by bees, butterflies and other insects.

Similar Species: Due to the resemblance of the leaves, the flowers and the fruits can be confused with *Enterolobium cyclocarpum*, but *E. cyclocarpum* grows in pastures and savannas in dry areas and the fruits are larger.

Uses: Wood is used in the manufacture of decorative boards, interior joinery, joinery, boxes, fence posts, firewood, and paper pulp and in the manufacture of boats. The fruit is edible for cattle.

13. *Eugenia coloradoensis* Standl.

Family: Myrtaceae
Common names: Guayabito, guayabito de montaña

Description: Tree 5 to 20 m high. Cup scattered and with lustrous foliage. Brown outer bark. Flattened terminal twigs. Leaves simple and opposite, 5 to 15 cm long and 3 to 7 cm wide, oblong or elliptical, with acute or acuminate apex, entire edges and obtuse or roundedbase. The leaves are glabrous and with translucent dots. Petioles 0.5 to 1 cm long and ribbed on top. White flowers. Fruits in ovoid drupes, 1.5 to 2.5 cm long, with a structure in the shape of a crown at the tip, green, turning purple or black when ripe.

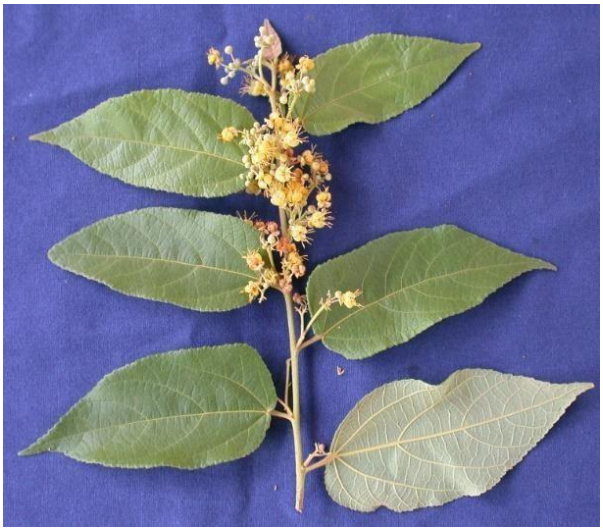
Ecological Data: The species grows at low elevations, in humid or very humid forests of the provinces of Colon, Darien and Panama. It blooms and fructifies from June to October. The flowers are visited by bees and other insects. The seeds are dispersed by animals.

Similar Species: Due to the similarity of the leaves, it can be confused with *Eugenia galalonensis*, but in *E. galalonensis* the fruits are smaller and mature in yellow, red or black.

Uses: Wood is used for bridges, floors, horcones, pilasters and tool handles.

14. *Guazuma ulmifolia* Lam.

Family: Malvaceae
Common names: Guácimo



Description: A medium-sized tree, usually with many branches near the ground (but rare forest individuals grow straight and tall). Leaves are alternate, in flat plane along long branches; upperside dark green, underside light green-blue. Leaf base is decidedly asymmetric, and leaves are rough (asperous) to the touch. There are three main leaf veins arising together from the leaf base, a characteristic of this family as well as several related families (Bombacaceae, Malvaceae, Tiliaceae).

Flowers and fruits: Produces small, whitish-cream flowers during the dry season. These develop into odd, woody fruits that are almost reminscent of a tiny pine cone (or alder cones). But the fruits have a cherry flavor if chewed. Fruits are green when immature, becoming black, produced through much of the wet seas

Distribution: A very common tree of farmland, sometimes forming nearly pure stands in abandoned pasture. There are many along the road from Panama to Gamboa, and quite a few in Gamboa. Fairly common inside secondary forest, and, remarkably, there are few individuals in the old forest on Barro Colorado Island.

How to recognize: Not hard to learn because of its abundance in residential areas, the asymmetric leaf base and asperous feel should pin it down. When fruits are present, they cinch the identification, since no other species has anything similar. *Muntingia calabura* also grows in pasture and abandoned farmland, and has similar leaves with an asymmetric base; but *Muntingia* has softer leaves with a lighter underside, and usually has white flowers that are much larger than *Guazuma's*.

15. *Gustavia superba* (Kunth) O. Berg

Family: Lecythidaceae
Common names: membrillo

Description: A medium-sized tree with a straight trunk that is often unbranched, with just one cluster of leaves at the top of the trunk (like a palm). In big trees, though, there are a few large branches, each with a cluster of leaves at the end. Leaves are very large -- no other tree in the area other than palms -- has larger leaves. They are toothed, long, narrow atthe base, and broad at the apex.

Flowers and fruits: Flowers are large and purple, with many stamen arranged in a ring, few in number. From March to June, when they are mature, a few flowers can easily be found on ground beneath adult trees. Fruits are round, green, hard, larger and heavier than abaseball. Inside are a few large seeds. The fruits often remain on the ground for weeks, rotting and collecting mold. Agoutis eat the seeds, but they also bury some for later use andthus serve as dispersal agents.

Distribution: An abundant tree in secondary forests in the central part of the isthmus, less common at Sherman, and not seen in forests near Panama City or at the wettest Caribbean sites. At Plantation Rd near summit, around Gamboa, along Pipeline Rd out to the Rio Limbo, and at Barro Colorado this species is the dominate secondary forest tree. In some sites, *Gustavia* makes up 50% of the canopy. Anywhere in the central part of the isthmus it is a good indicator of forest that has been regenerating for 60-100 years. It is much less common in old-growth, and does not typically form the earliest regeneration. It is also fairly common in abandoned pastures, apparently because agoutis take the seeds out into the fields, and because the very large seeds allow seedlings to germinate in harsh pasture conditions.

How to recognize: The long leaves in a single cluster at the apex of a large branch or trunk are unmistakable. In the center part of the isthmus, there is just one other species that is similar, *Cespedezia macrophylla*. The two species are unrelated, and have completely different flowers. But without flowers they are easily confused, and both are common along

Pipeline Rd. Indeed, a prominent publication in Science years ago was based on mis-identification of *Cespedezia* and *Gustavia* at Pipeline Rd. With a fallen leaf in hand, look closely at the leaf underside -- the smallest veins of *Cespedesia* are prominent and parallel, whereas in *Gustavia* they are inconspicuous and widely spaced. On the trees, *Gustavia* leaves tend to droop downward much more than *Cespedesia* leaves, some of which point upward, and new leaves of *Cespedesia* are conspicuously red, unlike *Gustavia*. There are other relatives of *G. superba* in the area -- *G. fosteri*, *G. dubia*, and LK griaca *Grias cauliflora*.

16. *Hieronyma alchorneoides* Allemão

Family: Euphorbiaceae

Sinonimus: *Hieronyma laxiflora*

Common Names: Zapatero, pilón, palo chancho, piedro, pantano

Description: A tall tree with a straight, cylindrical trunk, light yellowish in color. Large trees have buttresses at the base, and these extend into roots that are visible above the ground as far as 30 m from the trunk. Wounds at the base of the trunk turn black from the sap exuded. Leaves are simple, alternate, and clustered toward the end of branches. They are heart-shaped, but the size and shape is quite variable. Large trees typically have some yellow leaves in the crown. The stipules of saplings are remarkable -- green and leaf like, but rolled into a little structure which ants sometimes inhabit (indeed, the stipule appears to be designed to house small creatures). In adults, the stipules are nothing like this and instead are thin and short. Flowers are greenish or yellowish, small, produced in long stalks near the ends of the branches. There appear to be two flowering seasons per year, one in March and April, a second from August to October. The fruit is a small berry that turns purple when it is mature, either in May-June or November-January.

Distribution: Found from Gamboa to Sherman in the Canal area lowlands, but neither on the Pacific slope nor the wet forests of Santa Rita and the mountains. It is mostly a tree of forest edge or clearings in the forest; within the forest, there are scattered large trees but few saplings. *Hyeronima* is most abundant in Soberania, and there juveniles are common and readily seen along Pipeline Rd. Despite the edge preference, *Hyeronima* is not a tree of towns or open areas.

How to recognize: In juveniles, the bizarre stipules are a give-away, and these are easy to see. In adults, *Hyeronima* is like several other Euphorbiaceae, with heart-shaped leaves that often turn yellow while still on the tree. In particular, see ***Croton billbergianus***, and ***Hura crepitans***. *Croton* is also common and at a glance can be confused with *Hyeronima*, but *Croton* has small, stalked glands at the base of each leaf, and dying leaves in the crown are usually more orange rather than yellow. *Hura* has distinctly different leaf venation, and as a large tree it lacks buttresses. Several other *Croton* and Euphorbiaceae in the Canal area are restricted to remote wet sites.

Uses: *Hyeronima* had heavy wood useful in many kinds of construction, and it is well known in Central America and sometimes planted in plantations. Oils from the seeds are used medicinally as well as an anti-helminthic.

17. *Inga vera* Willd.

Family: Fabaceae
Sinonimus: *Inga spuria, Inga affinis*
Common Names: Guabito, guabo de mono, guabo pelu, candelillo

Description: Tree 5 to 15 m high and 10 to 50 cm in diameter. Rounded Cup or Umbelada. Straight and cylindrical trunk, lenticelado. Brown outer crust, internally red or pink.

Terminal twigs Ferrugíneo pubescent and with white lenticels. Paripinnadas and alternating leaves, with 5 to 9 pairs of leaflets, opposite in the spine, the basalts reduced in size. Leaflets 3 to 17 cm long and 2 to 4 cm wide, oblong or elliptic, with acuminatum apex, whole edges and rounded base. Stipules deciduous. Petioles 0.3 to 2 cm long, winged. Winged Rachis. Sessile and pot-shaped interfoliolares glands. All the young parts of the plant present ferrugíneos hairs. Inflorescences in spikes. White flowers. Fruits in legumes slightly cylindrical and 8 to 18 cm long, green, becoming yellowish when maturing.

Ecological data: The species grows at low elevations, in dry or humid climates. Common in dry secondary forests of the Pacific in Panama, but rare or absent in rainforests of the Caribbean. It blooms and fruits from February to September. The flowers are visited by bees and butterflies. The seeds are scattered by animals.

Similar species: *Inga goldmanii* and *Inga mucuna* have very similar leaves, but with leaflets and larger fruits.

Uses: Wood used in the elaboration of boxes, fence posts and firewood. The species has great potential as a honey plant in farms dedicated to beekeeping. It can also be used in mixed plantations to recover degraded areas.

18. *Jacaranda copaia* (Aubl.) D. Don

Family: Bignoniaceae

Common names: jacaranda, palo de buba, nazareno, guabanday, pata de elefante

Description: A tall forest tree with straight trunk, branched near the top. The bark is light brown, with fine vertical fissures, unspotted. At the base, the trunk broadens into small

buttresses which have horizontal wrinkles, like an elephant's trunk.Leaves are bipinnately compound, meaning each leaf divides twice, looking fern-like. Leaflets are small, usually less than 5 cm long, pointed, can be 100 or more per leaf; on juveniles, leaflets can be toothed. Leaves are opposite, and on juveniles can be over 1 meter long (somewhat smaller on adults). A very fast-growing tree.

Flowers and fruits: *Jacaranda* produces one of the spectacular floral displays in the area. During the dry season, usually in March, large purple flowers cover the entire crown, and this is easily visible on hillsides, along the Canal, even from airplanes. The fruits are round, flat, dry disks, brown, maturing from July to October. They break open to release tiny, winged seeds, and at Barro Colorado, this species produces more seeds than any other. The empty disks are often found on the ground beneath big trees. Trees are deciduous for a briefperiod early in the dry season, but regrow leaves prior to flowering.

Distribution: A common canopy tree at Barro Colorado, Soberania, and Sherman, around Gamboa and along the Canal from Gamboa to Barro Colorado. South of Gamboa, it is scarce, although it can be found on the Pacific slope. Inside the forest, juveniles are very rare and restricted to natural clearings, but along roads over Cerro Pelado in Gamboa, Pipeline Rd, and Santa Rita, juveniles can be abundant.

How to recognize: Tall adults should not be confused, with the elephant-trunk like roots, light brown bark, and small, pointed leaflets. The pointed or toothed, bipinnate (fern-like) leaflets of juveniles are also easy to recognize. The only species that can be confused are several legumes with small leaflets, especially Schyzolobium parahyba but also Enterolobium spp. And Platypodium elegans. Note that the legumes have rounded leaflets and alternate leaves, but in tall trees, the latter can be hard to see. Both *Schizolobium* and *Jacaranda* are common along Pipeline Rd, and they look similar as adults and as juveniles. Jacaranda caucana is planted as an ornamental, and is seldom seen in the forest; it has smaller leaflets than *J. copaia*.

19. *Lacmellea panamensis* (Woodson) Markgr.

Family: Apocynaceae
Common names: lagarto negro

Description: A medium-sized tree with a straight trunk. The bark is dark, nearly black, and has irregular, blunt, conical spines. Larger trees have small buttresses at the base. Leaves are long and narrow, opposite, spaced regularly along branches, in flat plane. If a leaf is broken off, copious white latex drips out. The white latex is also readily visible if the barkis slashed.

Flowers and fruits: Flowers are small cream-colored or yellow tubes, in clusters at the base of the leaves. They are produced from October to February. The fruit is a fairly large, hard, spherical berry, green then turning yellow, maturing from November to June.

Distribution: Widespread on the Caribbean half of the isthmus, including Santa Rita, but seldom common. Only on the peninsula west of Barro Colorado Island, and in a small patch at Sherman, are there dense population.

How to recognize: The long branches with regularly spaced leaves might at a glance look like compound leaves with many leaflets. Once you see that they are not, this species is pretty easy to recognize, given narrow leaves and dripping latex. Another Apocynaceae with opposite leaves and latex is *Malouetia guatemalensis*, but its leaves are wider. A congener, *L. speciosa* is similar to *L. panamensis*, but its leaves are larger, and it is restricted to montane sites. All other opposite-leaved trees have no latex or sparse latex thatexudes slowly in tiny droplets.

Uses: The wood is hard and fine quality, and has many uses, and the fruits are edible. Kuna Indians are said to use the latex to enhance milk production of nursing women.

20. *Lindackeria laurina* C. Presl

Family: Achariaceae
Common names: carbonero, amarillo, escribano, cucuyo

Description: A medium-sized tree with a straight trunk that often has small sprouts emerging from its base. The bark is gray, and small pieces are typically peeling free. The leaves are alternate, simple, fairly long, rounded at the base but with a long, pointed tip. Leaves are clustered toward the branch end, each held at a different angle, all hanging vertically. The petiole is long and swollen at both ends; the leaf is held at a sharp angle to the petiole. When a leaf is crumpled slightly and allowed to flatten, white lines form at all the folds.

Flowers and fruits: Flowers are small, white, in clusters at branch ends, opening from May to October. The fruit is a small capsule with long spines, green than maturing yellow;it opens into three valves, exposing a single seed with a red pulp. Fruits mature from December to March.

Distribution: A roadside tree, abundant along Pipeline Rd. and other forested roads from Gamboa to Panama City. Not common in the forest, where it is largely restricted toclearings. Not known north of Soberania or in wet forests of Santa Rita or Chagres.

How to recognize: The way the leaves are held, angled to the branch and to each other, in a loose cluster, is unusual, and this species should not be confused. The only other species in the area with leaves held similarly is *Capparis frondosa* but the two species are quite different on close inspection. First, the white lines that form along leaf folds in *Lindackeria* are unmistakable. Moreover, *Capparis* is a small shrub, and it has both short and long petioles mixed on the same branches.

21. *Manilkara bidentata* (A. DC.) A. Chev.

Family: Sapotaceae
Sinonimous: *Mimusops darienensis, Manilkara darienensis*
Common names: Níspero, níspero de montaña, balata

Description: Tree 20 to 40 m high and 20 to 100 cm in diameter. Rounded cup with lustrous foliage. Trunk straight and cylindrical, with small board roots at the base. Greyish outer bark with vertical fissures. Red or pink interior bark. Simpodial terminal twigs. The detachment of any part of the plant produces the flow of a milky exudate. Leaves simple and alternate, grouped in the apices of the twigs, 10 to 25 cm long and 5 to 9 cm wide, elliptical to oblanceolate, with acute apex sometimes emarginated, entire edges and cuneate base. Secondary veins very thin and parallel, connecting near the edge to form a submarginal ridge. The leaves of juvenile plants are larger compared to adults. Petioles 2 to 3 cm long and slightly grooved on top. White or yellowish flowers. Fruits in globose or ellipsoid berries 1.5 to 2.5 cm long, green and with a sharp projection on the tip, turning yellow or orange when ripe.

Ecological Data: The species grows at low and medium elevations, in humid or very humid climates. Common in Caribbean rainforests in Panama, but rare or absent in dry forests of the Pacific. It is one of the most abundant trees in the vicinity of the crane that theSmithsonian Institute has for the study of the forest canopy in Sherman (Colón). It blooms and fructifies from December to June. The flowers are visited by bees and other insects. The seeds are dispersed by animals.

Similar species: *Manilkara zapota* has very similar leaves, but in *M. zapota* the fruits are globose or ellipsoid berries, brown and covered with lenticels that give a rough consistency to the touch. It can also be confused with *Aspidosperma spruceanum*, but in *A. spruceanum* the fruits are flattened and woody follicles and the seeds are winged.

Uses: Wood used for fence posts, railway sleepers, planks and tool handles. Very appreciated for the construction of docks and maritime vessels. The milky exudate was used in the past for the manufacture of chewing gum or chewing gum.

22. *Miconia argentea* (Sw.) DC.

Family: Melastomataceae
Common Names: Papelillo, dos caras, oreja de mula, canillo


Description: A small to medium-sized tree, with large, almost round leaves that have bold, parallel, secondary veins and conspicuously white undersides. In the bigger individuals, the bark is distinctive, with a whitish-brown color and vertical papery strips.

Flowers and fruits: Flowers are small, white, and carried in dense, pyramidal clusters above the leaves. The flowering pattern of this species is remarkable. For several weeks, trees gradually develop flower buds, and clusters of dull gray buds are visible throughout the dry season. Then on one day in January or February, many individuals over large areas complete flower development, and bright white flower clusters appear on nearly every tree (many along the highway from Panama City to Gamboa, for instance). The following day, the flowers start dropping, and the dull gray color of the clusters is all that remains by the second day. The synchronous flowering can occur two or three times during the same dry season. Later in the wet season, the small blue-black berries appear, and are consumed by many small birds.

Distribution: One of the abundant and familiar trees in farmlands and towns throughout Panama, very common along all the roads of the Canal area. It also frequently appears in fence rows in farmland. Within the forest, it only occurs in natural clearings where there is

light, but it is still fairly numerous, and at Barro Colorado, it is one of the most common light-demanding species.

How to recognize: Quite possibly the easiest tree in central Panama to learn. The large, round leaves with white undersides and conspicuous venation are unmistakable, but note that all Melastomataceae have bold, parallel secondary veins. ***Miconia impetiolaris*** is a common shrub that also has whitish leaf undersides, but the leaf-bases fold against the stem. The one species that could be mistaken for *M. argentea* is ***Miconia elata*** but it is veryrare in the area, only occurring in wet forests or at higher elevations.

Uses: The wood is sturdy, and owing to the tree's abundance, rural people in Panama frequently use it for fence posts or for house construction.

23. Miconia ligulata Almeda

Family: Melastomataceae
Common Names: Papelillo, dos caras, oreja de mula, canillo

Descripción: Arbusto o árboles de 4 a 9 metros; ramas jóvenes, pecíolos, nervaduras primarias en el envés e inflorescencia con un indumento moderada a densamente copioso pardo de pelos dendríticos o pinoides. Hojas de 12 a 28 centímetros de largo y de 4 a 9 centímetros de ancho, elípticas, 5-plinervadas, el haz esparcidamente casposo-puberulento a glabro, el envés moderadamente y deciduamente casposo-puberulento en las nervaduras secundarias y de orden superior, la base gradualmente atenuada y decurrente en el pcecíolo, los márgenes enteros a undulados, el ápice atenuado a largamente acuminado; pecíolos de 0.7 a 2.5 centímetros. Inflorescencia panículas de 4 a 11.5 centímetros; pedícelos de 0.5 a 2 mm; bractéolas de 0.5 a 0.75, subuladas, fusionadas lateralmente formando una cresta nodal

o un collar bajo, persistentes. Flores 5-meras. Hipanto deciduamente casposo-puverulento, lobulos del cáliz de aproximadamente 0.5 mm pero escasamente sobrepasados por los dientes exteriores subulados y ocultos por estos, deprimido-triangulares a undulados. Pétalos 2.5 a 3.5 mm de largo por 1 mm de ancho, linear-oblongos, glabros. Estilo de 3 a 4 mm; estigma truncado; ovario penta locular, ínfero. Frutos bayas de 2-4 mm x 3-4 mm, azul-púrpuras en la madurez, semillas de 0.5 mm, piramidales y lisas con ángulos verrucosos inconspicuos.

23. **Datos Ecológicos:** La especie crece a bajas y medianas elevaciones, en climas húmedos. Común y ampliamente distribuida en bosques húmedos de Panamá. Florece y fructifica de diciembre a junio. Las flores son visitadas por abejas y otros insectos. Las semillas son dispersadas por animales. Los frutos maduros constituyen parte de la dieta de muchas especies de aves (incluyendo algunas migratorias).

24. Ochroma pyramidale (Cav. ex Lam.) Urb.

Family: Malvaceae
Sinónimos: *Ochroma lagopus*
Common Names: Balso, balsa, lano

Description: A medium-sized tree of roadsides, usually branching near the ground, with a wide, flat crown. Leaves are large and heart-shaped, usually weakly lobed, that is with corners on either side of the leaf. There are 3-5 prominent veins arising from the leaf base, and the underside of the leaf is whitish.

Flowers and fruits: The balsa can be partly deciduous during the second half of the dry season or the beginning of the wet season, although leaves grow back quickly so trees are not usually completely leafless. Flowers are very large, to 20 cm across, and white, produced in December and January. Many birds, bats, and even kinkajous and olingos

(arboreal, noctural mammals) visit the flowers for nectar. Fruits mature from February into the beginning of the wet season, are are long capsules that open to reveal tiny seeds covered in hairs that carry seeds in the wind

Distribution: An abundant roadside species throughout the Canal area and most parts of Central and South America. Scarce in the forest, with juveniles only appearing in large clearings.

How to recognize: The large, heart-shaped leaves, weakly lobed, are distinctive. The other native species with similar leaves is the cuipo, *Cavanillesia platanifolia* which is much less common along roads, has a straight trunk unbranched for most of its length, and generally has smaller leaves. Other species with heart-shaped leaves do not have the lobes (corners) of the balsa. See also the non-native teak, which has leaves quite like those of the balsa, and does occur pretty commonly along roadsides of the Canal area.

Uses: This is the balsa of model-airplane fame, with extremely light, soft wood. It is also used for making rafts (hence the name balsa, Spanish for raft). The seed's fibers are used for making cushions or life vests.

25. Oenocarpus mapora H. Karst.

Familia: <u>Arecaceae</u>
Sinonimous: *Oenocarpus panamanus*
Common Names: Maquenqué, trupa

Description: Palm with groups of 2 to 15 trunks leaving from the base. Each stem reaches 5 to 15 m in height and 5 to 20 cm in diameter, with the bud or apex purple red. Pinnate and alternate leaves 3 to 6 m long, with more than 50 leaflets spaced regularly on each side of

the rachis, green on the upper side and white or gray on the underside. Petioles with a green basal ligule. Rhachis ribbed on top. The species is monoecious. Inflorescences branched and reddish. White and small flowers Fruits in globose drupes 2 to 2.5 cm long and with a small point at the apex, green, turning black when ripe.

Ecological Data: The species grows at low and medium elevations, in humid or very humid climates. Common and widely distributed in the forests of the Panama Canal. It is one of the most abundant palms on the island of Barro Colorado. The ants called folofas or congas (*Paraponera clavata*), usually make nests at the base of these palms, these ants are very aggressive and defend their territory, so we recommend being very careful when approaching these palms. The flowers are visited by bees, beetles and other insects. It blooms and fructifies from August to June. The flowers are visited by bees and beetles. Theseeds are dispersed by animals.

Similar Species: *Euterpe precatoria* and *Wettinia quinaria* are very similar palms, but they have a solitary trunk.

Uses: The trunks of this palm are used to build walls of ranches, also to make fences and corrals.

26. Pera arborea Mutis

Family: Euphorbiaceae
Common Names: Sapito, clavito, pellejo de gallina

Description: Tree 10 to 30 m high and 10 to 60 cm in diameter. Cup rounded and with lustrous follage. Straight and cylindrical trunk. Bark exterior green or grayish, sometimes dark and with scaly lenticels. Yellow inner bark. Green and scaly terminal twigs. Leaves simple and alternate, with lepidote scales on the underside, 7 to 16 cm long and 2 to 6 cm wide, elliptical to obovate-oblong, with acuminate apex, entire edges to wavy and rounded or acute base. The leaves dry black. Petioles 0.5 to 2 cm long and slightly grooved on top. Inflorescences in fascicles along the twigs. The species is dioica. White or yellowish

flowers. Fruits in ovoid or globose capsules, 0.8 to 1.2 cm long and coming out in small groups of the defoliated parts of the twigs, green, turning black and dehiscent when ripe.

Ecological Data: The species grows at low and medium elevations, in humid or very humid climates. Common in Caribbean rainforests in Panama, but rare or absent in dry forests of the Pacific. The flowers are visited by butterflies, bees and other insects. It blooms and fructifies all year, mainly from April to September. The seeds are dispersed by the opening of fruits and animals.

Similar Species: It can be confused with species of the genus Maytenus (Celastraceae), but Maytenus has the edges of the dentate leaves and the seeds covered with a red aril, which does not happen in Pera.

Uses: There are no known uses for wood, but the trees reach good size and diameter. The green fruits are toxic and cause strong irritations in contact with the skin.

27. *Protium panamense* (Rose) I.M. Johnst.

Family: Burseraceae
Common names: Copal, Copá, Chutra

Description: A medium-sized, subcanopy tree with a cylindrical trunk and light brown bark. The trunk often leans some, and large individuals typically have stilt roots. Leaves are alternate, compound, with 5-9 large leaflets, including one terminal leaflet; the leaflets are quite widely spaced. The tip of the leaflet is pointed but not extended into a tip. Where the leaflet stalk meets the central leaf rachis, there is a conspicuous brown swelling. The base of the petiole is also swollen and brown, flattened vertically. Crushed leaves have apleasant terpentine-like smell, and in young leaves the odor is quite strong. Slashed bark produces a clear resin with the same odor.

Flowers and fruits: Flowers are small, white or slightly yellow, in stalks along the branches, produced in February-March and again in from July to September. The fruit is a small capsule, pointed at one end, green then red as it matures; fruits can be found for most of the year. If the fruit is split, it also smells of terpentine. Inside is a seed surrounded in white pulp that many large birds and monkeys are attracted to.

Distribution: An abundant mid-story tree at Barro Colorado, Soberania, and Sherman, and widespread at Santa Rita and the upper Chagres, but less common. Not common near Gamboa and absent from the forests near the Pacific coast. *P. panamense* and *P. tenuifolium* have opposite distributions, the latter mostly on the Pacific coast north to Barro Colorado.

How to recognize: The genus *Protium* is easy to recognize -- common and frequently seen, and with widely-spaced leaflets that do not resemble those of the Meliaceae or Fabaceae (which have compound leaves with more densely spaced leaflets). Even tall *Protium* can thus be readily recognized. With leaf in hand, the brown, swollen nodes along the leaf rachis, and their terpentine-like odor, are distinctive, but all the Burseraceae share these traits. In this area, only *P. panamense* and *P. tenuifolium* have large leaflets. These two are very similar though; the extended drip-tip and lack of stilt-roots in *tenuifolium* are the key distinctions.

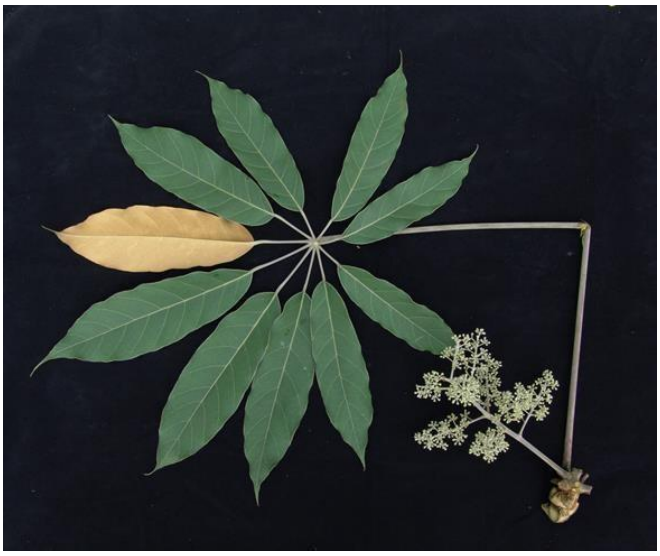
Uses: The resin is used medicinally, but see *Trattinickia aspera* the Burseraceae whose resin is most popular locally.

28. *Schefflera morototoni* (Aubl.) Maguire, Stey. & Frod.

Family: Araliaceae

Sinonimus: *Didymopanax morototoni*

Common Names: Mangabé, gargorán, guarumo de pava, pavo, pava



Description: A medium-sized tree with a straight trunk. Smaller trees unbranches, but larger ones sometimes branch once or twice. A single layer of leaves right at the top of the tree. The leaves are very large, composed of 8-10 leaflets which are arranged in a ring (palmately compound). The underside of leaves is a deep brown color, and often visible at great distance when the sun is shining and breezes turn leaves upside down.

Flowers and fruits: Flowers are small, but produced in large clusters right on the top of the tree during the early wet season. Fruits, produced toward the middle or end of the wet season, are small berries that eaten by many birds.

Distribution: Abundant roadside tree throughout the area, from Pacific to Caribbean. Common in towns, gardens, farmland. Can be numerous in young secondary forest, and is visible on many hillsides between Gamboa and Panama City when dry season winds flip the leaves. Essentially absent in old-growth forest, although could occur in large enough clearings.

How to recognize: There is no other native species in this area with leaves at all similar to *Schefflera's*. All other palmately-compound leaves are much smaller, and lacking the deep brown underside (see especially Bombacaceae). Several *Schefflera* species are widely planted as ornamentals in many parts of the world - often as house plants - so there might be one seen in Panama City. But the ornamental *Schefflera* have green leaf undersides, not brown.

Uses: The long, stiff leaf petioles are sometimes used for buidling bird cages.

29. *Simarouba amara* Aubl.

Family: Simaroubaceae
Common names: Aceituno, olivo

Description: A tall forest tree with a straight, cylindrical trunk, completely unbuttressed even in large individuals. The bark on larger trees is light gray with splotches of both dark and light green; it looks like camouflaging. Leaves are long, with 9-20 leaflets including one terminal one; juveniles generally have longer leaves with more leaflets than adults. Leaflets are smooth, shiny green, and asymmetric, with the outer half wider than the inner half. The base of the petiole is swollen, flattened vertically. Broken leaves or trunk slashes produce a clear resin that has a bitter taste.

Flowers and fruits: Flowers are white or yellowish, produced in terminal clusters in March and April. Fruits are small berries, green then maturing black from May to July; their resemblance to olives is the basis for the common name.

Distribution: Widespread in forests from Gamboa north; not seen along the Pacific slope. Common in mature forest at Barro Colorado and Soberania, less common or scarce elsewhere. Juveniles appear in forest clearings and grow rapidly, but they are also found in the shaded forest interior and are seldom seen along roads or open areas.

How to recognize: *Dipteryx panamensis* and *Sapindus saponaria* have asymmetric leaflets, but larger and less numerous than *Simarouaba*'s leaflets. The related *Simarouba glauca* is cultivated in the area, and there are some in Panama City; *S. amara* is not seen in the city.

30. ***Spondias mombin*** **L.**

Family: Anacardiaceae
Common Names: Jobo, jobo amarillo

Description: A medium-sized, occasionally large, tree, with long compound leaves. Each leaf has an odd number of leaflets, from 9-19, usually_. The leaves are alternate, but bunched toward the end of the branches, emanating like spokes of a wheel in all directions from the branch. The leaflets are opposite except for the terminal one. Particularly on young plants, the leaf stalk tends to be reddish toward the outer leaflets. Crushed leaves have a faint turpentine-like smell. The trunk and bark is gray, and sometimes has distinctive, blunt, gray spines (often more like warts than spines); however, not all trees have many warts or spines at all, and the really big trees do not.

Flowers and fruits: Deciduous, losing its leaves around February or March, but growing them back before the rains begin. The small, while flowers appear in dense bunches just after the new leaves. The fruits are yellow, produced from July to October.

Distribution: This is one of the most abundant trees in farmlands and towns throughout Panama, where it is generally only a small or medium-sized tree. It is abundant along roads, and its familiar yellow fruits often pile up on streets and sidewalks in the Canal area. It is also very common within forests around Panama City and Gamboa, but considerably less common in mature forests of Barro Colorado, Soberania, and Fort Sherman. In the forest, its juveniles only survive in natural clearings, where there is lots of light. But giant trees occur sporadically in old-growth forest, reaching diameters over 1 m.

Uses: Jobo is commonly used for living fences in farmland of Panama, since cut branches readily root. The fruits are edible and sometimes called monkey-plum, but the wood is low-quality and seldom used. In the provinces of Herrerra and Los Santos, the bark is used for carving figures, and leaves and roots are occasionally used as medicine.

31. *Tabebuia guayacan* (Seem.) Hemsl.

Family: Bignoniaceae
Common Names: Guayacán

Description: Tree 20 to 40 m high and 50 to 100 cm in diameter. Rounded cup. Trunk straight and cylindrical, with small board roots at the base. Greyish outer bark with vertical shallow fissures. Terminal twigs with white lenticels. Leaves digitate and opposite, with 5 to 7 leaflets, 5 to 30 cm long and 3 to 15 cm wide, ovate or lanceolate, with acuminate apex, wavy edges and rounded base. In juvenile plants the leaflets may have jagged edges. Petioles 7 to 20 cm long. Yellow and bell-shaped flowers. Fruits in tubular and cylindrical capsules from 25 to 60 cm long, green and with the outer surface wavy, turning black and dehiscent when ripe. Winged seeds.

Ecological Data: The species grows at low and medium elevations, in dry, humid or very humid climates. Common and very abundant in Panama's forests. During the flowering season guayacán trees drop their leaves and the crown turns yellow due to the color of the flowers. Adult guayacán trees bloom in a synchronized manner at the beginning of the

rainy season, immediately after the fall of heavy rain. The flowers are visited by bees, butterflies and hummingbirds. The seeds are scattered by the wind.

Similar species: Tabebuia rosea has very similar leaves, but the flowers are pink. Due to its yellow flowering the guayacan can be confused with Tabebuia ochracea, but T. ochracea has a yellow ferruginous pubescence on the twigs and leaflets, which does not occur in T. guayacan. The guayacán can occasionally flower sporadically in early January, so it can be confused from a distance with Schyzolobium parahyba that has yellow flowers for this time, but Schizolobium has bipinnate and alternate leaves.

Economic Importance: The wood is heavy and of high durability, used in naval constructions, bridges, car bodies, tool handles, railway sleepers and hydraulic works of fresh water. The guayacán is used as an ornamental plant in parks and avenues because of the beautiful yellow color of its flowers.

32. *Tabernaemontana arborea* Rose in Donn. Sm.

Family: Apocynaceae
Common names: Huevo de gato

Description: A moderately-sized forest tree, reaching the canopy but not more than about 70 cm in trunk diameter. The trunk is straight, light-colored with greenish spots, and fluted, slightly flared at the base, usually unbranched for most of its length. Leaves are opposite, shiny, fairly thick to the feel, and drip copious white latex when broken (as does the bark). One of each pair of leaves is nearly always notably larger than the other.

Flowers and fruits: Flowers are 2-3 cm across, white, with 5 petals in a pinwheel form (typical of the Apocynaceae), often seen on the ground below trees during the flowering

season from March to June. Fruits are in pairs, fairly large (each just larger than a golf ball), light brown in color, often found unbroken on the forest floor at Barro Colorado. Inside is a sweet orange pulp that covers the seeds. Fruits are produced for most of the year.

Distribution: Only in forest on the wetter half of the Canal area, from Barro Colorado and Pipeline Rd. north, including the wet forests of Santa Rita. Numerous and easy to spot at Barro Colorado.

How to recognize: Easiest to recognize as an adult on Barro Colorado, where there are many trees of nearly the same trunk size. The very light coloring and fluted effect is notableand distinctive. Juveniles are common in the forest, and opposite leaves which drip white latex when broken, unequal in size. One other Apocynaceae, are *Stemmadenia grandiflora* also has opposite, unequal leaves with lots of white latex. It's a small tree, with yellow flowers, but in the absence of flowers, the two can be confused. Other Apocynaceae *(Lacmellea panamensis, Malouetia guatemalensis* have opposite leaves with white latex, but the two leaves in a pair are equal in size.

Uses: This species sprouts easily when cut, and is occasionally used in living fences.

33. *Tapirira guianensis* Aubl.

Family: Anacardiaceae

Sinonimus: *Tapirira myriantha*

Common names: Caobilla, palo de gusano

Description: Tree of 20 to 35 m in height and 30 to 70 cm in diameter. Rounded cup with dense foliage. Trunk with medium-sized board roots at the base. External brown or reddish bark. When the terminal twigs are broken or the new leaves are squeezed, a strong smell of

resin is perceived. Leaves imparipinnate and alternate, with 5 to 11 leaflets, opposite in the rachis. Leaflets 5 to 23 cm long and 3 to 11 cm wide, elliptical to oblong elliptic, with acuminate apex, entire borders and obtuse base. Petioles 4 to 20 cm long and pulvinados in the base. The species is dioica or polygamous. Flowers small and yellowish green. Fruits in ovoid or globose drupes 1 to 1.5 cm long, green, turning black or purple when ripe.

Ecological Data: The species grows at low and medium elevations, in humid or very humid climates. Common in Caribbean forests in Panama, but rare or absent in dry forests of the Pacific. It blooms and fructifies from March to September. The flowers are visited bybees and other insects. The seeds are dispersed by animals.

Similar species: *Spondias mombin* has very similar leaves, but in *S. mombin* the leaflets have a submarginal ridge and the fruits mature yellow, which does not occur in *Tapirira*. It can also be confused with some species of *Protium*, but in *Protium* the leaflets are pulvinados and the fruits are capsules. Its common name of caobilla is due to the similarity of this species with the mahogany *Swietenia macrophylla*, but *S. macrophylla* has paripinnate leaves, and in *Tapirira* the leaves are imparipinnate.

Economic Importance: Its wood is used for floors, bridges, railway sleepers, tool handles, and fence posts and in the manufacture of furniture.

34. *Terminalia amazonia* (J.F. Gmel.) Exell

Family: Combretaeae
Sinonimus: *Terminalia obovata*
Common Names: Amarillo, roble amarillo, amarillo carabazuelo

Description: Tree 20 to 40 m high and 50 to 150 cm in diameter. Trunk with medium-sized board roots at the base. Grayish outer bark with vertical fissures, internally yellow. Simpodial terminal twigs. Leaves simple and alternate, 4 to 12 cm long and 3 to 6 cm wide,

obovate to oblong-lanceolate, with acuminate or rounded apex, entire borders and cuneate base. The leaves are grouped in the apices of the twigs and present domacios or groups of hairs in the axils of the secondary veins of the underside. Petioles 0.5 to 1.5 cm long, pubescent. White or green, aromatic flowers. Samaroid fruits of 0.8 to 2.0 cm in diameter, composed of two papyrus wings, green, turning red or yellowish brown when ripe

Ecological Data: The species grows at low and medium elevations, in humid or very humid climates. Common and widely distributed in Panama's forests. It grows in acid, sandy or clayey soils. Also in places that are flooded for a period of 3 to 5 months a year. Drops its leaves during the dry season, but replaces them at the beginning of the rainy season. It blooms and fructifies from March to June. The flowers are visited by bees and other insects. The seeds are scattered by the wind.

Similar Species: Due to the similarity of the leaves it can be confused with *Terminalia oblonga*, but in *T. oblonga* the outer bark is exfoliated in large sheets, leaving the trunk smooth and white, also the fruits are larger. Because of its sympodial branching it can be confused with Buchenavia tetraphylla, but in *Buchenavia* the fruits are drupes, very different from the samaroid fruits of *Terminalia*.

Economic Importance: Wood is used to manufacture furniture, tool handles, boards, boat covers, boats, bridges, railway sleepers, floors and turned items. The bark contains tannins and is used to tan and dye skins.

Economic Importance: The wood is heavy and of high durability, used in naval constructions, bridges, car bodies, tool handles, railway sleepers and hydraulic works of fresh water. The guayacán is used as an ornamental plant in parks and avenues because of the beautiful yellow color of its flowers.

35. Trichilia tuberculata (Triana & Planch.) C. DC.

Family: Meliaceae
Common names: Alfajia

Description: A large but not giant tree of mature forest. Large trees have straight, cylindrical trunks, with no buttresses, branched only near the top. The bark has small, white"tubercles", each consisting of a pair of vertical white bars with a vertical black line in between; the entire tubercle is about 3 mm long. Leaves are alternate, compound, with a pseudo-terminal leaflet. That is, there are really an even number of leaflets, usually 6-8, but one of the last pair bends forward and appears to be terminal. Leaflets are arrangedalternately along the leaf rachis, and the basal ones are smaller than the outer ones. The base of the leaf stalk is swollen, but flattened (not cylindrical). There are often small, black circles on leaves, but this is a fungus and is not always present.

Flowers and fruits: Fruits are produced at the start of the wet season, and where this species is common, many can be found on the ground. They are small, dark seeds with a bright red aril which does not quite cover the seed.

Distribution: Abundant in the old-forest of Barro Colorado Island, where it is one of the dominant trees of the canopy and is very common as a sapling. If you pay close attention, you will find that there are seldom saplings right around an adult, whereas there are concentrations of saplings far from any adult. Apparently there is a fungus associated with adults which tends to kill nearby saplings. Also abundant in the central part of Pipeline Rd and on the peninsulas near Barro Colorado. Present, but at much lower density, throughout the rest of the Canal area lowlands, including both Pacific and Caribbean coasts. Never seen outside the forest.

How to recognize: In large trees, the white tubercles are inconspicuous, and can only be found with close inspection (often after rubbing moss away), but no other species has them. In saplings, the way the terminal leaflet is not quite straight is characteristic of many species of *Trichilia* and sets the genus apart from other Meliaceae like *Guarea* or *Cedrela*. On Barro Colorado and at Pipeline Rd, the other *Trichilia* is *T. pallida*; it is far less common and has larger leaflets. In other forests of the Canal area, there is usually at least one other *Trichilia* more abundant than *T. tuberculata*. The most important is *T. pleeana*, which is common in the drier forests around Panama City; it has more leaflets that are mostly the same size as one another.

36. Trichospermum galeottii (Turcz.) Kosterm.

Family: Malvaceae
Common names: Capulín, majaguillo, burrilico

Description: Tree 10 to 20 m high and 10 to 50 cm in diameter. Straight and cylindrical trunk. Black or grayish outer bark. Cylindrical and pubescent terminal twigs. Leaves simple and alternate, pubescent, 10 to 25 cm long and 3 to 9 cm wide, oblong-lanceolate, with acuminate apex, serrated edges and rounded base. Leaf-blades with three main ribs emerging from the base and many secondary ribs perpendicular to these, forming a ladder- like pattern. Stipules deciduous. Petioles 1 to 1.5 cm long and pulvinados on both ends, pubescent. The species is dioica. Pink flowers Fruits in capsules 1 to 2 cm long, flattened and with the apical end emarginated, green, turning brown or black and dehiscent when ripe. Seeds with ciliated trichomes.

Ecological Data: The species grows at low and medium elevations, in humid or very humid climates. Common and widely distributed in the forests of the Panama Canal. It grows in secondary forests and disturbed areas. It partially drops its leaves during the dry season, but replaces them at the beginning of the rainy season. It blooms and fructifies fromOctober to May. The flowers are visited by bees, butterflies and other insects. The seeds arescattered by the wind.

Similar Species: Trema micrantha is a very similar tree, but in T. micrantha the leaves are rough to the touch and the fruits are small, green drupes, turning red or orange when ripe, which does not occur in Trichospermum.

Economic Importance: The fibers that are extracted from the bark are used as ropes to tie. The trunk and branches are used for firewood. It is a fast-growing tree that leaves many dry leaves and branches on the ground, thus helping to improve soil conditions, so it can be

used in mixed plantations to recover degraded areas. It can also be used as an ornamental plant for the beautiful color of its flowers.

37. *Virola sebifera* Aubl.

Family: Myristicaceae
Common Names: Velario colorado, copidijo, bogamani, sangre

Description: Tree 10 to 25 m high and 10 to 50 cm in diameter. Trunk with verticillated branch. External brown or reddish bark. The detachment of any part of the plant produces the flow of an aqueous exudate, which turns reddish. Cylindrical terminal twigs with ferruginous hairs. Leaves simple and alternate, 10 to 20 cm long and 5 to 12 cm wide, oblong, with acuminate apex, entire edges and base subcordada to rounded. Petioles 0.8 to 2.5 cm long, pubescent. The species is dioica. Yellowish, small and aromatic flowers. Fruits in capsules globose to ovoid 2 to 3 cm long, chestnut brown and dehiscent in two valves when ripe. Seeds wrapped in a red and lacy aril.

Ecological Data: The species grows at low and medium elevations, in humid or very humid climates. Common and widely distributed in Panama's forests. It blooms and fructifies from June to February. The flowers are visited by bees and other insects. The seeds are dispersed by animals, mainly monkeys, toucans and guans that feed on the aril.

Similar Species: Due to the similarity of the leaves, it can be confused with *Virolaelongata*, but in *V. elongata* the fruits are smaller and of green or grayish color. It can also be confused with *Virola surinamensis*, which is a larger tree with larger fruits, which mature yellow. Generally *V. sebifera* has many fruits by infrutescences in comparison with other species of *Virola*.

Uses: Wood used for internal constructions and in plywood. Indigenous of the Amazon in South America prepare a hallucinogen from the bark, which is used in religious ceremonies.

38. Virola surinamensis

Family: Myristicaceae
Sinonimus: *Virola nobilis*
Common Names: Fruta dorada, miguelario, bogamani


Description: Tree 20 to 35 m high and 20 to 80 cm in diameter. Trunk with verticillated ramification and well-developed table roots at the base. External brown or reddish bark. The detachment of any part of the plant produces the flow of an aqueous exudate, which turns reddish moments later. Leaves simple and alternate, 8 to 15 cm long and 3 to 5 cm wide, oblanceolate, with acuminate apex, entire edges and rounded base. Petioles 0.5 to 1 cm long and ribbed on top. The species is dioica. Yellowish and aromatic flowers. Fruits in ovoid capsules 2.5 to 3.5 cm long, green or brown, turning yellow and dehiscent into two leaflets when ripe. Wrapped seeds of a red aril.

Ecological Data: The species grows at low and medium elevations, in humid or very humid climates. Common in forests of the central part and the Caribbean in Panama, but rare or absent in dry forests of the Pacific. It grows on slopes and hollows within the matureforest. It blooms and fructifies from November to February, and from March to June. The flowers are visited by bees and other insects. The seeds are dispersed by animals, mainly monkeys, toucans and guans that feed on the aril. On the forest floor the seeds are attacked by weevils of the family Curculionidae

Similar Species: Due to the similarity of the leaves, it can be confused with Virola sebifera, but in V. sebifera the fruits are chestnut brown in color and are produced in greaterquantity. It can also be confused with Virola multiflora, but in V. multiflora the leaves are smaller and have a white or gray underside

Economic Importance: Wood is used for sheet and plywood, light construction, boxes, drawers, furniture, boats, interior trim and in the manufacture of paper pulp. Indigenous of

the Amazon in South America, prepare a hallucinogen from the bark, which is used in religious ceremonies.

39. Vismia macrophylla Kunth

Family: Clusiaceae
Sinonimus:
Common Names: Pinta mozo, achiote, sangrillo

Description: Tree 5 to 12 m high and 5 to 20 cm in diameter. External brown or red bark and exfoliating in imbricate sheets. Ferruginous terminal pubescent twigs. The detachment of any part of the plant produces the flow of an orange exudate. Leaves simple and opposite, 10 to 40 cm long and 6 to 16 cm wide, oblong or lanceolate, with acuminate apex,entire edges and base or subcordada cordate. The leaves are green on the beam and chestnutbrown on the underside. Leaf blades with red or black glandular points on the underside, visible with a magnifying glass. Petioles 1 to 2.5 cm long and slightly grooved on top. White and aromatic flowers, with purple stripes on the sepals and petals. Globose fruits, 1to 1.5 cm long, green, turning reddish when ripe, generally present the remains of the chalice at the base and the remnants of the stigmas of the flower at the tip.

Ecological Data: The species grows at low and medium elevations, in humid or very humid climates. Common and widely distributed in secondary forests of Panama. It grows in disturbed places with red and clayey soils. It blooms and fructifies from May to October.

The flowers are visited by bees, wasps and butterflies. The seeds are dispersed by animals.

Similar species: Vismia baccifera is a very similar tree, but in V. baccifera the leaves are smaller and have a rounded base.

Uses: Wood used for firewood and in the manufacture of tool handles. Dyes, tannins and oils are obtained from the resin. In the past the indigenous groups of our country, used the orange exudate of this plant to make a dye and paint the body.

40. Vochysia ferruginea Mart

Family: Vochysiaceae
Common Names: Flor de mayo, mayo

Description: Tree 10 to 30 m high and 10 to 80 cm in diameter. Rounded or umbelled cup. Trunk straight and cylindrical, devoid of branches until half of the total height. Black outer bark with white or gray spots. Terminal twigs quadrangular and with ferruginous hairs. Leaves simple and opposite, coriaceous, 5 to 14 cm long and 3 to 5 cm wide, elliptical, with acute or acuminate apex, entire edges and obtuse base. The veins on the underside of the leaf are yellow and meet near the edge to form a submarginal ridge. Stipules small,pubescent and deciduous. Petioles 0.4 to 0.7 cm long and slightly grooved on top. Flowers of intense yellow color, aromatic, with three unequal petals and one of the sepals forming a spur curled at the base. Fruits in capsules of 1.5 to 3 cm long, green, turning black and dehiscent when ripe. Winged and small seeds.

Ecological Data: The species grows at low and medium elevations, in humid or very humid climates. Common and widely distributed in humid forests of Panama. It grows in alluvial soils and with acid pH. Drops its leaves partially throughout the year. It blooms and fructifies from March to June, and from September to November. The flowers are visited by hummingbirds, bees, butterflies and other insects. The seeds are scattered by the wind.

Similar Species: Due to the resemblance of flowers and fruits, it can be confused with Vochysia guatemalemsis, but V. guatemalensis has larger leaves and whorled in groups of three, which does not occur in V. ferruginea. It can also be confused with Vochysia jefensis, but in V. jefensis the leaves are glabrous and have rounded edges on the underside.

Economic Importance: Its wood is used in internal constructions, carpentry, fence posts, in the manufacture of boxes, phosphorus sticks and in the production of pulp for paper. It is a kind of rapid growth. The twigs and leaves that fall are decomposed by improving soil conditions and providing high levels of organic matter, nitrogen, calcium and phosphorus. Excellent characteristics for use in reforestation programs to recover degraded soils. The trees of this species have great potential in farms dedicated to beekeeping, also as ornamental plants for their extraordinary flowering.

41. Tetrathylacium johansenii Standl.

Family: Salicaceae

Common Names: Palo de chancho, pantano

Description: Tree 10 to 30 m high and 20 to 60 cm in diameter. Trunk with resprouts and small roots on the base. Cylindrical or slightly edged terminal twigs. Single and alternating leaves, 10 to 25 cm long and 3 to 7 cm wide, oblong or lanceolate, with acuminatum apex, jagged edges and subcordada or uneven base. Foliar and persistent stipules at the ends of the twigs. Petioles 0.3 to 0.6 cm long and slightly ribbed in the upper part. Inflorescences in spikes. White flowers. Globose Fruits 1 to 2.5 cm long, green, becoming red when maturing.

Ecological data: The species grows at low and medium elevations, in humid or very humid climates. Common and widely distributed in the forests of the Panama Canal. It grows on slopes, ravines, swampy places and on the banks of rivers. It partially drops its leaves during the dry season, but resets them at the beginning of the rainy season. The peccaries orpigs of Monte Tayassu Tajacu eat the crust of the base of these trees, mainly in times of famine, hence its common name of pig stick. It blooms and fruit from April to September. The flowers are visited by bees and other insects. The seeds are scattered by animals.

Uses: Wood used in the construction of bridges, floors, furniture and carpentry.

42. *Lacistema aggregatum* (P.J. Bergius) Rusby

Family: Lacistemataceae

Common names: huesito

Description: A small tree with a straight, cylindrical trunk. Branches have small swellings at the base of each leaf. Leaves are simple, alternate, regularly-spaced along branchlets, in a flat plane. They can be untoothed or slightly toothed. The stipules fall off readily, but they leave a clear scar - a ring that encircles about three-quarters of the branchlet, leaving a gap on the side opposite the leaf.

Flowers and fruits: Flowers are small, white or greenish, in clusters along the branchlets, produced from January to May. There is a pair of small bracts at the base of each flower. Fruits are a capsule that turns from green to reddish as they mature; each has a single seed inside which is covered with a white aril. Fruits mature in May and June.

Distribution: A remarkably widespread treelet of the forest understory, found commonly in all lowland forests along the Canal. It is the only forest species which is very common in forests near the Caribbean, near the Pacific, and in the center of the isthmus. It is numerous in the forests around Gamboa, in Soberania, on Barro Colorado, and at Sherman.

How to recognize: This is a hard species to recognize at first, but it is common enough to encounter frequently and learn well, and the incomplete ring around branchlets is distinctive. When the leaves have teeth, it looks immediately like a Flacourtiaceae with its regularly-spaced leaves in a flat plane, and it should bring to mind *Casearia sylvatica* or other *Casearia*, or *Lozania pittieri* which is much less common. But if teeth are not present,*Lacistema* could be confused with Euphorbiaceae like *Drypetes standleyi* or *Margaritaria nobilis*, or Lauraceae like *Ocotea cernua*. If you don't think of checking for the incomplete ring, *Lacistema* will be hard to pin down.

43. Ficus bullenei I.M. Johnst.

Family: Moraceae

Common names: Higuerón, matapalo

Description: The plants of this species begin their life cycle as epiphytes, but later they become independent trees that reach from 10 to 20 m high. Trunk with black outside crust and lenticelada. Terminal twigs covered with ferrugíneos and tomentosos hairs. The detachment of any part of the plant produces the flow of a milky exudate. Single and alternating leaves, 7 to 26 cm long and 4 to 13 cm wide, elliptic to obovate, with obtuse or rounded apex, whole edges and rounded or slightly roped base. The leaves are rough in the beam and pubescent on the underside, mainly on the ribs. Stipules 1 to 2 cm long, pubescent. Petioles 1 to 3 cm long and covered with ferrugíneos and tomentosos hairs. Fruits in globose sicos and with a crown-shaped structure at the tip, from 1 to 1.7 cm long, green and pubescent on the outside.

44. Quassia amara L.

Family: Simaroubaceae

Common names: guabito amargo, cruceta, hombre grande

Description: A small tree of the forest understory, typically with a leaning stem, sometimes multiply-stemmed. Leaves are alternate, compound, with 3-5 leaflets, one terminal and the remaining in opposing pairs. The rachis between the leaflets is conspicuously winged. The leaves and mark have an unpleasant bitter flavor if chewed, hence the local name.

Flowers and fruits: The flowers are one of the distinctive sights in the understory of Canal area forests. They are bright pink tubes with a narrow mouth, somewhat wider at the base. Flowers are produced from October to February. The fruit consists of 4-5 berries held together in a red receptacle; the fruits themselves are green, then turn black when maturing early in the dry season.

Distribution: Generally, not very common but patchy in mature forest understory. Numerous at Soberania around Limbo and in forests near Gamboa; common in places on Barro Colorado. Rare in the upper Chagres and at Sherman, and not seen near the Pacific coast.

How to recognize: One of the plants first learned at Barro Colorado due to the winged leaf rachis; only lianas (the genera *Paullinia* and *Serjania*) have similar leaves. Recall that *Inga* leaves, which often have wings along the rachis, are paripinnate - they lack the terminal leaflet. When flowering, *Quassia* is conspicuous, and flowers are often found on trails at Barro Colorado or on Pipeline Rd.

Uses: The bitter flavor is caused by a chemical named for the genus - quassain - which has insecticidal properties. The chemical can be extracted by boiling any part of the plant, including the leaves or trunk, and is used as a natural insecticide. It is one of the favorite local medicinal plants, and its use for treating various intestinal parasites is probably well- justified based on quassain's properties; like many local medicinal plants, it is also used for practically any ailment imaginable. Some people soak pieces of the trunk in alcohol to produce an insect repellent.

45. Unonopsis panamensis

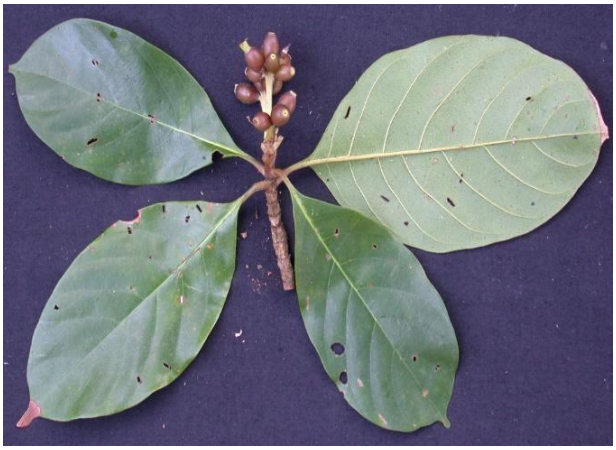
Family: Annonaceae

Description: They are trees that measure from 3 to 5 meters high, with leaves Cartáceas, main nerve elevated in the beam; Ribbed, bulging, black stalks when dried. Inflorescences Ripidios of few flowers, axillary or arranged in the armpits of fallen leaves, or caulifloras; Pedicels with a tiny bracts, spherical buds; Sepal leaflets; Petals 6, valved, subequal, fleshy, ovados to rounded, inner petals on the outside with a narrowly triangular keel demarcating the overlap; Numerous stamens, truncated-discoid connective; Hairs 3 – 18, Stigmata Piriformis-ovoid, OVA 1 or 4, lateral. Fruit a fascicle of Monocarpos globose, Estipitados, Abayas, the stipes obliquely joined to the Monocarpus; Seeds compressed-globose, Foveoladas, with a different equatorial crest, without aril.

Ecological data: The species grows at low and medium elevations in humid or very humid forests of the provinces of Bocas del Toro, Colón, Darien, Panama.

46. Amaioua corymbosa Kunth

Family: Rubiaceae
Common names: Madroño, madroño de montaña



Description: Tree 4 to 10 m high. Ribbed trunk. Brown or reddish outer crust, sometimes exfoliating in small sheets. Simpodiales terminal twigs and chestnut brown color. Single and opposite leaves, 5 to 15 cm long and 3 to 8 cm wide, ovate, oblong or elliptical, with acuminatum apex, whole edges to wavy and base decurrent or rounded. The leaves sometimes have domacios in the ribs of the underside. Stipules Seríceas and deciduous, persistent in the apexes of the twigs as a conical terminal bud. Petioles 0.5 to 3 cm long. The species is dioica. White and tubular flowers. Fruits in globose berries, 1 to 2 cm long, green, becoming red purple or black when maturing.

Ecological data: The species grows at low and medium elevations, in humid or very humid forests of the provinces of Chiriquí, Cocle, Colón, Darién, Panama and Veraguas. It blooms and fruits from February to July.

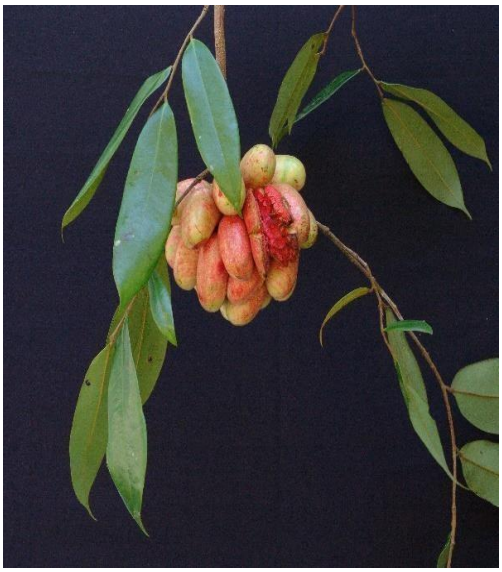
Similar species: by the resemblance of the trunk and leaves can be confused with *Macrolobium roseum*, but in *M. roseum*. The flowers are pink and the fruits are small capsules. *Amaioua magnicarpa* has very similar leaves and fruits, but of larger size.

Uses: The wood is used to manufacture tool handles and as Horcón in ranches.

47. Xylopia macrantha Triana & Planch.

Family: Annonaceae

Common names: Malagueto de montaña, malagueto, joroba, rayado



Description: A treelet or medium-sized tree of forest understory, occasonially reaching the canopy. Leaves are alternate, narrow, pointed, in a flat plane, and arranged regularly along the branches. Branches zig-zag between leaves. The leaf underside is blue, with secondary veins inconspicuous (essentially invisible).

Distribution: A mature forest species, common at Barro Colorado, Soberania, and Sherman. Absent from the Pacific half of the Canal area. Common along Pipeline Rd.

How to recognize: The leaves of this species are very similar to those of *X. aromatica*. The best character to separate the two is habitat - *aromatica* is always a roadside and farmland species, mostly of the Pacific slope, while *macrantha* is a forest species of the Caribbean slope. See also *X. bocatorena*, *X. frutescens*, and *Mosannona garwoodii*.

48. Xylopia frutescens Aubl.

Family: Annonaceae

Common names: malagueto macho

Description: A medium-sized tree with very small leaves and a distinctive crown. The branches are long and can have many leaves; the leaves are pointed, arranged in a flat plane, regularly-spaced, alternate. The leaf underside has a soft, bluish color, and the secondary veins appear to be absent (they are there, though, and visible under closeexamination). On larger trees, the long branches droop is such a way that from a distance, the entire crown appears pointed at the top, in the shape of a Christmas tree.

Flowers and fruits: Produces small white flowers on the branches, from May to August. Fruits mature from October through March, and many small birds collect in *Xylopia* for the small berries (this is a good species for collecting birds along Pipeline Road).

Distribution: A common roadside and farmland species throughout the Canal area, rare or absent within forest, found on the dry Pacific slope to the wet Santa Rita ridge. Common along Pipeline Rd.

How to recognize: Since there are no conifers (needle-leaved trees) in the Panama lowlands, any Christmas-tree-like form must be a *Xylopia*. This and *X. aromatica* both occur in the same roadside habitat, and both have the strange, pointed crowns, but they are easy to separate by leaf size. Both are readily identified as saplings by the bluish leaf undersides, lack of secondary veins visible on the leaf underside, and the long branches with regularly-spaced leaves.

Uses: The wood is hard and much-used by local farmers for construction and tools.

49. Cinnamomum triplinerve (Kunth) Koesterm.

Family: Lauraceae

Sinonimus: *Cinnamomum cinnamomifolium, Phoebe cinnamomifolia, Phoebe mexicana, Phoebe johnstonii*

Common names: Sigua, sigua blanca

Description: Tree 10 to 30 m high and 10 to 50 cm in diameter. Umbelada or rounded cup. Trunk with small roots and sometimes with regrowths in the base. Gray outer crust and Lenticelada. Green and glabrous terminal twigs. Simple and alternating leaves, aromatic when squeezed, 8 to 30 cm long and 4 to 9 cm wide, elliptical, with sharp apex, whole edges and base round or sharp. Foliar blades with three suprabasal veins more developed than the rest. Petioles 1 to 2 cm long and slightly ribbed in the upper part. Green or yellowish, aromatic flowers. Fruits in drupes of 1 cm of length and with a basal glass of yellowish green color, green, becoming black when maturing.

Ecological data: The species grows at low and medium elevations, in humid or very humid climates. Common and widely distributed in forests of Panama. It blooms and fruit from April to September. The flowers are visited by bees and other insects. The seeds are scattered by animals.

Similar species: by the resemblance of the leaves it can be confused with Nectandra purpurea, but in N. purpurea the leaves have the long apexes and acuminata, the fruits are of larger size.

Uses: Wood used in the construction of bridges and industrial floors.

50. Tabebuia rosea

Family: Bignoniaceae

Sinonimus: *Tabebuia pentaphylla*

Common names: Roble, roble de sabana

Description: Tree 10 to 30 m high and 20 to 80 cm in diameter. Umbelada Cup or slightly rounded. Trunk with small roots in the base. In juvenile plants the trunk branches in 2 or 3 main and ascending branches. Gray outer crust with vertical fissures. Fingered and opposite leaves, with 3 to 5 leaflets of different sizes, the basalts are always smaller, the largest is the central. Leaflets 3 to 16 cm long and 3 to 8 cm wide, obovate or lanceolate-elliptic, with acuminatum apex, whole edges and obtuse base. Petioles 8 to 12 cm long and pulvinados in the base. White or pink and bell-shaped flowers. Fruits in tubular and cylindrical capsules of 20 to 40 cm long, green, black becoming and dehiscent when maturing. Winged seeds.

Ecological data: The species grows at low and medium elevations, in dry, humid or very wet climates. Common and widely distributed in Panama. Adapts to a wide variety of soils and climates, it can even withstand temporary floods. Adult oak trees flourish in a synchronized fashion during the dry season, around February and March. During the flowering season the oak trees drop their leaves and the glass turns white or pink by the color of the flowers. The flowers are visited by bees, butterflies and hummingbirds. The seeds are scattered by the wind.

Similar species: by the resemblance of the leaves can be confused with Tabebuia Guayacan and Tabebuia ochracea, but both species have yellow flowers.

Uses: Very good quality wood, used to manufacture fine furniture, floors, cabinets, cabinetry, decorative veneers, handicrafts, wagon wheels, boxes, packings, stockings for

firearms and boats. Bark and leaves are used in traditional medicine. It is an ornamental tree that has been planted in almost all the parks and avenues of Panama.