



WETLANDS #15

# JIMBA BAMBOO

— *Guadua longifolia* —

Municipio de Livingston,  
Izabal, Guatemala

**BELÉN CHACÓN & NICHOLAS HELLMUTH**

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## CREDITS

The helpful individuals listed below are all part of the FLAAR Mesoamerica research and field work team. The office research team, webmaster, and web designers are additional individuals in the main office in Guatemala City. Since each report is a different plant or animal, the individuals who assist in preparing the bibliography, species identification and botanical information are not the same for each report.

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### FRONT COVER PHOTOGRAPH

Photo by: David Arrivillaga, FLAAR Mesoamerica, Dec. 18, 2021.

Camera: Sony Alpha A9 II. Settings: 1/320; sec; f/9; ISO 400.

### TITLE PAGE PHOTOGRAPH

Photo by: David Arrivillaga, FLAAR Mesoamerica, Dec. 18, 2021.

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# CONTENTS

My Personal Experience with <i>Guadua longifolia</i> , by Nicholas Hellmuth _____	2
Full Botanical Name _____	3
Here are synonyms for <i>Guadua longifolia</i> _____	3
Local names for <i>Guadua longifolia</i> _____	4
Mayan names for <i>Guadua longifolia</i> _____	4
How many other plants of Guatemala have the same Spanish name? _____	4
Habit for <i>Guadua longifolia</i> _____	5
Habitat for <i>Guadua longifolia</i> _____	5
What other Trees or Plants are often found in the same Habitat? _____	6
Botanical Description of <i>Guadua longifolia</i> in Standley and co-authors Chicago botanical monographs _____	8
Close relative(s) of <i>Guadua longifolia</i> _____	8
<i>Guadua longifolia</i> in Belize _____	9
Where in Mexico can <i>Guadua longifolia</i> be found? _____	10
Where has <i>Guadua longifolia</i> been found in the Municipio of Livingston?	
• Is <i>Guadua longifolia</i> listed for Biotopo Protegido Chocón Machacas, CECON/USAC? _____	11
• Is <i>Guadua longifolia</i> listed for Tapón Creek Nature Reserve (including Taponcito Creek), FUNDAECO? _____	11
• Is <i>Guadua longifolia</i> listed for Buena Vista Tapón Creek Nature Reserve? _____	11
• Is <i>Guadua longifolia</i> listed for Cerro San Gil (south side of Río Dulce)? _____	11
• Is <i>Guadua longifolia</i> listed for Ecoalbergue Lagunita Creek (Área de Usos Múltiples Río Sarstún)? _____	11
• Is <i>Guadua longifolia</i> listed for El Refugio de Vida Silvestre Punta de Manabique? _____	11
• Is <i>Guadua longifolia</i> listed for Bocas de Polochic? _____	11



# CONTENTS

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Are <i>Guadua longifolia</i> plants registered for Parque Nacional Tikal? _____	13
Are <i>Guadua longifolia</i> plants registered for Parque Nacional Yaxha, Nakum and Naranjo? is <i>Guadua longifolia</i> present or missing from earlier lists? _____	13
Is <i>Guadua longifolia</i> from the Highlands or from the Lowlands (or both)? _____	13
World Range for <i>Guadua longifolia</i> _____	13
Does <i>Guadua longifolia</i> also grow in home gardens? _____	14
Uses of <i>Guadua longifolia</i> _____	15
Are any parts of <i>Guadua longifolia</i> eaten by mammals? _____	16
What are the primary pollinators of <i>Guadua longifolia</i> flowers? _____	16
Concluding Discussion and Summary on <i>Guadua longifolia</i> _____	17
References Cited and Suggested Reading on <i>Guadua longifolia</i> _____	19
Helpful web sites for any and all plants _____	32
Websites on bamboo native to Guatemala and Mexico _____	33
Websites on bamboo introduced into Guatemala _____	33



## 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.





***Guadua longifolia***

Photo by: David Arrivillaga, FLAAR Mesoamerica, Dec. 18, 2021.

Camera: Sony Alpha A9 II. Settings: 1/320; sec; f/9; ISO 400.

### MY PERSONAL EXPERIENCE WITH *GUADUA LONGIFLORA* **BY NICHOLAS HELLMUTH**

My interest in *Guadua longifolia* began when I read a helpful article on bamboo scaffolding in Classic Maya art by Houston, Taube, Luzzadder-Beach, and Timothy Beach (2017). So, I began asking friends and plant scouts in Petén. Turns out that this bamboo grows by the literal millions along the banks of Río Holmul (south of Nakum and north of Naranjo-Sa'al). Gradually we began to find this spiny bamboo in other areas that were seasonally inundated: along Arroyo Petexbatún, upstream from Sayaxché, Petén. This bamboo is quite common in some areas of Petén.

During research I also learned that parts of most bamboos are edible. So, our field work and library research has added a lot to the useful article by iconographers in 2017.

If you wish to see and experience this bamboo, simply drive from Yaxha to Nakum. Just realize that it's best to have a hotel reservation back at Yaxha, since there are no hotels at Nakum. Plus, in several of the months of rainy season no vehicle, not even 4-wheel drive, can reach Nakum without destroying the underside of your vehicle. In the dry season it helps to have a 4WD pickup truck (an SUV will have its underside scratched and damaged even in the dry season). The best place to stay at is in Ecolodge El Sombrero, near the entrance to the Yaxha part of the park.



**Savanna west of naranjo bamboo dead from fire.**

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, Dec. 18, 2021.  
Camera: iPhone 13 Pro Max.

## FULL BOTANICAL NAME

Tropicos data base mentions that the accepted name is *Guadua longifolia* (E. Fourn. R. W. Pohl)

<https://tropicos.org/name/25525347>

## HERE ARE SYNONYMS FOR ***GUADUA LONGIFOLIA***

According to

<http://www.worldfloraonline.org/taxon/wfo-0000873523>

these are some synonyms for *Guadua longifolia*:

- *Arthrostylidium longifolium* (E.Fourn.) E.G.Camus
- *Arthrostylidium spinosum* Swallen
- *Arundinaria longifolia* E.Fourn.
- *Bambusa longifolia* (E.Fourn.) McClure
- *Bambusa swalleniana* McClure
- *Guadua spinosa* (Swallen) McClure

### ***Guadua longifolia***

Photo by: David Arrivillaga, FLAAR Mesoamerica, Dec. 18, 2021.

Camera: Sony Alpha Ag II. Settings: 1/1,000; sec; f/10; ISO 1,250.



## LOCAL NAMES FOR **GUADUA LONGIFOLIA**

Swallen (1955: 155) mentions in Flora of Guatemala: Part II: Grasses of Guatemala that “the native name in Mexico and Guatemala is recorded as *Jimba*”. *Bambú espinoso* or *bambú espinudo* (Ordóñez et al. n.d.: 19).

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

*Bambusa vulgaris* Schrad. in Etnobotánica Garífuna is called “Bambú” for the area of Livingston, Izabal (Pöll, Mejía and Szejner 2005: 84).

Most species of the Bambusoideae subfamily are informally called “bamboo”, but just *Guadua longifolia* is called “Jimba”.

As a curious fact, masses of *Guadua* plantations are called “jimbales”, *Chejopa* or *che’opa’*, which means place of *Guadua* bamboos at the edge of the water or stream (Trabanino and Núñez 2014: 157-158).

### **Jimbal**

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, Mar. 24, 2021. Livingston, Izabal.  
Camera: Sony Alpha Ag II. Settings: 1/800; sec; f/16; ISO 1,000.

## MAYAN NAMES FOR **GUADUA LONGIFOLIA**

According to Mesoweb

<https://www.mesoweb.com/resources/vocabulary/English-Maya.html>

the Mayan name for bamboo is “cheb”.



## HABIT FOR ***GUADUA LONGIFOLIA***

Grass, according to Balick, Nee & Atha (2000: 172) and Flora of Guatemala: Part II: Grasses of Guatemala (1955).

## HABITAT FOR ***GUADUA LONGIFOLIA***

It is often found in tropical dry forest (IARNA-URL 2018: 50-51).

Found in wet savannas and riverbanks, from Mexico to Honduras

(<http://legacy.tropicos.org/Name/25525347?projectid=3>).



**Savanna west of Naranjo bamboo dead from fire.**

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, Dec. 18, 2021.  
Camera: iPhone 13 Pro Max.

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

IARNA-URL (2018: 51) mentions *G. longifolia* among a list of other species that might be commonly found in tropical dry forests: *Acacia pennatula*, *Acoelorrhaphe wrightii*, *Acrostychnum daneaefolium*, *Albizia saman*, *Alseis yucatanensis*, *Ampelocera hotleii*, *Aspidosperma cruenta*, *Aspidosperma megalocarpon*, *Aspidosperma stegomeris*, *Astrocaryum mexicanum*, *Astronium graveolens*, *Attalea cohune*, *Bernoullia flammea*, *Brosimum alicastrum*, *Brosimum panamense*, *Bucida buceras*, *Bursera bipinnata*, *Bursera diversifolia*, *Bursera graveolens*, *Bursera simaruba*, *Bursera steyermarkii*, *Byrsonima crassifolia*, *Caesalpinia vesicaria*, *Calophyllum brasiliense*, *Cameraria latifolia*, *Cedrela odorata*, *Ceiba aesculifolia*, *Ceiba pentandra*, *Cephalocereus maxoni*, *Chrysobalanus icaco*, *Cladium jamaicense*, *Clusia salvinii*, *Cochlospermum vitifolium*, *Cordia alliodora*, *Cordia curassavica*, *Cordia dodecandra*, *Crescentia cujete*, *Croton ciliatoglandulosus*, *Croton glabellus*, *Croton payaquensis*, *Crysophila stauracantha*, *Cupania belizensis*, *Cupania prisca*, *Dendropanax arboreus*, *Desmonchus orthocanthos*, *Dialium guianense*, *Drypetes brownei*, *Drypetes laterifolia*, *Entada polystachya*, *Eritrina berteroaana*, *Erythroxylum guatemalense*, *Eugenia capuli*, *Fraxinus vellerea*, *Gaussia maya*, *Gliricidia sepium*, *Guarea excelsa*, *Guazuma ulmifolia*, *Haematoxylon brasiletto*, *Haematoxylon campechianum*, *Hampea trilobata*, *Helicteres guazumifolia*, *Hippocratea excelsa*, *Hirtella americana*, *Hirtella racemosa*, *Hymenocalis littoralis*, *Ipomea murucoides*, *Jacquinia aurantiaca*, *Karwinskiacalderonii*, *Laetiathamnia*, *Licania hypoleuca*, *Lonchocarpus castilloii*, *Malmea depressa*, *Manilkara zapota*, *Matayba oppositifolia*, *Metopium brownei*, *Mimosa hemendieta*, *Mimosa skinneri*, *Mouriri exilis*, *Ocimum micranthum*, *Opuntia decumbrens*, *Pachira aquatica*, *Panchreatum litorali*, *Passiflora mayarum*, *Phragmites australis*, *Pimenta dioica*, *Piscidia piscipula*, *Pistacia mexicana*, *Poulsenia armata*, *Pouteria amygdalina*, *Pouteria campechiana*, *Pouteria reticulata*, *Protium copal*, *Pseudobombax ellipticum*, *Pseudolmedia spuria*, *Quararibea funebris*, *Rauvolfia tetraphylla*, *Sabal guatemalensis*, *Sabal mauritiiformis*, *Sageretia elegans*, *Sapindus saponaria*, *Schizolobium parahybum*, *Sebastiania longicuspis*, *Simarouba glauca*, *Simira salvadorensis*, *Spondias mombin*, *Stemmadenia donnell-smithii*, *Swartzia cubensis*, *Swietenia humilis*, *Swietenia macrophylla (en el norte)*, *Talisia floresii*, *Talisia olivaeformis*, *Tecoma stans*, *Terminalia amazonia*, *Thevetia ovata*, *Tonduzia pittieri*, *Trichilia minutiflora*, *Trophis racemosa*, *Turnera ulmifolia*, *Typha latifolia*, *Urechitis antrieuxii*, *Vatairea lundelli*, *Vitex gaumeri*, *Vochysia guatemalensis*, *Xylopia frutescens*, *Zanthoxylum culantrillo* and *Zuleania guidonia*.

(IARNA-URL 2018: 51).



**Rio Ixpop**

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, Jan. 27, 2021, Livingston, Izabal.  
Camera: iPhone 12 Pro Max.

## BOTANICAL DESCRIPTION OF *GUADUA LONGIFOLIA* IN STANDLEY AND CO-AUTHORS CHICAGO BOTANICAL MONOGRAPHS

According to Tropicos: Stems 4-10(-15) m x 2-5(-7) cm, erect, with thick walls; internodes green, glabrous. Stem leaves with sheaths glabrous to sparsely appressed hairy with white trichomes; auricles and oral setae absent; blades 2-9 cm, 3/8-2/3 times longer than pods, trichomes white. Branch leaves with ciliate sheaths, glabrous to sparsely hispid on the back, generally without auricles; oral setae 2-7 mm; inner ligule 0.1-0.2 mm; blades 13-27 x (0.2-)0.4-0.7 cm, 14-72 times as long as wide, linear, generally glabrous except for a few cilia near base, sometimes sparsely hairy. Pseudospikelets 50-130 x 3-4 mm, 3-16 in groups or spiked; basal bracts 3-8, 3-14 mm; florets 5-8; lemmas 15-21 mm, 17-23-veins, glabrous, with an awn 3-5 mm; paleas to 15 mm, much shorter than lemmas, the keels prominently ciliate; stamens 3, anthers 7-8.5 mm.

<http://legacy.tropicos.org/Name/25525347?projectid=3>

You can find the complete botanical description in Flora of Guatemala: Part II: Grasses of Guatemala, under *Guadua spinosa*, on pages 155-157.

## CLOSE RELATIVE(S) OF *GUADUA LONGIFOLIA*

There is no information on closely related species for *G. longifolia*.

The genus *Guadua* is important in America in terms of construction. *Guadua angustifolia* is native from America, it is known for being highly resistant and ideal for construction, and it reaches up to 30 meters (Galindo 2015: 1). Another important species is *Guadua paniculata*, it is adapted to fire, and it is also used for construction (Veldman 2008: 66). According to Swallen (1955: 147-155), a native Guatemalan bamboo species is *Guadua aculeata*, commonly known as "tarro", and it is very important economically.



## *GUADUA LONGIFOLIA* **IN BELIZE**

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Mostly found in El Cayo, Belize.

[To see more information click here](#)

(Davidse and Pohl 1992: 92; retrieved online on July 9th, 2022).



## WHERE IN MEXICO CAN *GUADUA LONGIFOLIA* BE FOUND?

Campeche, Chiapas, Chihuahua, Durango, Jalisco, Morelos, Nayarit, Oaxaca, Puebla, Querétaro, Quintana Roo, San Luis Potosí, Sinaloa, Sonora, Tabasco, Veracruz.

<https://tropicos.org/name/25525347>



**Savanna west of Naranja bamboo dead from fire.**

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, Dec. 18, 2021.  
Camera: iPhone 13 Pro Max.

## WHERE HAS *GUADUA LONGIFOLIA* BEEN **FOUND IN THE MUNICIPIO OF LIVINGSTON?**

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- > Is *Guadua longifolia* listed for Biotopo Protegido Chocón Machacas, CECON/USAC?  
Our research team found and documented the species in Chocón-Machacas River.
- > Is *Guadua longifolia* listed for Tapón Creek Nature Reserve (including Taponcito Creek), FUNDAECO?  
Not mentioned, no data found.
- > Is *Guadua longifolia* listed for Buena Vista Tapón Creek Nature Reserve?  
Not mentioned, no data found.
- > Is *Guadua longifolia* listed for Cerro San Gil (south side of Río Dulce)?  
Not mentioned, no data found.
- > Is *Guadua longifolia* listed for Ecoalbergue Lagunita Creek (Área de Usos Múltiples Río Sarstún)?  
Not mentioned, no data found.
- > Is *Guadua longifolia* listed for Sarstoon-Temash National Park (northern side of Río Sarstún)?  
Not mentioned, no data found.
- > Is *Guadua longifolia* listed for El Refugio de Vida Silvestre Punta de Manabique?  
Not mentioned, no data found.
- > Is *Guadua longifolia* listed for Bocas de Polochic?  
Not mentioned, no data found.



*Guadua longifolia*

Photo by: David Arrivillaga, FLAAR Mesoamerica, Dec. 18, 2021.

Camera: Sony Alpha Ag II. Settings: 1/320; sec; f/9; ISO 400.

## ARE *GUADUA LONGIFOLIA* PLANTS REGISTERED FOR PARQUE NACIONAL TIKAL?

There is an herbarium sample from the Smithsonian – National Museum of Natural History that was collected in the park (Smithsonian National Museum of Natural History, retrieved online on July 11th, 2022)

(<https://collections.nmnh.si.edu/search/botany/?ark=ark:/65665/3e4672ec0f6cd4b5ebf3528394744c8c1>).

## ARE *GUADUA LONGIFOLIA* PLANTS REGISTERED FOR PARQUE NACIONAL YAXHA, NAKUM AND NARANJO? IS *GUADUA LONGIFOLIA* PRESENT OR MISSING FROM EARLIER LISTS?

Yes, according to the field trip report of Natural Reserve Bio Itzá: “The wild native bamboo or jimba, is found *en masse* on the west side of the ancient Maya City of Naranjo, and *en masse* along much of the shores of Río Holmul. This bamboo is probably found around wetlands, in or close outside the Tikal Park but has not yet been well documented.” (Hellmuth 2021: 13).

## IS *GUADUA LONGIFOLIA* FROM THE HIGHLANDS OR FROM THE LOWLANDS (OR BOTH)?

It is found in the Lowlands of Guatemala, especially in Izabal and Petén (Swallen 1955: 155), also in Chiapas, Mexico according to the study of Trabanino and Núñez (2018).

## WORLD RANGE FOR *GUADUA LONGIFOLIA*

Tropicos data base mentions that Jimba occurs in Nicaragua, Honduras, Belize, Guatemala (Izabal and Petén), and Mexico.

<https://tropicos.org/name/25525347>

## DOES *GUADUA LONGIFOLIA* **ALSO GROW IN HOME GARDENS?**

Bamboo can grow in any type of land field. According to Dávila and Brugger (2012: 90), around 24 native species of bamboo, including genera *Guadua*, *Chusquea*, *Otatea*, among others, are used as ornamental and are sold in nurseries at United States and Europe.

Aguirre-Cadena and collaborators (2018: 50) say that among the advantages of using bamboo in a land field is that it prevents soil erosion, as well as rehabilitates degraded land and it allows the formation of microclimates for the regeneration of forests.



## USES OF *GUADUA LONGIFOLIA*

In Latin America and the Caribbean, bamboo has been used for the construction of (rustic) houses, basket making, fuel, among other uses, from pre-Columbian times until today. *Guadua* canes are characterized for being long, thick and resistant; the perfect material for building houses (Trabanino and Núñez 2014: 157).

In tropical parts of America, Madagascar, and the north and south parts of China, bamboo is known for being edible, especially the shoots, which are eaten in Tropical Asia. It is eaten as a vegetable, pickled, in salads, among others. Also in the Philippines, the bamboo shoot is traditionally used to prepare different kinds of dishes.

The preparation for the young shoot is to remove the overlapping pods to access the edible interior, which taste is slightly sweet (Aguirre-Cadena, et al. 2018: 50).

**In much of Latin America, bamboo is not noted as an edible species, but in Veracruz, Mexico the regrowth or the shoot of *Guadua longifolia* and *Bambusa oldhamii* are eaten** (Aguirre-Cadena, et al. 2018: 50).

In Guatemala, the species known for being edible are: *Bambusa oldhamii*, *Dendrocalamus latiflorus* and *Bambusa edulis*, especially the buds or regrowth are edible and are a good source of fiber, additionally they have a really good taste (Valdez 2013: 26).

Recently, a discovery in the archeological site "Chinikihá" in the Chiapas lowlands, in the northwestern part of Usumacinta Basin, revealed that *Guadua* species were used as a mortuary element and as worship to the dead in the Late Classical Period. Trabanino and Núñez (2014: 145) hypothesized the use for *Guadua* as a coffin, or as a fuel used during ceremonies dedicated to the dead, probably because of its perishable property.



***Guadua longifolia***

Photo by: David Arrivillaga, FLAAR Mesoamerica,  
Dec. 18, 2021.

Camera: Sony Alpha Ag II. Settings: 1/1,250; sec; f/10;  
ISO 1,250.

## ARE ANY PARTS OF ***GUADUA LONGIFOLIA* EATEN BY MAMMALS?**

In Mexico, the species of woody bamboo, specially the leaves, is used as fodder for cattle, goats, horses and sheep (Dávila and Brugger 2012: 88).

## WHAT ARE THE PRIMARY POLLINATORS **OF *GUADUA LONGIFOLIA* FLOWERS?**

There is no specific research for pollinators of *Guadua longifolia*, but there is research for species *G. paniculata* and *G. inermis*.

According to a study by Ruíz-Sánchez and collaborators (2017: 55), the primary visitors for bamboo species are bees, flies and Hemiptera insects.

“Four species of bees, three from tribe Meliponini (*Geotrigona acapulconis*, *Plebeia frontalis* and *Trigona fulviventris*) and one from tribe Apini (*Apis mellifera*), along with a syrphid fly (*Toxomerus teligera*). Some species of Hemiptera were also found feeding on the flowers, such as *Neortholomus jamaicensis* (Lygaeidae), or preying on the flower visitors (*Apiomerus pictipes* (Reduviidae)).”.

(Ruiz-Sanchez, et al. 2017: 51).





## CONCLUDING DISCUSSION AND SUMMARY ON *GUADUA LONGIFOLIA*

Being a worldwide known genus (a bamboo) for its use in construction, I would expect to find more information online. Regarding the species, *Guadua longifolia* is mostly found in Mexico and because of it there is a lot of research available from there. Considering the similarities of the areas, a lot of information could also be useful for Guatemala. One example is the research on *Guadua* used in Mayan burials in the Chiapas territory. This fact can be important in future sample collections in Mayan archeological sites and could provide valuable information regarding pre-Hispanic culture, especially in ethnobotany.

For Guatemala, the only places it is found in (according to the Global Biodiversity Information Facility – GBIF and the Portal de Biodiversidad de Guatemala) is the archeological sites called “La Joyanca”, La Libertad, Petén; Río Pasión, Petén; Tikal, Petén; and Boca Ancha, Izabal.

[to see more information click here](#)

<https://biodiversidad.gt/portal/collections/list.php?usethes=1&taxa=2251>

So, I wonder if this species is really planted in home gardens, or if it could be planted by the local people if its uses were communicated to them.

Given the ease of bamboo to be planted in any type of soil, it is widely known as a sustainable forestry alternative, as it enriches and moisturizes the soil and allows water regulation. **These facts could be linked to the edible characteristics and nutrimental value to provide a supplement for communities all over Mexico and Guatemala (places where *Guadua longifolia* is native).**



Photo by: David Arrivillaga, FLAAR Mesoamerica, Dec. 18, 2021.  
Camera: Sony Alpha A9 II. Settings: 1/800; sec; f/10; ISO 1,250.

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Frankly, an awesome iconographic discovery. Considering that most “identifications” of plants, flowers, animals, and insects in Classic Maya art vary from incomplete to totally incorrect, it is impressive to see such helpful recognition of a plant that I was totally unaware of the fact that it is native to Guatemala. I have lived in Japan (six months) and worked in China so many years (including living in Beijing six weeks) that I assumed bamboo was native to Asia (as is 90% of what you see along the highways of Guatemala).

What we at FLAAR have added to their research is to find where *Guadua* bamboo grows in the Petén area. Its presence in Chiapas is better documented, but needs a lot more botanical precision (and in a manner that a non-botanist can understand).

Also lacking are viable photos of the Mayan bamboo: again, here is where the FLAAR team can assist Mayan research.

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This is one of the best discussions of the Maya use of native bamboo that I have found so far. It was done three years earlier than the work of epigraphers and iconographers, but being published in South America, it did not “get into the network of Mayanists” around the world (though Houston, Taube et al 2017 do list Trabanino and Núñez 2014 in their bibliography). So now we wish to draw attention of these two authors and their knowledgeable discussion of bamboo in Chiapas.

*Oatea* genus of bamboo can be used to make beds (page 159). We (FLAAR project) have not yet found *Oatea* bamboo in Parque Nacional Yaxha, Nakum and Naranjo.

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**SUGGESTED READING FOR ALL THE PRODUCTS YOU CAN MADE FROM BAMBOO**

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Since we now know that *Guadua longifolia* is readily available in wetlands and along the edges of rivers in Petén, what if the Classic Maya made other useful products besides just scaffolding?

And what if the Classic Maya made house-walls out of native bamboo instead of just tanil or guarumo or other wood or plants of comparable size?

So, let's look at books that show uses of bamboo in other parts of the world.

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

There are several web sites that are helpful even though they're not of a university, 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). Therefore, we prefer to focus on web sites that have reliable and original 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 collection of the Field Museum herbarium, 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. Also 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.



## WEBSITES ON BAMBOO NATIVE TO GUATEMALA AND MEXICO

[www.cicy.mx/sitios/flora%20digital/ficha\\_virtual.php?especie=536](http://www.cicy.mx/sitios/flora%20digital/ficha_virtual.php?especie=536)

Information.

[www.gbif.org/species/9217919](http://www.gbif.org/species/9217919)

Map location.

[www.guaduabamboo.com/blog/bamboo-species-of-guatemala](http://www.guaduabamboo.com/blog/bamboo-species-of-guatemala)

Lists all bamboo species native to Guatemala and indicates which are used (for house construction).

[www.guaduabamboo.com/blog/bamboo-species-of-mexico](http://www.guaduabamboo.com/blog/bamboo-species-of-mexico)

Complete list of bamboo native to Mexico; mentions that several species are used to make baskets.

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

Photos and map location.

[www.tropicos.org/name/25525347?projectid=7](http://www.tropicos.org/name/25525347?projectid=7)

Information.

## WEBSITES ON BAMBOO INTRODUCED INTO GUATEMALA

<https://www.mayan-characters-value-based-education.org/home12/home/is-bamboo-in-guatemala-from-ancient-maya-or-is-all-bamboo-from-asia.php>

Information

## 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 Alturas

San Juan

Reserva Natural Tapón Creek  
Municipio de Livingston

Finca Gangadhwali

Sarstún Creek

Taponcito Creek

El Rosario

Río Cocolí

Río Loto Creek

San Martín

La Desmembración

Plan Grande Totón

Área de Usos Múltiples Río Sarstún

El Mac Creek

Cállx Creek

Laguna Salvador

Río Creek Salvador

Biotopo Chocón Machacas

Laguna Cállx

Laguna Negra

El Golfete

Parque Nacional Río Dulce

Río Totón

Canal Río Dulce



Izabal



### Información de referencia:

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- 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 domingensis</b></p> <p>Cattail</p> <p>MLW#8</p>

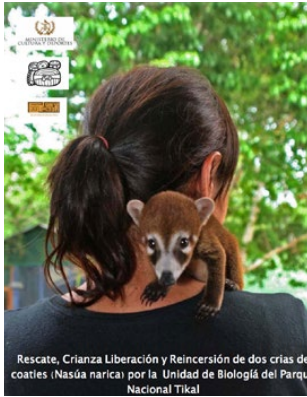
Wetland Series 2: plants that grow along the beach shore of Amatique Bay

<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>Papaturro</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



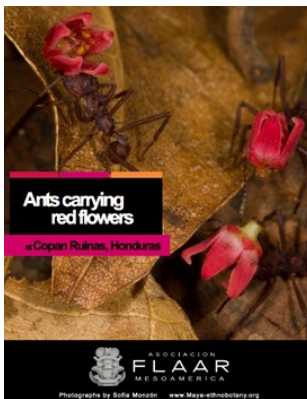
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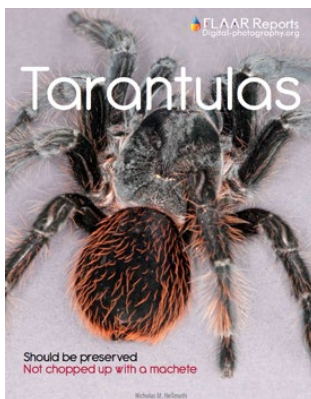
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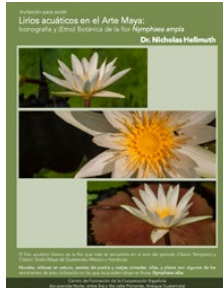
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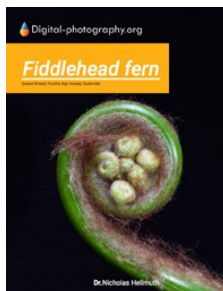
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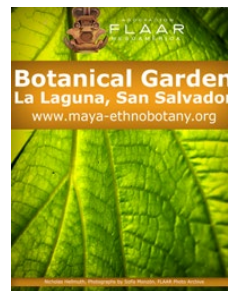
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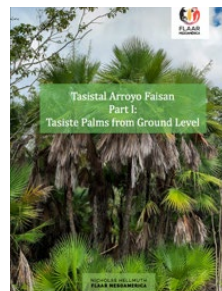
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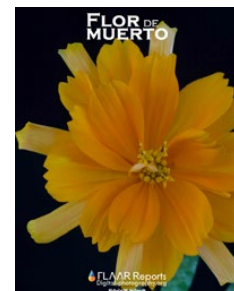
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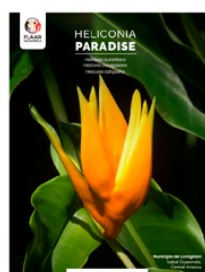
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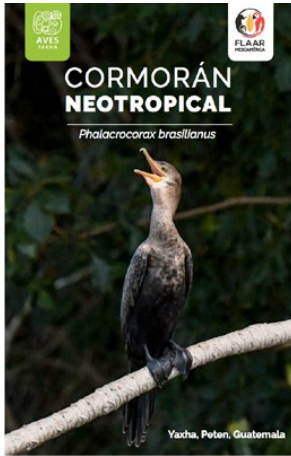
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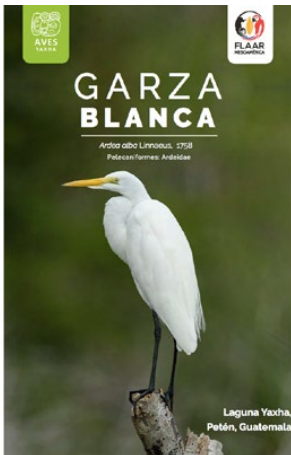
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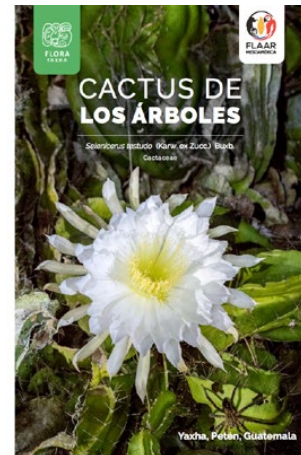
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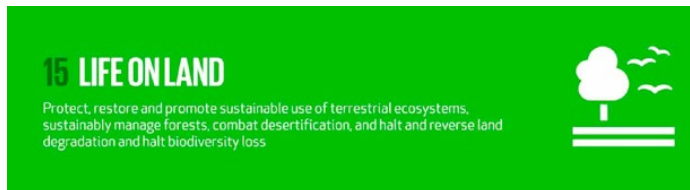


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The current Alcalde of Livingston, Mr. Daniel Pinto, together with his team on the Division of International Cooperation, has set the goal of achieving the municipality development in the years 2020-2024 based on the goals and indicators proposed by the 2030 Agenda for Sustainable Development. In this regard, bot FLAAR (USA) and FLAAR Mesoamerica (Guatemala) will collaborate whit this Municipality achieve the Sustainable Development Goal (SDG), number 15 "Life on Land".

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 estrategies 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:

<https://flaar-mesoamerica.org/rain-forests-rivers-lakes-bays-ocean-caves-canyons-livingston-the-caribbean-biodiversity-wonderland-of-guatemala/>

### SERIES OF MUNICIPIO OF LIVINGSTON



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This report may be cited with this information:

HELLMUTH, Nicholas (2022)  
Jimba, Bamboo. *Guadua longifolia*, Municipio de Livingston, Izabal, Guatemala. FLAAR (USA) and FLAAR Mesoamérica (Guatemala). Wetlands series 3: rivers, lagoons, swamps, or ocean, Wetlands #15

#### BACK COVER PHOTO

Photo by: David Arrivillaga, FLAAR Mesoamerica, Dec. 18, 2021, Livingston, Izabal.  
Camera: iPhone 13 Pro Max.

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