

Flowers of Zapoton, Pumpo, *Pachira aquatica*

Volume 1 of Series:

Flowers of the FLAAR Ethnobotanical Research Garden

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FLAAR (USA) and FLAAR Mesoamerica (Guatemala)

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Flowering at 1,600 meters above sea level, in Guatemala City, far from its lowland wetlands homeland habitat.

There are two *Pachira aquatica* trees that grow in our research garden surrounding our 6-level residence-office. One is surrounded by so many other trees that you can't see whether it has any flowers or not. The younger tree has grown very very tall (in order to get it's leaves to reach full sun above the surrounding trees) and these flowers are visible from the ground. But since the flowers are so high up, it's not easy to hold the iPhone steady. So I cut off a centimeter of one of the long curling sepals at the lower left. Nonetheless, the flower looks GORGEOUS against the blue sky (rare in the rainy season of Central America).



The iPhone 15 Pro Max zoomed its 15mm lens to 5740mm. I hope the Google Pixel 10 XL and the newer iPhone 17 Pro Max have an easier to use “telephoto” option.

The other snag is that since I have to hold the telephone high above my head, when I tap my finger to tell the camera where to focus, it often focuses on the wrong part (here the leaves instead of the flowers). This is literally at the tip top of the tree—amazing that I can even see it from standing on the ground.

Five more buds will open in the coming days.



But if you take lots of different photos, then at least some will turn out well focused, as here.

October 3, 2025, 8:47am
because later in the day the sun is at the wrong angle (and the sun glares into the camera lens). You need the sun “behind your back”.

iPhone 15 Pro Max.



***Pachira aquatica* fruits were available to the Maya and their Neighbors for thousands of years**

Pachira aquatica thrives at sea level along the rivers, lakes, and swamps of the Caribbean area of Municipio de Livingston, Izabal, Guatemala.

Pachira aquatica loves to grow along the shores of the Rio San Pedro in Parque Nacional Laguna del Tigre (PNLT), Reserva de la Biosfera Maya, RBM, Peten, Guatemala.

There is one *Pachira aquatica* tree on the edge of the aquada behind the visitors center at Tikal.

But so far not one single solitary *Pachira aquatica* tree has been found around the edges of Lake Yaxha or along the banks of the Rio Ixtinto.

Lots of *Pachira aquatica* trees can be seen in the Costa Sur of Guatemala, including at AutoSafari Chapin.

All these areas are at low elevation—yet we have two of these trees growing happily at 1,600 meters above sea level surrounding the office-residence of FLAAR Mesoamerica on the hills overlooking Guatemala City. Thus we highly recommend *Pachica aquatica* as a garden plant, especially along streets and avenues to everyone can see the beautiful flowers and the enormous fruits. Zapote is a generic word for lots of different zapote (sapote) fruits (all edible). Zapoton means giant-zapote fruit, because this is the largest and heaviest fruit of any tree native to Guatemala. We show the fruits in our FLAAR publication on *Pachira aquatica*—you can easily download this from the Internet—just Google *Pachira aquatica*, Hellmuth, FLAAR

The tree is also called pumpo.

October 5, 2025. There
are new fresh flowers
opening every day for two
weeks.

iPhone 15 Pro Max



The flowers at the upper left are one or two days old. The flower at the right has opened the day of the photography, Oct. 5, 2025.

Photographed at 9:34am.

Since October is the rainiest month in 30 years here in Guatemala City, it's amazing there is blue sky to create such a helpful background color. That's because most (but not all) of the rain falls in the late afternoon and night.



The large Seeds of giant Zapatone Fruits can be processed to make a Cacao (Chocolate) Substitute

We are also working on all cacao substitutes that are native and wild in the Mayan areas. Lots of Mayan people want to have cacao but either could not grow it in the climate or soil of their home gardens or could not afford to import it. When I Google cacao substitutes zilch Mesoamerica plants were mentioned five years ago, yet I have already found two cacao substitutes that both grow in the Municipio de Livingston areas of Izabal, Guatemala, plus more species elsewhere:

Amphitecna latifolia, morro de playa, beach calabash (Hellmuth 2021b).

Cassia grandis, Bucutz, carap (Hellmuth 2023).

Pachira aquatica, zapoton (Hellmuth 2021a).

Pouteria sapota, mamey zapote, mamey sapote (Martha Elena Cervantes Sanchez, and many other ethnobotanist comment on *Pouteria sapota* as a substitute for cacao.

Amphitecna latifolia is found mostly in wetlands of Izabal (Hellmuth 2021b and Portal de Biodiversidad de Guatemala). But curiously it has also been listed for Huehuetenango, BARILLAS, Barillas, Laguna de Maxbal.

Cassia grandis is listed by Portal de Biodiversidad de Guatemala for: Baja Verapaz, Jutiapa, Guatemala, Izabal, Peten, Suchitepéquez, with the majority of specimens coming from Peten. So these seeds were available to the Classic Maya to mix with *Theobroma cacao*—since cacao trees are not common in Peten. That said, *Theobroma cacao* can be planted anywhere, literally—these trees flower and produce cacao pods in the FLAAR Ethnobotanical Research Garden at 1,600 meters above sea level.

Pouteria sapota has been found in Alta Verapaz, Escuintla, Izabal, Peten, Santa Rosa, Zacapa. These giant trees can produce over 1,000 tasty edible fruits per year—plus the giant seed in the middle of each fruit—that's lots of cacao beverage without the expense of buying actual *Theobroma cacao* seeds.

This flower probably opened
earlier this morning.

Oct. 5, 2025, 9:35am.

iPhone 15 Pro Max.



Oct. 15, 2025, 9:43, but not pure sun nor pure blue sky. These flowers are at least two days old, and starting to wither.



Oct. 16, 2025, 9:56am, with
iPhone 15 Pro Max.

On the following page we
show a closer view from
zooming the lens (not
cropped).



Flower at the left
opened perhaps
yesterday.

Flower at the right
opened perhaps 2
or 3 days ago.

Oct. 16, 2025,
9:59am, with
iPhone 15 Pro
Max.



This flower is two or three days old, so all the bright red colors are no longer visible. In another two days or so, this wilted flower will fall to the ground.



This leaf is blowing in the wind.

The bright red colors appear when the flower has just burst open that morning.

The upright green object is a bud that will open the next or following morning.

September 22, 2025, 9:47am,
DNG (RAW) format.

Brand new Google Pixel 10 XL,
their new model for autumn
2025.

1100mm by zooming in on
17.9mm lens. I would prefer to
find a “telephoto lens”, but this
was the first time I had this
new Pixel 10 XL camera in my
hands.



BOTANICAL DESCRIPTION OF *PACHIRA AQUATICA* IN STANDLEY AND CO-AUTHORS

Flora of Guatemala, Volume 24, Part VI

Pachira aquatica Aubl. Pl. Guian. 725. pis. 291, 292. 1775. *Carolinea princeps* L. f. Suppl. 314. 1781. *C. macrocarpa* Schlecht. & Cham. Linnaea 6: 423. 1831. *P. macrocarpa* Walp. Repert. Bot. 1: 329. 1842. Zapoton; Pumpunjuche; Uacoot (Petén, Maya); Zapote bobo (Petén).

Densely forested or more usually rather open swamps, sometimes in or at the edge of brackish water, chiefly at or near sea level, at higher elevations growing along stream banks, at 300 meters or less; Peten; Izabal; Santa Rosa; Escuintla; Suchitepéquez; Retalhuleu; San Marcos. Southern Mexico to British Honduras and Panama; South America. A large or small tree, sometimes flowering when only a shrub, commonly 12-20 meters high, seldom more than 60 cm. in diameter, supported by usually narrow and tall buttresses, the bark light brown or grayish, smooth, the crown usually small but sometimes depressed and spreading; branchlets glabrous or nearly so, thick; leaves long-petiolate, the leaflets 5-8, rather thick and somewhat coriaceous, elliptic-oblong to oblanceolate-oblong, 8-20 cm. long, acute or obtuse, attenuate to the base, glabrous above, beneath glabrous to rather densely velutinous-pubescent; calyx 1.5-2 cm. long, densely yellowish-tomentulose, truncate; petals 18-30 cm. long, about 1 cm. wide, often involute, tomentulose outside, white or pale greenish yellow; stamens very long, the stout tube 4.5-12 cm. long, the slender filaments purple or reddish; fruit subglobose or ovoid, mostly 20-30 cm. long, light brown, smooth or nearly so. Known in British Honduras as “provision tree” and “Santo Domingo”; called “zapote de agua” in Chiapas; “shila blanca” in Salvador; “amapola” in Yucatan; “apompo” in Veracruz and Oaxaca. The Maya name in Yucatan is recorded as “cuyche.” The tree is particularly abundant along or near the North Coast, often dominant in shallow open swamps where it forms dense groves. It is conspicuous because of the light-colored smooth bark, and especially on account of the huge, very hard and heavy fruits which occur in such abundance that one wonders how the trees can support such a load. Fruits are found sometimes on trees no more than 2 meters high. The fruits often weigh six pounds or more, and are filled with solid white flesh in which the many large seeds are imbedded. Sometimes or perhaps usually they remain upon the trees until ripe, when they open, and the brown seeds, often as large as a hen’s egg, fall into the water. There they soon germinate and float about with expanded cotyledons until they land on some shoal or bank, where they root. The seeds, called “saba nuts” in Atlantic Nicaragua, are cooked and eaten in some parts of Central America. The young leaves are said to be cooked and eaten in South America. Probably the highest region in which the tree grows in Guatemala is in the vicinity of San Felipe and Retalhuleu, where it is frequent along streams. The exceedingly large flowers are handsome and rather showy, but the petals, of course, are very narrow. (Standley and Steyermark 1949: 400).

PACHIRA AQUATICA MENTIONED IN TREES AND SHRUBS OF MÉXICO, STANDLEY 1923

In the previous century, 1923, *Pachira macrocarpa* was still thought to be a separate species. With *Pachira aquatica* as another species. Later botanists realized they were all the same so merged *Pachira macrocarpa* in with *Pachira aquatica*. From the description of *Pachira macrocarpa* you can see they are the same:

1. *Pachira macrocarpa* (Schlecht. & Cham.) Walp. Repert. Bot. 1: 329. 1842. *Carolinea macrocarpa* Schlecht. & Cham. Linnaea 6: 423, 1831. *Pachira longifolia* Hook, in Curtls's Bot. Mag. 76: pi. 1850. Veracruz and Oaxaca; reported from Tabasco; type from Papantla and Tecolutla, Veracruz. Central America. Large tree with rounded crown; leaflets 6 to 8, elliptic-oblong or obovate-oblong, 8 to 10 cm. long, obtuse or acutish, coriaceous, glabrous; calyx 1.5 cm. long, minutely tomentulose; petals 7 to 11 mm. wide, minutely tomentulose outside; stamens purplish; fruit subglobose. "Apompo," "zapote reventador" (Veracruz); "sapot6u" or "zapotfin" (Guatemala, El Salvador); "pumpum-Juche" (El Salvador). The fruit is said to be as large as a coconut. The tree usually grows along river banks. The seeds fall into the water, where they germinate and float about with expanded cotyledons until they reach the bank and take root. The leaves and flowers are said to be employed to relieve inflammation of the eyes, and the seeds to be employed as a substitute for cacao. *Pachira longifolia* appears to be intended as a new name for *P. macrocarpa*, but the plant illustrated is probably *P. aquatica*. For Illustrations of *P. macrocarpa* see Contr. U. S. Nat. Herb. 18: pi, 68, 69.

2. *Pachira aquatica* Aubl. Pl. Gulan. 725. pi, 291, 292. 1775. *Carolinea princeps* L. f. Suppl. Pl. 314. 1781. Veracruz and probably elsewhere; reported from Tabasco and Chiapas, Central and South America; type from French Guiana. Large or small tree; leaflets 5 to 7, oblong, elliptic, or oblanceolate, 8 to 20 cm. long, acute to rounded at apex, coriaceous, glabrous or nearly so; calyx. 1.5 to 2 cm. long; petals 10 to 15 mm. wide, greenish and tomentulose outside, yellowish within; fruit ovoid, 10 to 30 cm. long. " Zapote bobo" (Tabasco, Ramirez); " zapote de agua " (Chiapas, Rovirosa); " ceibdn de agua " " ceibfin de arroyo," "castafio silvestre" (Cuba). The tree is said to be known in British Honduras as " provision-tree." The large seeds are often eaten, usually after having been roasted, and it is said that in the Guianas the young leaves are sometimes cooked and eaten. Here is to be referred Hemsley's report of *P. imignis* Savigny, a Brazilian plant. Hemsley also reports *P. minor* (Sims) Hemsl. from Mexico, but the original illustration¹ of that species is unlike any Mexican plant of which the writer has seen specimens. For illustrations of *P. aquatica* see Contr. U- S. Nat. Herb. 18: pi. 70, 71. (Standley 1923: 792-793)

Portal de Biodiversidad de Guatemala lists *Pachira aquatica* as being collected in the following parts of Guatemala: Alta Verapaz, Escuintla, Izabal, Peten, Quetzaltenango, Retalhuleu, Solola, Suchitepéquez. I estimate that all the locations for Departamento de Guatemala are in gardens or escaped from gardens. They list one example for the Jardin Botanico, so more proof that *Pachira aquatica* is a good tree for planting along streets of cities. There used to be a beautiful *Pachira aquatica* in the main plaza of Chisec, Alta Verapaz, but it was chopped down about five years ago to put concrete sidewalks and other modern features instead of beautiful vegetation.

Pachira aquatica Aubl. **CAM, CHIS**, GRO, JAL, MICH, NAY, OAX, PUE, **QROO**, SIN, **TAB**, VER, **YUC** (Villaseñor 2016: 795). So *Pachira aquatica* was available to the Classic Maya as food from the forests in wetland areas of Campeche, Chiapas, Quintana Roo, Tabasco and Yucatan.

Pachira aquatica Aubl. — Syn: *Pachira macrocarpa* Walp. — Ref: FG 6: 399. 1949. — Loc Use: MED, FOOD, CNST. — Reg Use: MED, FOOD, DYE. — Nv: provision bark, provision tree, santo domingo, sapote bobo, uacut, zapote bobo, zapoton. — Habit: Tree. (Balick, Nee and Atha 2000). So clearly recognized as edible by botanists who also very helpfully list ethnobotanical uses by local Maya people.

References Cited

A more complete bibliography on *Pachira aquatica* is in Hellmuth 2021, but below we list references cited in the present year 2025 photo album on flowers of *Pachira aquatica*.

BALICK, M. J., NEE, M. H. and D. E. ATHA

2000 Checklist of the Vascular Plants of Belize with Common Names and Uses: i-x, 1-246. New York Botanic Garden Press.

CERVANTES Sánchez, Martha Elena

2022 Aprovechamiento de la almendra de la semilla del fruto del zapote mamey como sustituto de chocolate. Ciencia Latina Revista Científica Multidisciplinar, 6(6), 8306-8315.

<https://ciencialatina.org/index.php/cienciala/article/view/3998/6064> DOI: https://doi.org/10.37811/cl_rcm.v6i6.3998

HELLMUTH, Nicholas

n.d. Flowers of the Maya Art Visible at Tikal: *Pachira aquatica*, Zapotón. Parque Nacional Tikal Petén. FLAAR Reports.

Available online: [http://citeseerx.ist.psu.edu/viewdoc/download?](http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.734.2609&rep=rep1&type=pdf)

[doi=10.1.1.734.2609&rep=rep1&type=pdf](http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.734.2609&rep=rep1&type=pdf)

HELLMUTH, Nicholas

2021a Cacao Substitute, Zapoton Seeds, *Pachira aquatica*, Swamp and Marshes, at the Caribbean Sea. Wetlands #5 (series). FLAAR Mesoamerica. 55 pages in the PDF, mostly with full-page size awesome photos of the beautiful flowers.

Available as a download on www.FLAAR-Mesoamerica.org

HELLMUTH, Nicholas

2021b Morro del Mar, Cacao Silvestre, Cocoa Substitute. *Amphitecna latifolia*. Potentially Edible Wild Plant Native to the Municipio de Livingston, Izabal, Guatemala. FLAAR and FLAAR Mesoamerica. 57 pages in the downloadable PDF.

HELLMUTH, Nicholas

2023 Bucutz, *Cassia grandis*. Helpful Medicinal Plant Native to the Mayan Biosphere Reserve (RBM). Parque Nacional Tikal Reserva de la Biósfera Maya (RBM) Petén, Guatemala. FLAAR and FLAAR Mesoamerica. 36 pages in the downloadable PDF.

In 2023 I did not yet realize that *Cassia grandis* seeds could be used to make cacao substitute.

STANDLEY, Paul C.

1923 Trees and Shrubs of Mexico. Contributions from the United States National Herbarium, Volume 23, Part 3. Smithsonian Institution, United States National Museum

STANDLEY, Paul C. and Julian A. STEYERMARK

1949 Flora of Guatemala. Fieldiana, Botany, Volume 24, Part VI. Chicago Natural History Museum.

VILLASEÑOR, José Luis

2016 Checklist of the native vascular plants of Mexico. *Revista mexicana de biodiversidad*, Vol. 87, pages 559-902.

We appreciate a generous donation during November 2021 to help cover the costs of FLAAR research projects specifically to assist and support the current FLAAR project of flora and fauna in the Reserva de la Biosfera Maya (RBM). This donation also assisted the 18-month FLAAR (USA) and FLAAR Mesoamerica (Guatemala) research project in the Municipio de Livingston area of the departamento of Izabal, Guatemala during 2019-2020.

This donation is from a family in Chicago in honor and memory of botanist Dr John D. Dwyer, who worked in many areas of Mesoamerica, including in the Yaxha area in the 1970's while the site was being mapped by FLAAR.

This donation is also in recognition of the urgency and need for conservation of both wildlife and rare plants in the bio-diverse ecosystems of the Reserva de la Biosfera Maya (RBM) of the northern half of Departamento de Peten, Guatemala. Parque Nacional Yaxha, Nakum and Naranjo (PNYNN) is one part of the over 5 million acres of the RBM.