



**FLAAR**  
MESOAMÉRICA

**WETLANDS # 22**

# **PATERNA GUAMA GUABA**

— *Inga spp.* —

**Municipio de Livingston,  
Izabal, Guatemala**

**DIANA SANDOVAL & SERGIO D'ANGELO JEREZ**



WETLANDS # 22

# PATERNA GUAMA GUABA

— *Inga spp.* —

Municipio de Livingston,  
Izabal, Guatemala

AUGUST 2022





## CREDITS

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The helpful individuals listed below are part of the FLAAR Mesoamerica research and field work team. The office research team is conformed by additional individuals in the main office in Guatemala City.

### Authors

Sergio D'angelo Jerez  
Diana Sandoval

### Compilation of Basic Data From Earlier Botanists

Sergio D'angelo Jerez  
Diana Sandoval

### Plant Identification Team

Nicholas Hellmuth  
Victor Mendoza  
Sergio D'angelo Jerez

### Bibliography Team

Nicholas Hellmuth  
Sergio D'angelo Jerez  
María José Toralla

### Photographers

Nicholas Hellmuth  
David Arrivillaga  
Roxana Leal  
Victor Mendoza

### Editors

Vivian Hurtado

### Manager of Design and Layout

Andrea Sánchez Díaz

### Layout of this English Edition

Jaqueline González

## APPRECIATION

---

### Assistance for local Access, Municipio de Livingston

Daniel Esaú Pinto Peña, Alcalde of Livingston (Izabal, Guatemala).

### Initiation of the Project of Cooperation,

Edwin Marmol Quiñonez, Coordinator of Livingston Cooperation (Izabal, Guatemala).

### Lancheros from Muelle Municipal to field trip base camp

Keneth William De La Cruz.  
Omar Suchite

---

### FRONT COVER PHOTOGRAPH

Photo by: María Alejandra Gutiérrez, Flaar Mesoamerica, Jan. 24, 2021.  
Camera: Canon 1D X Mark II. Settings: 1/250; sec: f/8; ISO 5,000.

### TITLE PAGE PHOTOGRAPH

Photo by: David Arrivillaga, FLAAR Mesoamerica, Mar. 21, 2021.  
Camera: iPhone 12 Pro Max.



# CONTENTS

Introduction to <i>Inga</i> spp. _____	2
Full Botanical Name _____	3
Here are synonyms for <i>Inga</i> spp. _____	3
Local names for <i>Inga</i> spp. _____	6
Mayan names for <i>Inga</i> spp. _____	6
How many other plants of Guatemala have the same Spanish name? _____	7
Habit _____	7
Habitat, in what Ecosystem(s) can you find native <i>Inga</i> spp.? _____	7
What other Trees or Plants are often found in the same Habitat? _____	8
Botanical Description of <i>Inga</i> spp. Standley and co-authors Chicago botanical monographs _____	9
Close relative(s) of <i>Inga</i> spp. _____	11
<i>Inga</i> spp. in Belize (Balick, Nee and Atha 2000) _____	11
Where in Mexico can <i>Inga</i> spp. be found (Villaseñor 2016)? _____	11
Where has <i>Inga</i> spp. been found in the Municipio of Livingston?	
• Is <i>Inga</i> spp. listed for Biotopo Protegido Chocón Machacas, CECON/USAC? _____	12
• Is <i>Inga</i> spp. listed for Tapón Creek Nature Reserve (including Taponcito Creek), FUNDAECO? _____	12
• Is <i>Inga</i> spp. listed for Buena Vista Tapón Creek Nature Reserve? _____	12
• Is <i>Inga</i> spp. listed for Cerro San Gil (south side of Río Dulce)? _____	12
• Is <i>Inga</i> spp. listed for Ecoalbergue Lagunita Creek (Área de Usos Múltiples Río Sarstún)? _____	13
• Is <i>Inga</i> spp. listed for El Refugio de Vida Silvestre Punta de Manabique? _____	13
• Is <i>Inga</i> spp. listed for Bocas de Polochic? _____	13



# CONTENTS

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Is <i>Inga spp.</i> trees registered for Parque Nacional Tikal? _____	15
Is <i>Inga spp.</i> trees registered for Parque Nacional, Yaxha, Nakum and Naranjo, is <i>Inga spp.</i> present or missing from earlier lists? _____	16
Is <i>Inga spp.</i> from the Highlands or from the Lowlands (or both)? _____	16
World Range for <i>Inga spp.</i> _____	16
Do <i>Inga spp.</i> also grow in home gardens? _____	16
Uses of <i>Inga spp.</i> _____	18
Is there potential medicinal usage of <i>Inga spp.</i> by local people? _____	18
Are any parts of <i>Inga spp.</i> eaten by mammals? _____	19
What are the primary pollinators of <i>Inga spp.</i> flowers? _____	19
Concluding Discussion and Summary on <i>Inga spp.</i> _____	20
References Cited and Suggested Reading on <i>Inga spp.</i> _____	22
Helpful web sites for any and all plants _____	25
Web sites specifically on <i>Inga spp.</i> _____	26





## Edible Wetlands Plants of Municipio de Livingston, Izabal

Wetland Series 1: from Swamps, Marshes and Seasonally Inundated Flatlands of Izabal



### Wetland Series 2: plants that grow along the beach shore of Amatique Bay



### Wetland Series 3: plants that grow alongside water: rivers, lagoons, swamps, or ocean







## GLOSSARY

**Bajo:** is a low forest over totally flat land. Bajos often have a few centimeters of standing water in the wet season. In the dry season they are dry to the point that the ground has the typical surface fissures of completely dried mud. So a bajo is a seasonally inundated wetland. If the bajo has palo de tinto it is called a tinal. But there are lots of bajos with few and often no logwood whatsoever. Bajos occupy a lot of the land of Petén (the rest are hills that have different vegetation, usually with tall trees). That said, some bajos do have occasional tall trees.

**Ciénaga:** area pantanoso, soft mud, wet, and often a bog or swamp or marsh.

**Ferns:** (class Polypodiopsida), are a class of nonflowering yet vascular plants that possess true roots, stems, and complex leaves (but they have no flowers or seeds). Ferns reproduce by spores.

**Manglar:** is Spanish for mangrove swamp. Each area of each coast has slightly different mangrove species. In the Municipio de Livingston the most common mangrove is the mangle rojo. Black mangrove is also present in Izabal coastal areas. Rio San Pedro (Petén) is an inland area that surprises us all with its mangrove trees.

**Marsh:** usually has water all year but has no total tree cover. Grasses, reeds and low plants are more common; plus, underwater plants and floating plants. If there are trees everywhere, then I consider it a swamp.

**Pantano:** could be considered a Spanish translation of marsh, so lots of reeds and grasses (but not many trees). If the area is a forest with water at the foot of every tree, then it is a swamp. The definition of each of these words depends a bit whether you are in the wetlands of Tabasco, or Rio San Pedro, or near Monterrico (inland from Pacific Ocean coast of Guatemala) or in the Municipio de Livingston or in Petén.



**Life on land** is the Sustainable Development Goal (number 15 of the United Nations proposal) which claims to ensure the conservation of terrestrial and freshwater ecosystems. Municipio de Livingston has multiple natural protected areas that includes tropical rain forests and species associated to rivers.



## GLOSSARY

**Plants:** any of a kingdom Plantae of multicellular eukaryotic mostly photosynthetic organisms typically lacking locomotive movement or obvious nervous or sensory organs and possessing cellulose cell walls.

**Riperian:** the bank of a river or stream. In a location such as the Municipio de Livingston, it would help to have a single word for the bank of a river, stream, and lagoon. I will use shoreline or comparable.

**Swamp:** usually has water all year but has lots of trees. During the rainy season the water simply gets deeper. Petén has more marshes than swamps; Izabal has both. You get mangrove swamps all around the Caribbean coast and parallel to the Pacific Ocean coast (several impressive mangrove swamp areas inland from the Pacific coast of Guatemala).

**Swampo:** is the way this is pronounced in the Caribbean area of Guatemala.

**Wetlands or Wetland:** to me is a generic word to cover swamps, marshes, rivers, lakes, lagoons and seasonally inundated areas (including bajos, savannas, cibles, etc.). Each ecologist and geographer and botanist use their own academic terms. But, Holdridge (initiator of life zone systems concept) never hiked through the Savanna of 3 Fern Species nor the Savanna East of Nakum (PNYNN) nor took a boat up all the rivers entering into El Golfete. And if he cruised up Arroyo Petexbatún, he (and Lundell and all other capable scholars who accomplished fieldwork in Petén) did not get out of their seats on the lancha to hike through the tinal swamps to see what was 100 to 200 meters inland (namely the two tasistal areas that FLAAR has documented).

15 LIFE ON LAND



**Life on land** is the Sustainable Development Goal (number 15 of the United Nations proposal) which claims to ensure the conservation of terrestrial and freshwater ecosystems. Municipio de Livingston has multiple natural protected areas that includes tropical rain forests and species associated to rivers.





***Inga vera***

Photo by: Nicholas Hellmuth, FLAAR Mesoamérica, Jun. 19, 2021.

Río San Juan Vicente, Izabal.

Camera: iPhone 12 Pro Max.



### INTRODUCTION TO *INGA* SPP.

Many species of legumes of the *Inga* genus are widely distributed in Guatemala, they are considered native plants since they can be found wild in forests and there is a great diversity of species of this same genus.

The *Inga* plants are widely used as shade for growing coffee, so it can be considered that they are plants that are frequently cultivated. However, even though the pulp of fruits such as “cushin” and “paterna” are consumed for their pleasant flavor, they are not species that are commonly consumed. *Inga* plants are also used for ecological restoration and reforestation, due to their ability to fix nitrogen.

Although this writing is about the *Inga* genus in general, emphasis is placed on 3 species, *Inga vera*, *Inga multijuga* and *Inga thibaudiana*, which are the most frequently found in flooded forests and wetlands, which in turn are the most abundant ecosystems. in Livingston.

It is part of our objective to collect information on plants that have the potential to be edible and that can become an alternative in the diet of people in rural areas, as well as to know the medicinal qualities of plants so that people know their potential. the native species of Guatemala.



***Inga vera.***

Photo by: Nicholas Hellmuth, FLAAR Mesoamérica, Jun. 19, 2021.  
Camera: Nikon D5. Settings: 1/320; sec; f/14; ISO 2,500.



## FULL BOTANICAL NAME

Type specimen:

*Inga vera* Willd.

<http://legacy.tropicos.org/Name/13021418>



*Inga vera* seeds

Photo by: Roxana Leal, FLAAR Mesoamérica, Jun. 20, 2021.  
Camera: Google Pixel 3XL.

## HERE ARE SYNONYMS FOR **INGA SPP.**

For *Inga vera*:

*Feuilleea affinis* (DC.) Kuntze

*Feuilleea inga* (L.) Kuntze

*Inga acutifolia* Benth.

*Inga affinis* DC.

*Inga arinensis* Hoehne

*Inga berteroaana* DC.

*Inga donnell-smithii* Pittier

*Inga fissicalyx* Pittier

*Inga guamito* L. Uribe

*Inga inga* (L.) Britton

*Inga lamprophylla* Wright ex Benth.

*Inga riparia* Pittier

*Inga spuria* Humb. & Bonpl. ex Willd.

*Inga uraguensis* Hook. & Arn.

*Inga vera* Kunth

*Inga vera* subsp. *affinis* (DC.) T.D. Penn.

*Inga vera* subsp. *lamprophylla* (Wright ex Benth.) Pittier

*Inga vera* subsp. *portoricensis* Pittier

*Inga vera* subsp. *spuria* (Humb. & Bonpl. ex Willd.) J. León

*Inga vera* var. *lamprophylla* (Wright ex Benth.) J.F. Macbr.

*Inga vera* var. *portoricensis* (Pittier) J.F. Macbr.  
*Mimosa inga* L.

<http://legacy.tropicos.org/Name/13021418?tab=synonyms>

## HERE ARE SYNONYMS FOR **INGA SPP.**

### **For *Inga vera*:**

*Feuilleea affinis* (DC.) Kuntze

*Feuilleea inga* (L.) Kuntze

*Inga acutifolia* Benth.

*Inga affinis* DC.

*Inga arinensis* Hoehne

*Inga berteroaana* DC.

*Inga donnell-smithii* Pittier

*Inga fissicalyx* Pittier

*Inga guamito* L. Uribe

*Inga inga* (L.) Britton

*Inga lamprophylla* Wright ex Benth.

*Inga riparia* Pittier

*Inga spuria* Humb. & Bonpl. ex Willd.

*Inga uraguensis* Hook. & Arn.

*Inga vera* Kunth

*Inga vera* subsp. *affinis* (DC.) T.D. Penn.

*Inga vera* subsp. *lamprophylla* (Wright ex Benth.) Pittier

*Inga vera* subsp. *portoricensis* Pittier

*Inga vera* subsp. *spuria* (Humb. & Bonpl. ex Willd.) J. León

*Inga vera* var. *lamprophylla* (Wright ex Benth.) J.F. Macbr.

*Inga vera* var. *portoricensis* (Pittier) J.F. Macbr.

*Mimosa inga* L.

<http://legacy.tropicos.org/Name/13021418?tab=synonyms>

*Inga lamprophylla* Benth.

*Inga racemaria* Uribe

*Inga spuria* var. *racemaria* (L. Uribe) T.S. Elias

*Inga spuria* f. *racemaria* (L. Uribe) L. Uribe

*Inga vera* subsp. *lamprophylla* (Benth.) Pittier

*Inga vera* var. *lamprophylla* (Benth.) J.F. Macbr.

*Inga vera* subsp. *vera*

<http://www.theplantlist.org/tp1.1/record/ild-19817>

### **For *Inga multijuga*:**

*Feuilleea multijuga* (Benth.) Kuntze

*Inga aestuariorum* Pittier

*Inga skutchii* Standl.

<http://legacy.tropicos.org/Name/13008844?tab=synonyms>

*Inga multijuga* subsp. *multijuga*

<http://www.theplantlist.org/tp1.1/record/ild-12166>



### For *Inga thibaudiana*:

*Feuilleea thibaudiana* (DC.) Kuntze

*Inga gladiata* Desv.

*Inga macradenia* Mart. ex Benth.

*Inga peltadenia* Harms

*Inga recordii* Britton & Rose

*Inga russotomentella* Malme

*Inga tenuiflora* Salzm. ex Benth.

*Inga thibaudiana* subsp. *peltadenia*  
(Harms) T.D. Penn.

*Inga thibaudiana* subsp. *russotomentella*  
(Malme) T.D. Penn.

*Inga thibaudiana* var. *latifolia* Benth.

*Inga macradenia* Benth.

*Inga tenuiflora* Benth.

*Inga tenuiflora* var. *glabrior* Benth.

*Inga thibaudiana* subsp. *thibaudiana*

*Inga thibaudiana* var. *thibaudiana*

[http://legacy.tropicos.org/  
Name/13009018?tab=synonyms](http://legacy.tropicos.org/Name/13009018?tab=synonyms)

**Note:** For the synonyms was consulted the website ThePlanList, now it has been superseded by World Flora Online and Tropicos.org. So, probably at the time you are reading this report, ThePlantList would no longer be used.

## LOCAL NAMES FOR *INGA* SPP.

### *Inga vera*:

The 12 species of *Inga* receive the same names generally and indistinctly according to Orellana 2014 (33):

Cuje, Cushin, Chalum, Shalum, Chochoc (Q'eqchí de Cobán), Cuajiniquil, Quijinicuil, Guama, Guamo, Paterno, Paterna.

Dendroflora de El Salvador cuje de río, cujinicuil, cujín, jaepete, nacaspilo, pepete, pepetillo, pepeto, pepeto chumayo, pepeto de río, pepeto real, pepito, zapatillo, zapato de mico.

[https://portal.cybertaxonomy.org/salvador/cdm\\_dataportal/taxon/006fb2ab-ac17-48de-884d-28a3bd6c4da3](https://portal.cybertaxonomy.org/salvador/cdm_dataportal/taxon/006fb2ab-ac17-48de-884d-28a3bd6c4da3)

### *Inga multijuga*:

Nacapiro, cuje. (Standley Standley and Steyermark 1946: 41).

Guaba, guabito, guabo de estero; Costa Rica. (OSA Arboretum)

<https://osa-arboretum.org/plant/inga-multijuga/>

### *Inga thibaudiana*:

Standley and Steyermark 1946 (42) : Guamo macho. Guavo de playa, Flora de Nicaragua

<http://legacy.tropicos.org/Name/13009018?projectid=7>

Guaba; Costa Rica. (OSA Arboretum)

<https://osa-arboretum.org/plant/inga-thibaudiana/>

## MAYAN NAMES FOR *INGA* SPP.

Chochoc (Q'eqchí de Cobán)

Other names given to the *Inga* species are possibly of Mayan or Nahuatl origin.



*Inga vera*

Photo by: María Alejandra Gutiérrez, FLAAR Mesoamerica, Jan. 24, 2021. Río Chocón Machacas. Camera: Canon 1D X Mark II. Settings: 1/250; sec; f/8; ISO 5,000.



## HOW MANY OTHER PLANTS OF GUATEMALA HAVE THE SAME SPANISH NAME?

Paterna is a name given to several species of the genus *Inga*.

## HABIT FOR **INGA SPP.**

Tree.

## HABITAT, IN WHAT ECOSYSTEM(S) CAN YOU FIND NATIVE **INGA SPP.?**

### ***Inga vera***

Subhumid temperate, humid tropics and subhumid tropics.

[http://www.conabio.gob.mx/conocimiento/info\\_especies/arboles/doctos/43-legum24m.pdf](http://www.conabio.gob.mx/conocimiento/info_especies/arboles/doctos/43-legum24m.pdf)

### ***Inga multijuga***

It is observed in open areas, roads, forest edges, rivers, secondary vegetation, coastal vegetation, as well as mangroves. In humid to very humid climates, with a marked dry season. Both on the Pacific and Atlantic coasts, the species regenerates and grows well in sandy soil, making it ideal for beautifying and planting trees along the coastline.

<http://www.crbio.cr:8080/neoportal-web/species/Inga%20multijuga#:~:text=Habitat%20and%20Distribution-,Habitat,h%C3%BAmedos%2C%20con%20estaci%C3%B3n%20seca%20marcada.>

### ***Inga thibaudiana***

It is found in primary and secondary woodland, in disturbed ground, on road verges and field edges at altitudes of up to 700 metres (2,300 ft) in regions with high rainfall and a humid climate.

[https://en.wikipedia.org/wiki/Inga\\_thibaudiana](https://en.wikipedia.org/wiki/Inga_thibaudiana)

## WHAT OTHER TREES OR PLANTS ARE OFTEN FOUND IN THE SAME HABITAT?

Vegetation associated with *Inga Vera*: *Taxodium mucronatum*, *Salix* sp., *Bursera* sp., *Nectandra* sp., *Lonchocarpus* sp., *Brosimum Alicastrum*., *Ficus* sp., *Swietenia* sp., *Cedrela Odorata*, *Guatteria* sp.

[http://www.conabio.gob.mx/conocimiento/info\\_especies/arboles/doctos/43-legum24m.pdf](http://www.conabio.gob.mx/conocimiento/info_especies/arboles/doctos/43-legum24m.pdf)

*Inga thibaudiana* grows in areas of forest that are seasonally flooded and is often associated with other trees, such as *Virola duckei* and *Brownea grandiceps*. Many lianas and epiphytic plants grow among its branches.

[https://en.wikipedia.org/wiki/Inga\\_thibaudiana](https://en.wikipedia.org/wiki/Inga_thibaudiana)

*Inga multijuga*

As mentioned before, *Inga multijuga* is associated with plants in flooded forests, as in the case of mangroves, it is also associated with plants that grow on the coasts.



*Inga* sp.

Photo by: Davi Arrivillaga, FLAAR Mesoamérica, Mar. 21, 2021. Mirador del cañón, Río Dulce.  
Camera: Sony Alpha A7R IV. Settings: 1/320; sec; f/8; ISO 2,000.

## **BOTANICAL DESCRIPTION OF *INGA* SPP. STANDLEY AND CO-AUTHORS CHICAGO BOTANICAL MONOGRAPHS**

### ***Inga vera*:**

As *Inga spuria* Humbl. and Bonpl. Ex Willd.:

A small or medium-sized tree, frequently 15 meters high, sometimes flowering when only a shrub of 2 meters, the branchlets short-pilose or somewhat tomentose with grayish or fulvous hairs; petiole very short or almost none, the leaf rachis rather broadly winged, the glands orbicular, sessile, large and conspicuous; leaflets 5-7 pairs, almost sessile, oblong-ovate to elliptic-oblong or lance-oblong, 5-15 cm. long, 2-8 cm. wide, subacuminate to obtuse, rounded or obtuse at the base, somewhat lustrous above, hirtellous or glabrate, densely and softly pubescent beneath or rarely glabrate; flowers spicate, the spikes axillary, mostly geminate, 2-4 cm. long, dense and few-many-flowered, the peduncles 2-4 cm. long; bracts small, ovate, deciduous; calyx 1-5 cm. long, appressed-pilose; corolla 2 cm. long, sericeous-pilose, the stamen sheath scarcely exerted; legume subterete or somewhat tetragonous, densely fulvous-tomentulose, 5-30 cm. long, 1-1.5 cm. in diameter, the valves very narrow, the margins much thickened, sulcate, expanded over the sides of the valves.

(Standley and Steyermark 1946: 44)

### ***Inga multijuga*:**

A tree with spreading crown, commonly 10 meters high or less, the branchlets densely rufous-tomentose; petiole and rachis naked, densely rufous-tomentose, the glands small, subsessile; leaflets rather thick, 5-10 pairs, short-petiolulate, ovate to oblong or oblong-elliptic, 5-17 cm. long, 1-5-6 cm. wide, acute or acuminate, sometimes obtuse and apiculate, rounded or obtuse at the base, densely rough-pubescent above, densely velutinous-pubescent beneath; flowers spicate, the peduncles axillary, usually geminate or fasciculate, 2-3 cm. long or longer, the spikes short, ovoid; calyx 5-8 mm. long, striate, brownish-tomentulose; corolla sericeous, 2.5 cm. long; legume 15-25 cm. long, 1 cm. thick, densely brown-tomentulose, subterete, sessile, twisted in age, the valves very narrow, their edges greatly thickened, expanded and costate.

(Standley and Steyermark 1946: 41)



### ***Inga thibaudiana*:**

As *Inga recordii* Britt. And Rose:

A tree of 6-12 meters with spreading crown, the trunk often 15 cm. or more in diameter, the branchlets densely puberulent; petiole and leaf rachis naked, puberulent-tomentulose, the glands large, cupular; leaflets 5-6 pairs, short-petiolulate, subcoriaceous, oblong-lanceolate or the lowest oblong-ovate, 5-13 cm. long, acute or acuminate, obliquely rounded at the base, lustrous above and white-punctate, pubescent along the nerves, paler beneath, pubescent with very short, subappressed, yellowish hairs; flowers spicate, the spikes fasciculate in the leaf axils or forming terminal panicles, 2-4 cm. long, dense and many-flowered, on peduncles 1-2 cm. long; bracts minute; calyx 4-5 mm. long, strigose; corolla about 18 mm. long, strigose, the stamen sheath included; legume straight or somewhat curved, strongly compressed, about 12 cm. long and 2 cm. wide, rounded at the base, sessile, short-rostrate at the apex, densely fulvous-puberulent, the margins strongly thickened.

(Standley and Steyermark 1946: 42)



## CLOSE RELATIVE(S) OF *INGA* SPP.

*Inga vera*

*Inga multiuga*

*Inga thibaudiana*

*Inga edulis*

## *INGA* SPP. IN BELIZE (**BALICK, NEE AND ATHA 2000**)

***Inga thibaudiana*** DC. — Syn: *Inga recordii* Britton & Rose —Ref: FG 5: 42. 1946; Sousa, 1993. — Loc Use: FOOD. — Nv:broken ridge bribri, bri-bri, bri bri macho. — Habit: Tree. —Voucher: Balick 2614, 2669, 3072; Bartlett 11683; Dwyer et al. 465; Gentle 2988, 3691, 3959, 7663, 8138, 9197; Peck 496; Record s.n. type of *I. recordii*; Schipp 19, 385, 1363.

***Inga vera*** Willd. — Syn: *Inga spuria* (Willd.) H. Léon — Ref: FG 5: 44. 1946; Sousa, 1993: 266. — Loc Use: FOOD, MED. — Reg Use: FOOD, MED. — Nv: bri-bri, bic-gri, bitis, chalum, wama. — Habit: Tree. — Voucher: Arvigo 69; Balick 1291, 2690; Bartlett 12992; J. Brown 115; Croat 24857; Dwyer 10894, 11336; Dwyer et al. 509; Gentle 1282; O'Neill 8601; Schipp 135, 295; J. Walker 1507.

(Balick, Nee and Atha 2000: 68)

## WHERE IN MEXICO CAN *INGA* SPP. BE FOUND (**VILLASEÑOR 2016**)?

*Inga vera* Willd. CAM, CHIS, COAH, COL, DGO, GRO, HGO, JAL, MEX, MICH, MOR, NAY, NLE, OAX, PUE, QRO, QROO, SLP, SIN, TAB, TAMS, VER

*Inga multijuga* Benth. CHIS, OAX

*Inga thibaudiana* DC. CHIS

## WHERE HAVE *INGA* SPP. BEEN FOUND IN THE MUNICIPIO OF LIVINGSTON?

The FLAAR Mesoamérica team found specimens that are identified as part of the *Inga* genus; however, it was not possible to determine which species were observed.

Specimen photographs on page 22 of the catalog of October-November-December of the year 2021:

<https://flaar-mesoamerica.org/wp-content/PDF/Catalogo-de-Hojas-de-Contacto-Proyecto-Documentacion-de-Biodiversida-Livingston-Oct-Nov-Dec-2021-FLAAR-Mes.pdf>

- > Is *Inga* spp. listed for Biotopo Protegido Chocón Machacas, CECON/USAC?  
*Inga spuria* (*Inga vera*) was listed in the flora of this area. (Pérez et al. 2001: 91).
- > Is *Inga* spp. listed for Tapón Creek Nature Reserve (including Taponcito Creek), FUNDAECO?  
*Inga fissicalyx* (*Inga vera*) was listed in the flora of this area. (FUNDAECO 2007: 44)
- > Is *Inga* spp. listed for Buena Vista Nature Reserve?  
*Inga fissicalyx* and *Inga spuria* (both are synonyms of *Inga vera*) were listed in the flora of this area. (FUNDAECO 2007: 44)
- > Is *Inga* spp. listed for Cerro San Gil (south side of Río Dulce)?  
*Inga fissicalyx* (*Inga Vera*), *Inga paterno* and *Inga lindeniana* were listed in the flora of this area. (Ruíz 2006: 159).



- > Is *Inga* spp. listed for Ecoalbergue Lagunita Creek (Área de Usos Múltiples Río Sarstún)?

*Inga fissicalyx* and *Inga spuria* (both are synonyms of *Inga vera*) were listed in the flora of this area. (FUNDAECO 2007: 44)

- > Is *Inga* spp. listed for Sarstoon-Temash National Park (northern side of Río Sarstún)?

*Inga vera* and *Inga quaternata* were listed in the flora of this area. (Meerman, Herrera and Howe 2003: 5).

- > Is *Inga* spp. listed for El Refugio de Vida Silvestre Punta de Manabique?

The following species were found:

*Inga cookii* Pittier

*Inga edulis* Mart.

*Inga punctata* Willd

*Inga multijuga* Benth.

*Inga recordii* Britt. & Rose (*Inga thibaudiana*)

(FUNDARY-ONCA 2001: 113)

*Inga fissicalyx* (*Inga vera*) was also found

(FUNDARY-ONCA 2007: 45)

- > Is *Inga* spp. listed for Bocas de Polochic?

*Inga fissicalyx* and *Inga vera* (both are synonyms) were listed in the flora of this area. (CONAP 2003: 29)





Photo by: Nicholas Hellmuth, FLAAR Mesoamérica, Jun. 19, 2021.  
Río San Juan Vicente.  
Camera: iPhone 12 Pro Max.



## IS *INGA* SPP. TREES REGISTERED FOR PARQUE NACIONAL TIKAL?

*Inga edulis*, (Schulze and Whitacre 1999: 227)

Missouri Botanical Garden (MO:Tropics)

**Catalog #:** 2273578

**Instance ID:** urn: catalog: MO:Tropicos: 2273578

**Taxon:** *Inga vera spuria* (Humb. & Bonpl. ex Willd.) J. León

**Family:** Fabaceae

**Determiner:** Carolina Romero (COL) III/ (2006)

**Collector:** Cyrus L. Lundell

**Number:** Lundell 15907

**Date:** 1959-04-27

**Literal Date:** 1959-4-27

**Location:** Guatemala, Petén, Tikal, bordering the Tikal Aguada 17.225 -89.61305

**Rights of Use:** CC BY (Attribution)

**Record Identifier:** 1799f22e-df63-4b28-b24d-1df695445606

**Registry Source:**

<https://biodiversidad.gt/portal/collections/list.php?usethes=1&taxa=2315> – National Museum of Natural History that



*Inga* sp.

Photo by: David Arrivillaga, FLAAR Mesoamérica, Nov. 12, 2021. Fuerte San Carlos, Lago de Izabal.  
Camera: Sony Alpha A7R IV. Settings: 1/2,500; sec: f/10; ISO 1,250.

### IS *INGA* SPP. TREES REGISTERED FOR PARQUE NACIONAL, YAXHA, NAKUM AND NARANJO, IS *INGA* SPP. **PRESENT OR MISSING FROM EARLIER LISTS?**

No records of occurrence were found within the park, but the possibility of finding species of the *Inga* genus in this area is not ruled out. Possibly the species of *Inga paterno*, *Inga vera* and *Inga edulis* can be found, which are the most common in Tikal and other parts of Reserva de la Biosfera Maya.

### IS *INGA* SPP. THE HIGHLANDS OR FROM **THE LOWLANDS (OR BOTH)?**

Both, species of *Inga* can be found from 0 to 1500 or 2000 meters above sea level.

### WORLD RANGE **FOR *INGA* SPP.**

The genus *Inga* is distributed from Mexico to Argentina.

<https://www.tropicos.org/name/40031040>

It is also found in Caribbean countries.

<https://www.naturalista.mx/taxa/209925-Inga-vera>

### DOES *INGA* SPP. **ALSO GROW IN HOME GARDENS?**

Because of its pleasant-tasting fruits, people can have some species of *Inga* in their gardens. However, *Inga* trees are commonly used as shade for coffee plantations; this form is the most widely used in Guatemala.

(Orellana 2014: 34)





Photo by: Victor Mendoza, FLAAR Mesoamérica, Mar. 7, 2021.  
Camera: Sony RX10 IV. Settings: 1/400; sec; f/7,1; ISO 800.

## USES OF *INGA SPP.*

### *Inga vera*

Fuel [wood]. It is an excellent fuel.

Wood is moderately heavy (specific weight 0.57). It is used as firewood and to make coal.

Edible (seed) [fruit, seed (aryl)]. The white pulp (aryl) is edible.

Construction [wood]. Rural construction (light).

Timber [wood]. Wood in roll. Valuable for its heavy wood. Approved for possible use in shoes for the subway system. Posts, rustic furniture, packaging, carpentry in general.

Fruit: laxative and refreshing.

Melífera [Flor]. Beekeeping. Flowers rich in nectar.

Domestic use [wood]. Preparation of vessels.

[http://www.conabio.gob.mx/conocimiento/info\\_especies/arboles/doctos/43-legum24m.pdf](http://www.conabio.gob.mx/conocimiento/info_especies/arboles/doctos/43-legum24m.pdf)

*Inga multijuga* is also used as coffee shade and as a timber plant.

The fruits of *Inga thibaudiana* are also consumed and it is also used for its wood.

## IS THERE POTENTIAL MEDICINAL USAGE OF *INGA SPP.* BY LOCAL PEOPLE?

*Inga vera*: [bark, bud, sheet, fruit]. Bark, bud, leaves: astringent, laxatives, and antiseptic baths.

[http://www.conabio.gob.mx/conocimiento/info\\_especies/arboles/doctos/43-legum24m.pdf](http://www.conabio.gob.mx/conocimiento/info_especies/arboles/doctos/43-legum24m.pdf)

No medicinal use was found for *Inga multijuga* and *Inga thibaudiana*



## ARE ANY PARTS OF **INGA SPP. EATEN BY MAMMALS?**

Spider monkeys consume the paterna pulp, *Inga paterna* and *I. edulis*. This fruit produces a sweet, dense, white paste around the seeds, which to people they also like to eat.

(Hellmuth 2018: 7)

The foliage of *Inga* plants is commonly used as livestock feed due to its high nutritional content.

(Bressani 2010: 2 part I)

## WHAT ARE THE PRIMARY POLLINATORS OF **INGA SPP. FLOWERS?**

*Inga vera*: The pollination of this species is carried out by hummingbirds and bees; it is attributed the property of meliferous.

<http://www.conafor.gob.mx:8080/documentos/docs/13/931Inga%20vera.pdf>

For the *Inga* genus in general it is known that they are pollinated by bees, hummingbirds, and bats.



*Inga vera*.

## CONCLUDING DISCUSSION AND SUMMARY ON *INGA* SPP.

The *Inga* genus is widely diverse throughout the Americas and in Guatemala many species of this genus grow in different ecosystems.

The plants of the *Inga* genus are of ecological importance for the forests of Guatemala.

*Inga vera* and other species of the genus are commonly used as coffee shade and in other agroforestry systems.

Although the fruits are edible, their consumption is not common even in communities dedicated to coffee cultivation.

*Inga vera* has potential as a medicinal plant.

*Inga multijuga* and *Inga thibaudiana* thrive in very humid forests and wetlands.



*Inga vera*.

Photo by: Victor Mendoza, FLAAR Mesoamérica, Mar. 21, 2021. Fuerte San Carlos, Lago de Izabal.  
Camera: Sony RX10 IV. Settings: 1/400; sec; f/7; ISO 1,600.





*Inga sp.*

Photo by: David Arrivillaga, FLAAR Mesoamérica, Mar. 23, 2021.

Camera: Sony RX10 IV. Settings: 1/320; sec; f/8; ISO 2,000.

## REFERENCES CITED AND **SUGGESTED READING ON *INGA* SPP.**

### **Most helpful mention of this plant (because this book lists the most uses):**

More useful monographs on this plant:

Botanists Standley and Steyermark's multi-page description is very helpful.

The monograph carried out by Conabio in Mexico has very complete information about *Inga vera*, it talks about botanical and ecological aspects and ethnobotanical uses.

Regarding *Inga multijuga* and *Inga thibaudiana*, not much information was found on the ethnobotanical uses that they could have apart from being edible.

### **BALICK, Michael J., NEE, Michael H. and Daniel E. ATHA**

2000 Checklist of the Vascular Plants of Belize: With Common Names and Uses. Memoirs of the New York Botanical Garden Vol. 85. 246 pages.

### **BRESSANI, R.**

2010 Valoración Química Nutricional de la Harina de Semilla de Diferentes Especies de Inga (I. jinicuil, I. laurina, I. vera). Estudios Preliminares para su Incorporación en la Dieta de la Población Rural. Proyecto FODECYT No. 043-2006. 89 pages.

<http://glifos.senacyt.gob.gt/digital/fodecyt/fodecyt%202006.43.pdf>

### **CONAP**

2006 Plan Maestro 2003-2007 Refugio de Vida Silvestre Bocas de Polochic. CONAP. Fundación Defensores de la Naturaleza. Guatemala.

### **FLAAR Mesoamérica**

2021 Catálogo de Hoja de Contacto Octubre-Noviembre-Diciembre. Proyecto: Documentación de Biodiversidad en Livingston, Izabal. 176 pages.

<https://flaar-mesoamerica.org/wp-content/PDF/Catalogo-de-Hojas-de-Contacto-Proyecto-Documentacion-de-Biodiversida-Livingston-Oct-Nov-Dec-2021-FLAAR-Mes.pdf>



### **FUNDAECO**

- 2007 Propuesta de Incorporación a la Convención Ramsar del Área Protegida “Reserva de Usos Múltiples Río Sarstún”, Fundación para el Desarrollo y la Conservación (FUNDAECO). 62 pages.

### **FUNDARY-ONCA**

- 2001 Plan Maestro 2002-2006 Área De Protección Especial Punta De Manabique. Consejo Nacional De Áreas Protegidas Fundación Mario Dary Rivera.

### **FUNDARY-ONCA**

- 2007 Plan Maestro 2008-2011 Área De Protección Especial Punta De Manabique. Consejo Nacional De Áreas Protegidas Fundación Mario Dary Rivera.

### **HELLMUTH, Nicholas**

- 2018 El mono araña, en Parque Yaxha, Guatemala, *Ateles geoffroyi*. FLAAR Mesoamérica. Serie: Mamíferos del Parque Nacional Yaxha-Nakum-Naranjo. Preparado para el Parque Nacional Yaxha-Nakum-Naranjo, programas educativos.

<https://flaar-mesoamerica.org/wp-content/uploads/2019/03/Ateles-geoffroyi-vol1-Mamiferos-Yaxha-FLAAR-Mesoamerica-Ene-2019-ES.pdf>

### **MEERMAN, J. C., HERRERA, P. and A. HOWE**

- 2003 Rapid Ecological Assessment Sarstoon Temash National Park Toledo District, Belize. Volume II: Appendices (Species lists and raw data). Temash Institute for Indigenous Management (SATIIM). 92 pages.

### **ORELLANA-Polanco, Álvaro D.**

- 2014 Catálogo de Frutales Nativos de Guatemala, Investigación para el desarrollo agrícola, Instituto de Investigación Agrícola (ICTA) Guatemala.

### **PEREZ-Consuegra, Sergio, et al.**

- 2001 Caracterización Ecológica de los Biotopos Chocón Machacas, Izabal y Cerro Cahuí, Petén, Universidad de San Carlos de Guatemala (USAC)

### **RUIZ, Claudia,** et al.

- 2006 Plan Maestro de la Reserva Protectora de Manantiales Cerro San Gil, 2008-2012. Consejo Nacional de Áreas Protegidas (CONAP), Fundación Para el Ecodesarrollo y la Conservación (FUNDAECO), The Nature Conservancy (TNC).

### **SCHULZE, Mark D. and David F. WHITACRE**

- 1999 A Classification and Ordination of the Tree Community of Tikal National Park, Petén, Guatemala. Bulletin of the Florida Museum of Natural History. Vol. 41, No. 3, pp. 169-297.

Even though 20 years ago, it's the best list of trees of Tikal that I have found. There is a web site with plants of Tikal but they are not separated into trees, vines, shrubs, etc., so harder to use. The new monograph on *Arboles de Calakmul* is better than anything available so far on Tikal (and the nice albeit short book by Felipe Lanza of decades back on trees of Tikal is neither available as a scanned PDF nor as a book on Amazon or ebay).

### **STANDLEY, Paul C. and Julian A. STEYERMARK**

- 1946 Flora of Guatemala. Fieldiana: Botany, Volume 24, Part IV. Chicago Natural History Museum.

### **VILLASEÑOR, José Luis**

- 2016** Checklist of the native vascular plants of Mexico. Catálogo de las plantas vasculares nativas de México. Revista Mexicana de Biodiversidad 87 (2016) 559–902.

<http://revista.ib.unam.mx/index.php/bio/article/view/1638/1296>



## HELPFUL WEB SITES FOR **ANY AND ALL PLANTS**

There are several web sites that are helpful even though not of a university or botanical garden or government institute.

However, most popular web sites are copy-and-paste (a polite way of saying that their authors do not work out in the field, or even in a botanical garden). Many of these web sites are click bait (they make money when you buy stuff in the advertisements that are all along the sides and in wide banners also). Therefore, we prefer to focus on web sites that have reliable information.

<https://serv.biokic.asu.edu/neotrop/plantae/>

Neotropical Flora data base. To start your search, click on this page:

<https://serv.biokic.asu.edu/neotrop/plantae/collections/harvestparams.php>

<http://legacy.tropicos.org/NameSearch.aspx?projectid=3>

This is the main SEARCH page.

<https://plantidtools.fieldmuseum.org/pt/rrc/5582>

SEARCH page, but only for the collection of the Field Museum herbarium of Chicago.

<https://fieldguides.fieldmuseum.org/guides?category=37>

These field guides are very helpful. Put in the Country (Guatemala) and you get eight photo albums.

<http://enciclovida.mx>

CONABIO. The video they show on their home page shows a wide range of flowers pollinators, a snake and animals. The videos of the insects are great.

[www.kew.org/science/tropamerica/imagedatabase/index.html](http://www.kew.org/science/tropamerica/imagedatabase/index.html)

Kew gardens in the UK is one of several botanical gardens that I have visited (also New York Botanical Gardens and Missouri Botanical Gardens (MOBOT), in St Louis, the botanical garden in Singapore, and El Jardín Botánico, the open forest botanical garden in Guatemala City).

[www.ThePlantList.org](http://www.ThePlantList.org)

This is the most reliable botanical web site to find synonyms. In the recent year, only one plant had more synonyms on another botanical web site.

## WEB SITES SPECIFICALLY ON **INGA SPP.**

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### ***Inga vera***

<http://legacy.tropicos.org/Name/13021418>

<http://legacy.tropicos.org/Name/13021418?tab=synonyms>

<http://www.theplantlist.org/tpl1.1/record/ild-19817>

[https://portal.cybertaxonomy.org/salvador/cdm\\_dataportal/taxon/006fb2ab-ac17-48de-884d-28a3bd6c4da3](https://portal.cybertaxonomy.org/salvador/cdm_dataportal/taxon/006fb2ab-ac17-48de-884d-28a3bd6c4da3)

[https://es.wikipedia.org/wiki/Inga\\_vera](https://es.wikipedia.org/wiki/Inga_vera)

[http://www.conabio.gob.mx/conocimiento/info\\_especies/arboles/doctos/43-legum24m.pdf](http://www.conabio.gob.mx/conocimiento/info_especies/arboles/doctos/43-legum24m.pdf)

<http://www.conafor.gob.mx:8080/documentos/docs/13/931Inga%20vera.pdf>

<https://www.naturalista.mx/taxa/209925-Inga-vera>

[www.naturalista.mx/taxa/206701-Guadua-longifolia](http://www.naturalista.mx/taxa/206701-Guadua-longifolia)

### ***Inga multijuga***

<http://www.theplantlist.org/tpl1.1/record/ild-12166>

<https://osa-arboretum.org/plant/inga-multijuga/>

<http://www.crbio.cr:8080/neoportal-web/species/Inga%20multijuga>

### ***Inga thibaudiana***

<http://legacy.tropicos.org/Name/13009018?tab=synonyms>

<http://www.theplantlist.org/tpl1.1/record/ild-12252>

<https://osa-arboretum.org/plant/inga-thibaudiana/>

[https://en.wikipedia.org/wiki/Inga\\_thibaudiana](https://en.wikipedia.org/wiki/Inga_thibaudiana)

<https://www.gbif.org/es/species/5357991>



## ACKNOWLEDGEMENTS TO FLAAR MESOAMÉRICA

**Flor de María Setina** is the office manager, overseeing all the diverse projects around the world. We also utilize the inkjet prints to produce educational banners to donate to schools.

**Vivian Hurtado** is the actual project manager for FLAAR's divisions: Flora & Fauna and MayanToons. She is also environmental engineer and passionate researcher

**Victor Mendoza** environmental engineer, is in charge of the photographic database of FLAAR Mesoamerica and its taxonomic identification. He also supports as a research assistant.

**Sergio Jerez** He is involved with plant identification, bibliographic research and map design for the trails explored on each expedition.

**Andrea de la Paz** designer who helps prepare the master-plan for aspects of our publications. She is our editorial art director.

**Senaida Ba** has been our photography assistant for several years. Now, she puts together PowerPoint presentations for students and teachers to learn about several subjects like Flora, Fauna and Mayan Iconography.

**Jaqueline González** designer who puts together the text and photographs to create the actual report.

**Roxana Leal** major in Communication who manages all our social media and digital community. She's sometimes part of our fieldwork trips, since she has a special interest for adventure and Guatemala's diverse nature.

**María Alejandra Gutiérrez** is an experienced photographer who now prepares all the Photography Catalogs for the project we're currently working on the RBM. She also contributed to the coordination of several trips we made during our Livingston, Izabal research project.

**David Arrivillaga** is an experienced photographer able to handle both Nikon and the newest Sony digital cameras. Work during and after a field trip also includes sorting, naming, and processing.

**Juan Carlos Hernández** takes the material that we write and places it into the pertinent modern Internet software to produce our web pages.

**Paulo Núñez** is a webmaster, overlooking the multitude of web sites. Internet SEO changes every year, so we work together to evolve the format of our web sites.

**Rosa Sequén** is also an illustrator for MayanToons and also helps prepare illustrations for Social Media posts and for animated videos.

**Laura Morales** is preparing animated videos in MayanToons style since animated videos are the best way to help school children how to protect the fragile ecosystems and endangered species

**Heidy Alejandra Galindo Setina** joined our design team in August 2020. She likes photography, drawing, painting, and design.

**Paula García** is part of our MayanToons Animation team. Her job brings our favorite jungle, wetland and savanna characters to life.

**María José Rabanales** she is part of the team for editing photographic reports and educational material of Flora and Fauna since September 2020. She works together with others of the team to prepare the finished pdf editions of the material of the Yaxha, Nakum and Naranjo Project.

**Alejandra Valenzuela** biology student is now part of Flora y Fauna's photographic report and educational material editing team since September 2020.

**Alexander Gudiel** designer who join the editorial design team on December 2020. He will combine the text, pictures and maps into the FLAAR Mesoamerica editorial criteria.

**Cristina Ríos** designer student who join the editorial design team on December 2020. He will combine the text, pictures and maps into the FLAAR Mesoamerica editorial criteria.

**Byron Pacay** handles GPS mapping of where we hike or go in the lancha (boat) each field trip day. He also lists where we stop to take photos and what each one of us is photographing and then has that tabulation ready each night.

**Edwin Solares** environmental engineering. He is a photographer and videographer during our expeditions and later edits this content to be able to use it in the materials we generate.

**Belén Chacón** her job includes organizing and tabulating data on useful and edible flora, which is listed in FLAAR's bibliography and many other references, in order to keep a complete list of plant species that are useful, along with updated taxonomical information.

**Diana Sandoval** her work consists of the recompilation of scientific information, which later is transformed into the FLAAR reports that are published on our websites.

**María José Toralla** she gathers information and bibliographies that are added to our Flora & Fauna electronic library and also make part of the information found in research, reports and websites.

**Valeria Áviles** is an illustrator for MayanToons, the division in charge of educational materials for schools, especially the Q'eqchi' Mayan schools in Alta Verapaz, Q'eqchi' and Petén Itzá Maya in Petén, and the Q'eqchi' Mayan and Garifuna schools in the municipality of Livingston, Izabal.

**Niza Franco** is part of our MayanToons Animation team. Her job brings our favorite jungle, wetland and savanna characters to life.

**Josefina Sequén** is illustrator for MayanToons and also helps prepare illustrations for Social Media posts and for animated videos.

**Isabel Rodríguez Paiz** is in charge of the fundraising. She is experienced in networking, social media, and organizing meetings to experience what FLAAR does out in the remote rain forest ecosystems





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# Reserva Natural Tapón Creek, Livingston

## Bahía de Amatique

Área de Usos Múltiples Río Sarstún

Punta Cocolí

Aldea Buena Vista Tapon Creek

Siete Altos

San Juan

Reserva Natural Tapón Creek  
Municipio de Livingston

Finca Gangadtwali

Sarstún Creek

Taponcito Creek

El Rosario

Río Cocolí

Plan Grande Totón

San Martín

La Desmembración

Área de Usos Múltiples Río Sarstún

El Mac Creek

Cállx Creek

Laguna Salvador

Río Creek Salvador

Río Totón

Biotopo Chocón Machacas

Laguna Cállx

Laguna Negra

El Golfete

Parque Nacional Río Dulce

Canal Río Dulce



Izabal



### Información de referencia:

- Límites departamentales de Guatemala. (IGN)
- Instituto Geográfico Nacional (IGN) (Hojas 2463 IV y 2463 III)
- Google Map data 2020. Shapes: Sistema Guatemalteco de Áreas Protegidas 2017.
- Cuerpos de agua. Ministerio de Agricultura Ganadería y Alimentación (MAGA)
- Dirección de Análisis Geoespacial del (CONAP), Marzo/2017.

## Edible Wetlands Plants of Municipio de Livingston, Izabal

Wetland Series 1: from Swamps, Marshes and Seasonally Inundated Flatlands of Izabal

<p><b>Cyperus esculentus</b></p> <p>Chufa, Yellow Nutsedge, Earth Almond</p> <p>MLW#1</p>	<p><b>Eleocharis geniculata</b> <b>Eleocharis caribaea</b></p> <p>Caribbean Spike-Rush</p> <p>MLW#2</p>	<p><b>Montrichardia arborescens</b></p> <p>Camotillo Water Chestnut</p> <p>MLW#3</p>	<p><b>Nymphoides indica</b></p> <p>Floating Heart Water Snowflake</p> <p>MLW#4</p>
<p><b>Pachira aquatica</b></p> <p>Zapoton</p> <p>MLW#5</p>	<p><b>Pontederia cordata</b></p> <p>Pickereel Weed</p> <p>MLW#6</p>	<p><b>Sagittaria latifolia</b></p> <p>Water Potatoes</p> <p>MLW#7</p>	<p><b>Typha dominguensis</b></p> <p>Cattail</p> <p>MLW#8</p>

Wetland Series 2: plants that grow along the beach shore of Amatique Bay

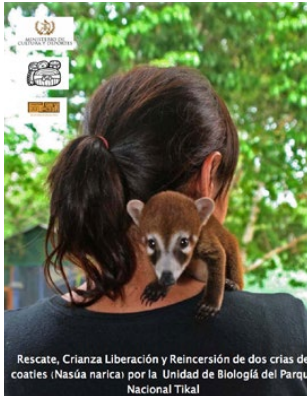
<p><b>Amphitecna latifolia</b></p> <p>Black calabash</p> <p>MLW#9</p>	<p><b>Coccoloba uvifera</b></p> <p>Uva del mar</p> <p>MLW#10</p>	<p><b>Manicaria saccifera</b></p> <p>Confra, Manaca</p> <p>MLW#11</p>	<p><b>Chrysobalanus icaco</b></p> <p>Coco Plum</p> <p>MLW#12</p>	<p><b>Avicennia germinans</b></p> <p>Black Mangrove</p> <p>MLW#13</p>	<p><b>Rhizophora mangle</b></p> <p>Red Mangrove</p> <p>MLW#14</p>
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Wetland Series 3: plants that grow alongside water: rivers, lagoons, swamps, or ocean

<p><b>Guadua longifolia</b></p> <p>Jimba</p> <p>MLW#15</p>	<p><b>Acoelorrhaphe wrightii</b></p> <p>Pimientillo, Tasiste, Palmetto Palm</p> <p>MLW#16</p>	<p><b>Acrostichum aureum</b></p> <p>Mangrove Fern</p> <p>MLW#17</p>	<p><b>Annona glabra</b></p> <p>Alligator Apple</p> <p>MLW#18</p>	<p><b>Bactris major</b></p> <p>Huiscoyol Palm</p> <p>MLW#19</p>	<p><b>Diospyros nigra</b></p> <p>Zapote negro</p> <p>MLW#20</p>
<p><b>Grias cauliflora</b></p> <p>Palo de Jawuilla</p> <p>MLW#21</p>	<p><b>Inga vera</b> <b>Inga multijuga</b> <b>Inga thibaudiana</b></p> <p>River Koko</p> <p>MLW#22</p>	<p><b>Pithecellobium lanceolatum</b></p> <p>Bastard Bully Tree Chucum Red Fowl</p> <p>MLW#23</p>	<p><b>Coccoloba belizensis</b></p> <p>Papaturre</p> <p>MLW#24</p>	<p><b>Symphonia globulifera</b></p> <p>Barillo</p> <p>MLW#25</p>	<p><b>Lacmellea standleyi</b></p> <p>Lechemiel</p> <p>MLW#26</p>



# OTHER PUBLICATIONS OF THE FAUNA OF GUATEMALA



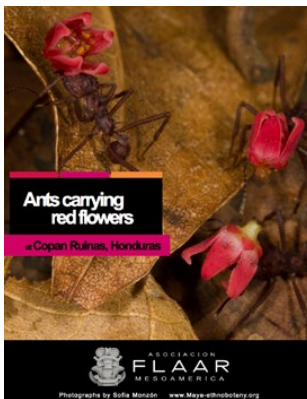
**LOS COATIES**  
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**EL PECCARY**  
Download now



**PHOTOGRAPHING BIRDS**  
Download now



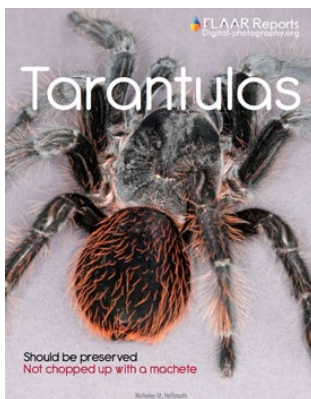
**Ants carrying red flowers**  
Download now



**Friendly Foxes**  
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**Honey Bess**  
Download now



**Tarantulas**  
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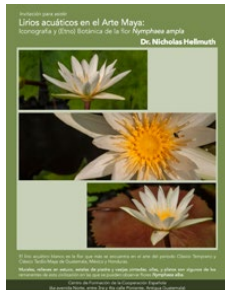
**Serpientes de Guatemala**  
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**Birds in the Mayan civilization**  
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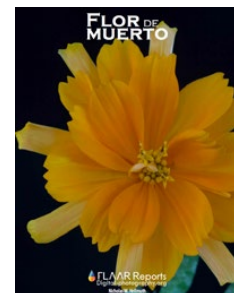
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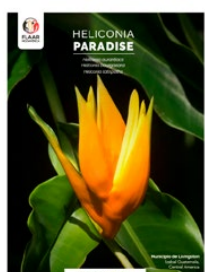
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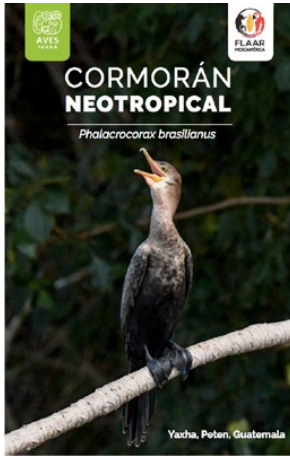


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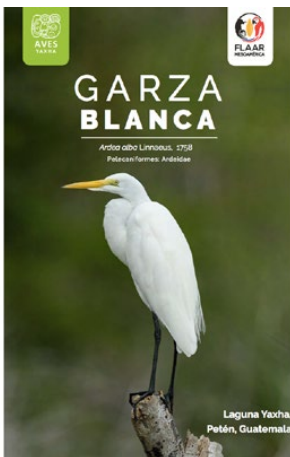
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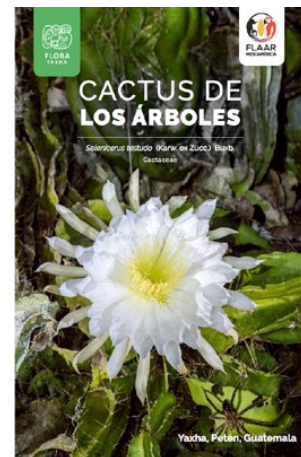
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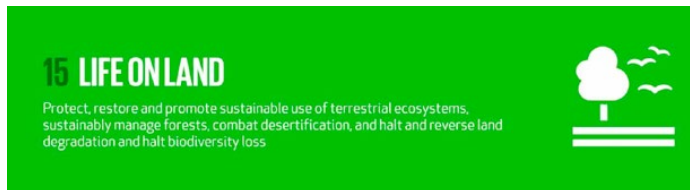


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Throughout this cooperation project, different materials will be and publishes prepared, as this Photo Essay. These will help to collect information on species, different ecosystems (terrestrial, wetlands and fresh water asociated) and biodiversity. This information will also be useful as it is considered in various conservation estrategias to protect threatened species and prevent their extinction. Moreover, the municipality goals also look forward to promote the sustainable use, conservation and research of the flora and animal species of all terrestrial, wetlands, aquatic shore and coastal associated ecosystems of the Guatemalan Caribbean region. You can learn more about this project and the SDG indicators wich are being pursued at:

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#### BACK COVER PHOTO

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, Mar. 21, 2021, Livingston, Izabal.  
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