



FLAAR  
MESOAMÉRICA

WETLANDS #25

# BARILLO, BOARDWOOD

— *Symphonia globulifera* —

Municipio de Livingston,  
Izabal, Guatemala

NICHOLAS HELLMUTH

# BARILLO, BOARDWOOD

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Izabal, Guatemala



## CREDITS

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#### *Symphonia globulifera.*

Photo by: David Arrivillaga, FLAAR Mesoamerica, Sep. 5, 2021, 10:22 a.m. Rio Dulce, Livingston, Izabal. Camera: Sony Ag (ILCE-gM2). Settings: 1/400; sec; f/10; ISO 1,600.

### TITLE PAGE PHOTOGRAPH

#### *Symphonia globulifera.*

Photo by: Victor Mendoza, FLAAR Mesoamerica, Sep. 5, 2021, 9:55 a.m. El Golgete Livingston, Izabal. Camera: Sony Ag (ILCE-gM2). Settings: 1/2500; sec; f/4.0; ISO 800.



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## 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





***Symphonia globulifera.***

Photo by: María Alejandra Gutiérrez, FLAAR Mesoamerica, Sep. 5, 2021, 10:17 a.m. Río Dulce, Livingston, Izabal.  
Camera: Canon EOS REBEL T3i. Settings: 1/2656; sec; f/11; ISO 4,000.

## INTRODUCTION TO ***SYMPHONIA GLOBULIFERA***

*Symphonia globulifera* is a species that can be found in humid, often swampy, forests, from Mexico to Brazil, so it is not surprising that the FLAAR Mesoamérica team found this species in the Livingston wetlands. This plant is known as a timber tree, however there is information that it is a plant whose fruits are edible and has medicinal potential. It is for this reason that it has been decided to incorporate *Symphonia globulifera* in the series of edible plants of wetlands and seeks to expose the properties of this plant.

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.



***Symphonia globulifera.***

Photo by: Brandon Hidalgo, FLAAR Mesoamerica, Sep. 5, 2021, 10:7 a.m. El Golfete, Livingston, Izabal.  
Camera: Canon EOS REBEL T3i. Settings: 1/5312; sec; f/8; ISO 6,000.



## FULL BOTANICAL NAME

- *Symphonia globulifera* L. f.

## HERE ARE SYNONYMS FOR ***SYMPHONIA GLOBULIFERA***

- *Actinostigma speciosum* Welw.
- *Aneuriscus aubletii* C.Presl
- *Aneuriscus exserens* C.Presl
- *Moronobea exserens* Endl. ex Walp.
- *Symphonia globulifera* var. *gabonensis* Vesque
- *Moronobea coccinea* Aubl.
- *Moronobea globulifera* (L. f.) Schtdl.
- *Symphonia gabonensis* (Vesque) Pierre
- *Symphonia microphylla* (Hils. & Bojer ex Cambess.) Benth. & Hook. f. ex Vesque
- *Symphonia utilissima* R.E. Schult.

### ***Symphonia globulifera***.

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, Sep. 5, 2021, 10:17 a.m. Creek Blanco, Livingston, Izabal. Camera: Nikon D5, Settings: 1/2656; sec; f/11; ISO 4,000.



## LOCAL NAMES FOR ***SYMPHONIA GLOBULIFERA***

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- Jabalí, masticable, chewick, manni y Árbol de Leche Maria.
- Machare, breo, tometo, breo para calafatear (Col); azufre (Per, Bol); brea caspi, caspi, palo azufre (Per); zaputi manni (López and Montero: 73).
- Pimientillo, waika chewstick, leche amarillo macho, wycot, corban (British Honduras) (Flora de Guatemala, Standley and Williams pp 58).

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

---

- Pimientillo
- *Calophyllum brasiliense* Camb. It shares many of the same names.
- SYNONYMY. Common names Based on Lopez thesis lic USAC 08, Cordero & Boshier calobr CATIE 03 In Guatemala, the tree is called santamaría or marío (in Spanish) and lech (in Q'eqchí). In Alta Verapaz it is known as milk or yellow milk. Santamaría is the most used name in the Central American region. OTHER COMMON NAMES: barí, leche de maria, guaya, barillo (Mexico); barillo or barrelo in El Salvador; milk marie in Belize and El Salvador; palo de maria in Honduras and Nicaragua; cedro maria, white maria or red maria in Costa Rica; Calaba in Panama. (INAB 2017)

*[Original text in spanish]*



***Symphonia globulifera.***

Photo by: David Arrivillaga, FLAAR Mesoamerica, Sep. 5, 2021, 10:7 a.m. Río Dulce, Livingston, Izabal.  
Camera: Canon EOS REBEL T3i. Settings: 1/5312; sec; f/8; ISO 6,400.



***Symphonia globulifera.***

Photo by: Victor Mendoza, FLAAR Mesoamerica, Jul. 2, 2021, 7:54 a.m. Río Sarstún, Lagunita Creek, Livingston, Izabal.  
Camera: Sony DSC-RX10M4 S. Settings: 1/200; sec; f/4.0; ISO 800.



*Symphonia globulifera.*

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, Sep. 5, 2021, 10:03 a.m. El Golfete, Livingston, Izabal.  
Camera: Sony A7C (ILCE-7C) S. Settings: 1/320; sec; f/7.1; ISO 500.

## HABIT FOR ***SYMPHONIA GLOBULIFERA***

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| Tree (Standley and Williams 1961: 58).

## HABITAT FOR ***SYMPHONIA GLOBULIFERA***

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| Wet, often swampy forests, at or little above sea level  
(Standley and Williams 1961: 58).

| It is a gregarious species of primary and secondary forests of tropical America. It prefers flooded and swampy areas up to 1,000 m. of altitude. (López y Montero 2005: 73).

*[Original text in spanish]*

## MAYAN NAMES FOR ***SYMPHONIA GLOBULIFERA***

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- Not reported.



***Symphonia globulifera.***

Photo by: Victor Mendoza, FLAAR Mesoamerica, Jul. 30, 2021, 2:15 p.m. Creek Blanco, Livingston, Izabal.  
Camera: Sony DSC-RX10M4. Settings: 1/500; sec; f/6.3; ISO 800.



*Symphonia globulifera*.

Photo by: David Arrivillaga, FLAAR Mesoamerica, Sep. 5, 2021, 10:19 a.m. Río Dulce, Livingston, Izabal.  
Camera: Canon EOS REBEL T3i. Settings: 1/2656; sec; f/11; ISO 4,000.



*Symphonia globulifera*.

Photo by: David Arrivillaga, FLAAR Mesoamerica, Sep. 5, 2021, 10:24 a.m. Río Dulce, Livingston, Izabal.  
Camera: Canon EOS REBEL T3i. Settings: 1/400; sec; f/11; ISO 1,000.





***Symphonia globulifera.***

Photo by: María Alejandra Gutiérrez, FLAAR Mesoamerica, Sep. 5, 2021, 10:06 a.m. Río Dulce, Livingston, Izabal.  
Camera: Canon EOS-1D X Mark II C. Settings: 1/8000; sec; f/11; ISO 4,000.

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

Illescas 2018 (34) mentions barillo among other species of timber value that can be found in the same natural systems as *Callophyllum Brasiliense* (Santa María): (*Symphonia globulifera*), sangre (*Virola koschnyi*), rosita (*Hyeronima alchorneoides*), canxán (*Terminalia amazonia*) and tamarindo (*Dialium guianensis*), anonillo (*Guatteria anomala*), punte (*Bucida buceras* L), matilisguate (*Tabebuia rosea*), guapinol (*Hymenaea courbaril* L), sangre de drago (*Pterocarpus officinalis* Jacq.) and Palma real (*Roystonea borinquena* O. F. Cook) Caoba (*Swietenia macrophylla* King.) and cedro (*cedrella odorata* L.)

*Acacia pennatula, Achimenes erecta, Acoelorrhaphe wrightii, Allophylus cominia, Alseis yucatanensis, Ampelocera hotleii, Annona glabra, Aphelandra scabra, Aspidosperma cruentum, Aspidospermamegalocarpon, Aspidospermastegomeris, Asterogynemartiana, Astrocaryum mexicanum, Astronium graveolens, Attalea cohune, Bactris mexicana, Bactris trichophylla, Bauhinia divaricata, Bernoullia flammea, Borreria oxyphylla, Brosimum alicastrum, Brosimum panamense, Bucida buceras, Bursera bipinnata, Bursera diversifolia, Bursera simaruba, Bursera steyermarkii, Byrsonima crassifolia, Byrsonimia bucidaefolia, Caesalpinia velutina, Caesalpinia vesicaria, Callophyllum brasiliense, Carapa guianensis, Castilla elastica, Cedrela odorata, Ceiba aesculifolia, Ceiba pentandra, Chrysobalanus icaco, Chrysophylla stauracantha, Chrysophyllum mexicanum, Cladium jamaicense, Clusia salvinii, Coccoloba acapulcensis, Coccoloba schiedeana, Cochlospermum vitifolium, Cordia aliadora, Cordia dodecandra, Cordia gerescanthus, Croton glabellus, Cryosophila stauracantha, Cupania belizensis, Cupania prisca, Cymbopetalum mayarum, Dalbergia ecastaphyllum, Dendropanax arboreus, Desmoncus orthocanthos, Dialium guianensis, Dracaena americana, Drypetes brownii, Drypetes laterifolia, Dyospyrus cuneata, Eugenia capuli, Eugenia rufidula, Euterpe macrospadix, Gaussia maya, Gliricidia sepium, Grias integrifolia, Guarea excelsa, Guazuma ulmifolia, Guettarda combsii, Haematoxylon campechianum, Hamelia rovirosae, Hampea trilobata, Hippocratea excelsa, Hirtella americana, Karwinskia calderoni, Laetia thamnia, Ledembergia macrantha, Licaria peckii, Liquidambar styraciflua, Lonchocarpus castilloii, Lonchocarpus guatemalensis, Louteridium donnell-smithii, Lysiloma bahamense, Malmea depressa, Manilkara zapota, Mannicaria saccifera, Matayba opositifolia, Metopiumbrownei,*

[Continues on the next page]

*Montricardia arborescens*, *Morinda panamensis*, *Oreopanax obtusifolius*, *Pachira aquatica*, *Palicourea triphylla*, *Passiflora mayarum*, *Pimenta dioica*, *Pinus caribaea*, *Piper psilorrhachis*, *Piscidia piscipula*, *Plumeria rubra*, *Poulsenia armata*, *Pouteria amygdalina*, *Pouteria campechiana*, *Pouteria reticulata*, *Protium copal*, *Pseudobombax ellipticum*, *Pseudolmedia spuria*, *Psychotria capitata*, *Pterocarpus hayesii*, *Pterocarpus officinalis*, *Quararibea funebris*, *Abal mauritiiformis*, *Sapindus saponaria*, *Schizolobium parahybum*, *Sebastiania longicuspis*, *Sebastiania tuerckheimiana*, *Senecio deppeanus*, *Simarouba glauca*, *Simira salvadorensis*, *Sloanea ampla*, *Souroubea triandra*, *Spondias mombin*, *Stemmadenia donnell-smithii*, *Swartzia cubensis*, *Swietenia macrophylla*, *Symphonia globulifera*, *Tabebuia rosea*, *Talisia floresii*, *Talisia olivaeformis*, *Terminalia amazonia*, *Trichilia minutiflora*, *Trophis racemosa*, *Unonopsis pittieri*, *Vatairea lundelli*, *Vismia camparaguey*, *Vitex gaumeri*, *Vochysia guatemalensis*, *Xylopia frutescens*, *Zamia splendens* y *Zuleania guidonia* (Inab, 2001). Otros géneros presentes: *Acalypha*, *Agave*, *Calliandra*, *Ficus*, *Ilex*, *Inga*, *Miconia*, *Quercus*, *Scleria*, *Serjania* y *Xylosma* (Inab, 2001).

(Iarna 2018: 59)

*Acoelorrhaphe wrightii*, *Alseis yucatenensis*, *Annona glabra*, *Aspidosperma cruentum*, *Asterogyne martiana*, *Astronium graveolens*, *Attalea cohune*, *Bactris mexicana*, *Bactris trichophylla*, *Bourreria oxyphylla*, *Brosimum allicastrum*, *Bursera simaruba*, *Calophyllum brasiliense*, *Carapa guianensis*, *Cedrela odorata*, *Ceiba pentandra*, *Chrysobalanus icaco*, *Chrysophylla stauracantha*, *Chrysophyllum mexicanum*, *Coccoloba schiediana*, *Cochlospermum vitifolium*, *Cordia gerescansthus*, *Cupania belizensis*, *Dalbergia ecastaphyllum*, *Desmonchus orthacantos*, *Dialium guianensis*, *Dracaena americana*, *Eugenia capuli*, *Euterpe macrospadix*, *Grias integrifolia*, *Guazuma ulmifolia*, *Guettarda combsii*, *Hamelia rovirosae*, *Ledembergia macrantha*, *Lonchocarpus guatemalensis*, *Mannicaria saccifera*, *Montricardia arborescens*, *Morinda panamensis*, *Pachira aquatica*, *Palicourea triphylla*, *Psychotria capitata*, *Pterocarpus hayesi*, *Pterocarpus officinalis*, *Sabal mauritiiformis*, *Sebastiania longicuspis*, *Sloanea ampla*, *Souroubea triandra*, *Spondias mombin*, *Swietenia macrophylla*, *Symphonia globulifera*, *Trophis racemosa*, *Unonopsis pittieri*, *Vismia camparaguey* y *Zamia splendens* (Inab, 2001). Otros géneros presentes: *Ficus*, *Ilex*, *Miconia*, *Piper* y *Pouteria* (Inab, 2001).

(Iarna 2018: 59)

BOTANICAL DESCRIPTION OF *SYMPHONIA GLOBULIFERA* IN  
**STANDLEY AND CO-AUTHORS CHICAGO BOTANICAL MONOGRAPHS**

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A large, glabrous tree, sometimes 30 meters high, the trunk sometimes more than a meter in diameter, the bark rough, brownish or darker, the trunk sometimes supported on stilt roots, the crown rounded, with horizontal or often recurved and pendant branches; leaves short-petiolate, coriaceous, lanceolate to lance-oblong or obovate-lanceolate, 6-12 cm. long, obtusely long-acuminate, narrowed to the acute base, the lateral nerves very numerous and slender, prominulous beneath; flowers on pedicels 4-13 mm. long, or in fruit 1-2.5 cm. long; sepals orbicular or broadly ovate, 2-8 mm. long; petals red, orbicular, 11-14 mm. long; fruit globose to ovoid, 3-4 cm. long, dark green at first, brownish or yellowish in age; seeds 1-3, with a thin testa.

Standley and Williams 1961 (58)

*SYMPHONIA GLOBULIFERA* **IN BELIZE**

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Meerman and Sabido (2001) documents this species as a common species in various ecosystems of Belize.

CLOSE RELATIVE(S) OF ***SYMPHONIA GLOBULIFERA***

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*Calophyllum Brasiliense*, *Clusia* spp, *Garcinia intermedia*.



***Symphonia globulifera.***

Photo by: David Arrivillaga, FLAAR Mesoamerica, Sep. 5, 2021, 10:7 a.m. Río Dulce, Livingston, Izabal.  
Camera: Canon EOS REBEL T3i. Settings: 1/250; sec; f/11; ISO 400.

## WHERE HAVE *SYMPHONIA GLOBULIFERA* BEEN **FOUND IN THE MUNICIPIO OF LIVINGSTON?**

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- > Is *Symphonia globulifera* listed for Biotopo Protegido Chocón Machacas, CECON/USAC?

Yes. (Pérez et al. 2001: 23).

- > Is *Symphonia globulifera* listed for Tapón Creek Nature Reserve (including Taponcito Creek), FUNDAECO?

Yes. Hidalgo and López (2007: 8).

- > Is *Symphonia globulifera* listed for Buena Vista Tapón Creek Nature Reserve?

Not mentioned.

- > Is *Symphonia globulifera* listed for Cerro San Gil (south side of Río Dulce)?

Yes. Velásquez (2005: 38, 40).

- > Is *Symphonia globulifera* listed for El Refugio de Vida Silvestre Punta de Manabique?

Yes. CONAP (2001: Annex 4).

- > Is *Symphonia globulifera* listed for Ecoalbergue Lagunita Creek (Área de Usos Múltiples Río Sarstún)?

No data found online.

- > Is *Symphonia globulifera* listed for Sarstoon-Temash National Park (northern side of Río Sarstún)?

Yes. Herrera (2004: Annex B).

- > Is *Symphonia globulifera* listed for Bocas de Polochic?

Yes. Fundaeco (2007: 14, 16).

## IS *SYMPHONIA GLOBULIFERA* FROM THE HIGHLANDS OR FROM THE LOWLANDS (OR BOTH)?

Lowlands, 0 - 1000 msnm.

### DOES *SYMPHONIA GLOBULIFERA* ALSO GROW IN HOME GARDENS?

- It is cultivable on flooded land.
- It is also considered an ornamental plant.

### WORLD RANGE FOR *SYMPHONIA GLOBULIFERA*

México a Brasil y Bolivia, África Occidental.

#### *Symphonia globulifera.*

Photo by: David Arrivillaga, FLAAR Mesoamerica, Sep. 5, 2021, 10:24 a.m. Río Dulce, Livingston, Izabal.. Camera: Canon EOS REBEL T3i. Settings: 1/400; sec; f/11; ISO 1,000.



## Edible Plants of Municipio de Livingston

Swamps, Marshes, and Seasonally Inundated Flatlands of Izabal



*Symphonia globulifera* Roots.

Photo by: Senaída Ba, FLAAR Mesoamerica, Sep. 5, 2021, 10:24 a.m. Cerro San Gil, Livingston, Izabal.  
Camera: Nikon D810. Settings: 1/320; sec; f/10; ISO 1,000



*Symphonia globulifera*.

Photo by: David Arrivillaga, FLAAR Mesoamerica, Jan. 30, 2021, 10:19 a.m. Cerro San Gil, Livingston, Izabal. Camera: Canon Sony A7R (ILCE-7RM4) S. Settings: 1/80; sec; f/10; ISO 1,600



*Symphonia globulifera*.

Photoby: David Arrivillaga, FLAAR Mesoamerica, Sep. 5, 2021, 11:29 a.m. Río Dulce, Livingston, Izabal.. Camera: Canon EOS REBEL T3i. Settings: 1/400; sec; f/10; ISO 3,200



## USES OF *SYMPHONIA GLOBULIFERA* (**WOOD PROPERTIES**)

**COLOR:** Marked difference between sapwood and heartwood; the sapwood is yellowish white or creamy yellow, the heartwood is reddish yellow medium-hard, medium-heavy, with medium scarlet.

**ODOR:** Not distinctive.

**TASTE:** Not distinctive.

**MARbled:** Uncharacteristic.

**DENSITY:** Pronounced with yellowish lines. 0.55 g/cm<sup>3</sup> (heavy)

**WORKABILITY:** It is easy to work with carpentry machinery and produces very fine surfaces, although planning is moderately difficult to do.

**DURABILITY:** The heartwood is durable in contact with the ground and moderately resistant to termite and fungal attack of the rot

**DRYING:** It dries with moderate rapidity, in the drying in the open air it must be placed indoors and with good ventilation.

### **APPLICATIONS:**

It dries with moderate rapidity, in the drying in the open air it must be placed indoors and with good ventilation. Agricultural implements and tools, construction in general, floors, parks, furniture sleepers, sheets, plywood, interior and exterior decoration, pulp, and paper.

(ESNACIFOR 1999: 4)

## IS THERE POTENTIAL MEDICINAL USAGE OF ***SYMPHONIA GLOBULIFERA***?

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- Used as an abortifacient, heart problems; analgesic; lung problems; Stomach problems.

## ARE ANY PARTS OF *SYMPHONIA GLOBULIFERA* **EATEN BY MAMMALS?**

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- The seeds are dispersed by animals, mainly bats that feed on the pulp of the ripe fruits.
- Tapirs and peccaries feed on the bark of the roots.

## WHAT ARE THE PRIMARY POLLINATORS OF ***SYMPHONIA GLOBULIFERA*** FLOWERS?

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- The flowers are visited by hummingbirds.

**CREDITS FOR PHOTO ON PAGE 28.**

***Symphonia globulifera***

Photo by: David Arrivillaga, FLAAR Mesoamerica, Sep. 5, 2021, 10:24 a.m. El Golfete, Livingston, Izabal.

Camera: Canon EOS REBEL T3i. Settings: 1/400; sec; f/10; ISO 1,000.



*Symphonia globulifera.*

Photo by: David Arrivillaga, FLAAR Mesoamerica, Sep. 5, 2021, 10:24 a.m. El Golfete, Livingston, Izabal.  
Camera: Canon EOS REBEL T3i. Settings: 1/400; sec; f/10; ISO 1,000.

## Edible Plants of Municipio de Livingston

Swamps, Marshes, and Seasonally Inundated Flatlands of Izabal



*Symphonia globulifera.*

Photo by: David Arrivillaga, FLAAR Mesoamerica, Jan. 30, 2021, 10:42 a.m. Cerro San Gil, Livingston, Izabal.  
Camera: Sony A7R (ILCE-7RM4). Settings: 1/250; sec; f/3.2; ISO 2,500.



*Symphonia globulifera.*

Photo by: Senaida Ba, FLAAR Mesoamerica, Jan. 30, 2021, 10:18 a.m. Cerro San Gil, Livingston, Izabal.  
Camera: Nikon D810 N. Settings: 1/320; sec; f/10; ISO 500.



*Symphonia globulifera.*

Photo by: David Arrivillaga, FLAAR Mesoamerica, Sep. 5, 2021, 11:28 a.m. El Golfete, Livingston, Izabal.  
Camera: Canon EOS REBEL T3i. Settings: 1/400; sec; f/10; ISO 3,200.



## CONCLUDING DISCUSSION AND SUMMARY **ON *SYMPHONIA GLOBULIFERA***

*Symphonia globulifera* is a plant known mainly for its timber value, however it has many other properties that are usable by humans. Barillo, as *Symphonia globulifera* is commonly known in Livingston, is a tree that grows in areas where the soil is flooded, so it is a species that can be found near bodies of water. Different uses have been explored for the resin of this tree, as a medicine it can be used as a diuretic and to heal skin wounds topically. The resin can also be used as fuel for torches and to extract yellow dye. The leaves are used to make infusions since the sap has been used as an abortifacient, to treat heart problems; analgesic; treat lung problems and stomach problems.

Its fruits are edible although they are not widely consumed by the communities, although they are known to be food for bats. The wood is used because it is durable, it is a hard wood and it is easy to work with woodworking machines, in addition to the warm colors of its heartwood. For all these properties it is important to know this species and study it more thoroughly as a plant with great medicinal potential.



*Symphonia globulifera.*

Photo by: David Arrivillaga, FLAAR Mesoamerica, Sep. 5, 2021, 10:18 a.m. El Golfete, Livingston, Izabal.

Camera: Canon EOS REBEL T3i. Settings: 1/400; sec; f/10; ISO 3,200.



***Symphonia globulifera.***

Photo by: Senaida Ba, FLAAR Mesoamerica, Jan. 30, 2021, 10:18 a.m. Cerro San Gil, Livingston, Izabal.

Camera: Nikon D810 N. Settings: 1/320; sec; f/10; ISO 500.



***Symphonia globulifera.***

Photo by: Victor Mendoza, FLAAR Mesoamerica, Jan. 30, 2021, 9:46 a.m. El Golfete, Livingston, Izabal.

Camera: Sony DSC-RX10M4 Sony DSC-RX10M4. Settings: 1/1600; sec; f/4.0; ISO 800.





*Symphonia globulifera.*

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, Dec. 12, 2021, 10:24 a.m. El Golfete, Livingston, Izabal.  
Camera: Sony Ag (ILCE-9M2 S). Settings: 1/320; sec; f/7.1; ISO 500.

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---

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### **ESNACIFOR**

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Available online: [http://www.itto.int/files/itto\\_project\\_db\\_input/2017/Technical/pd8-92-5-2%20rev2\(F\)%20s\\_Varillo\\_S.pdf](http://www.itto.int/files/itto_project_db_input/2017/Technical/pd8-92-5-2%20rev2(F)%20s_Varillo_S.pdf)

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**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).

**STANDLEY, Paul C.**

1922 Trees and Shrubs of Mexico. Contributions from the United States National Herbarium, Volume 23, Part 2. Smithsonian Institution. In this one monograph the species are not listed in alphabetical order, so it's a mental adventure finding the species you are looking for.

All monographs by Standley and co-authors can be easily found and downloaded. I would recommend finding the .pdf versions as they are easier to store, easier to copy, and easier to share with students and colleagues.

**STANDLEY, Paul C. and Samuel J. RECORD**

1936 The Forests and Flora of British Honduras. Field Museum of Natural History. Publication 350, Botanical Series Volume XII. 432 pages plus photographs.

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

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

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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.

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

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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 PAGES SPECIFICALLY ON ***SYMPHONIA GLOBULIFERA***

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<http://www.theplantlist.org>

Shows which are Accepted and which are Synonyms.

<http://legacy.tropicos.org/Name/7800762>

Shows which are Accepted and which are Synonyms.

<https://www.gbif.org/es/species/8185162>

General information about the species.

[https://hmong.es/wiki/Symphonia\\_globulifera](https://hmong.es/wiki/Symphonia_globulifera)

General information about the species.

<https://colombia.inaturalist.org/taxa/316836-Symphonia-globulifera>

General information, specifically on medicinal properties.

<https://panamabiota.org/stri/taxa/index.php?taxon=70124&clid=59>

information on pollinators and mammals that consume it.

<http://tropical.theferns.info/viewtropical.php?id=Symphonia+globulifera>

General information, specifically on medicinal properties.

<https://ecosdelbosque.com/plantas/symphonia-globulifera>

information on pollinators and mammals that consume it.

## ACKNOWLEDGEMENTS TO FLAAR MESOAMÉRICA

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**Flor de María Setina** is the administrator of the office, she is in charge of several projects around the world (since FLAAR-REPORTS has been researching large format printers around the world for over 20 years.)

**Vivian Hurtado** Environmental engineer and the current project manager of FLAAR's divisions: Flora & Fauna and MayanToons. She is in charge of supervise daily activities in FLAAR, field trips, reports and track the results.

**Victor Mendoza** Identifies species of flora, fauna and fungi. Participates as a researcher in the office and sometimes on field trips

**Andrea de la Paz** is a graphic designer who helps propose art for the overall template and for aspects of our posts.

**Senaida Ba** Has been our photo assistant for several years. Now she prepares PowerPoint presentations for teachers and students on various topics of Flora, Fauna and Mayan Iconography

**Jaqueline González** is a designer who diagrams text and photos to create the current reports.

**Roxana Leal** Bachelor of Communication is the one who manages all our social networks and the digital community. He sometimes accompanies us on field trips because he likes the adventure and nature of Guatemala.

**María Alejandra Gutiérrez** She is an experienced photographer who today prepares the Photograph Catalogs for the current RBM project. He supported us with the coordination of the trips for the Livingston, Izabal project.

**David Arrivillaga** is an experienced photographer and can handle both Nikon and the latest Sony digital cameras. Their work during and after a field trip also includes sorting, naming, and processing.

**Juan Carlos Hernández** receives the material we write and puts it into Internet software to produce our web pages.

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

**Valeria Áviles** is an illustrator for MayanToons, a division in charge of educational material for schools, especially the Mayan Q'eqchi' schools in Alta Verapaz, Q'eqchi' and Peten Itza Maya in Peten, and the Mayan and Garífuna Q'eqchi' schools in the Municipality of Livingston, Izabal.

**Josefina Sequén** is an illustrator for MayanToons and also helps prepare illustrations for social media posts and animated videos.

**Rosa Sequén** is an illustrator for MayanToons and also helps to prepare illustrations for social media posts and animated videos.

**Heidy Alejandra Galindo Setina** is a designer who diagrams text and photos to create the actual reports.

**Laura Morales** is preparing animated videos in the style of MayanToons, as animated videos are the best way to help schoolchildren protect ecosystems fragile and endangered species.

**María José Rabanales** She has been part of the Flora y Fauna photographic reportage and educational material editing team since September 2020. He works together with others in the team to prepare the finished pdf editions of the Yaxhá Nakum Naranjo Project material.

**Alejandra Valenzuela** She is a biology student and is part of the editing team of photographic reports and educational material of Flora and Fauna since September 2020.

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

**Cristina Ríos** is a design student who joins the editorial design team in December 2020. She will combine the text, images and maps in the editorial criteria of FLAAR Mesoamerica.

**Carlos Marroquín** is a graphic design student at USAC who volunteered to do his internship with the Editorial Design Team. We are very grateful to people like him who join our team and contribute their knowledge and work.

**Sergio Jerez** supports us with the identification of plants, bibliographic research and the generation of maps of the routes carried out in the expeditions

**Edwin Solares** is an environmental engineering student with a strong interest in ecology. 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 work includes the ordering and tabulation of the useful and edible flora listed in the FLAAR bibliography and many other references, to make a complete list of useful plant species with updated taxonomic information

**Diana Sandoval** Her work is based on the collection of scientific information that shapes the reports that are published on our pages.

**Paula García** is part of our MayanToons Animation team. With his work he gives life and sounds to our favorite characters from the jungles, wetlands and savannahs of the region.

**Niza Franco** is part of our MayanToons Animation team. With his work he gives life and sounds to our favorite characters from the jungles, wetlands and savannahs of the region.

**María José Toralla** Collects information and bibliographic references to feed our electronic library of Flora & Fauna and support research for reports and websites

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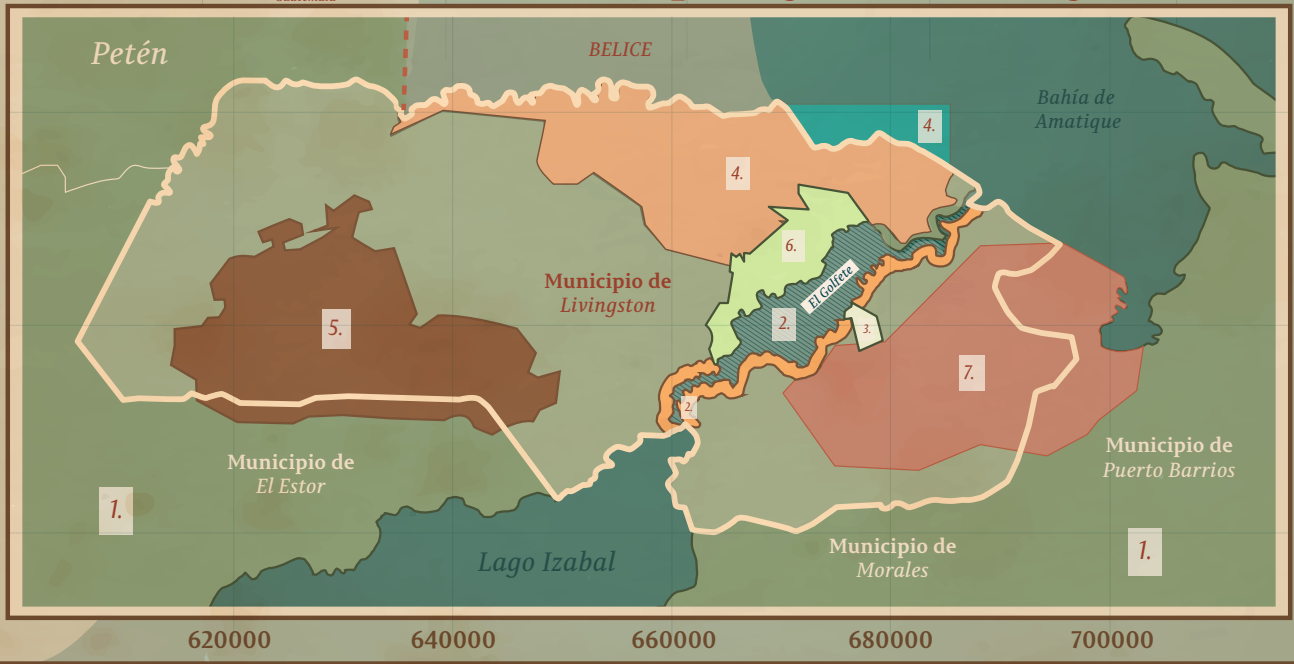
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### Áreas naturales protegidas de Livingston



Izabal

- 1. Área sin protección
- 2. Parque Nacional Río Dulce
- 3. El Higuerito
- 4. Área de Usos Múltiples Río Sarstún
- 5. Sierra de Santa Cruz
- 6. Biotopo Protegido Chocón Machacas
- 7. Reserva Protectora de Manantiales Cerro San Gil



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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

San Juan

Reserva Natural Tapón Creek  
Municipio de Livingston

Siete  
Altares

Finca  
Gangadiwali

Sarstún Creek

Taponcito  
Creek

El Rosario

San  
Martin

La Desmembración

Plan Grande  
Tatín

Área de Usos Múltiples  
Río Sarstún

Biotopo  
Chocón Machacas

El Golfete

Parque Nacional  
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>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>

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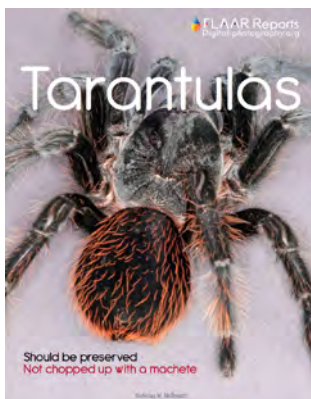
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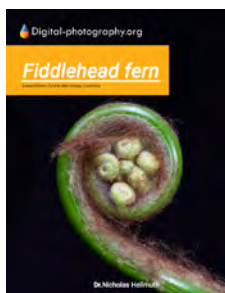
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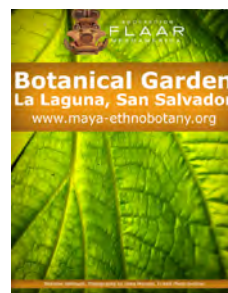
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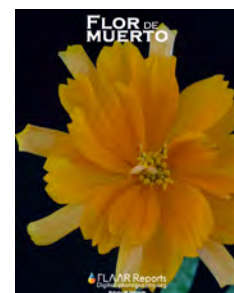
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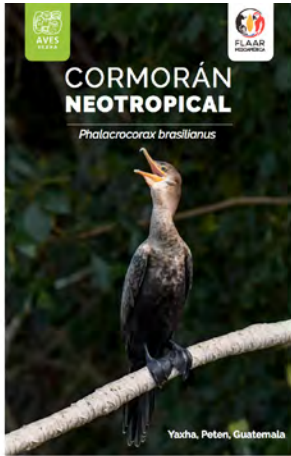
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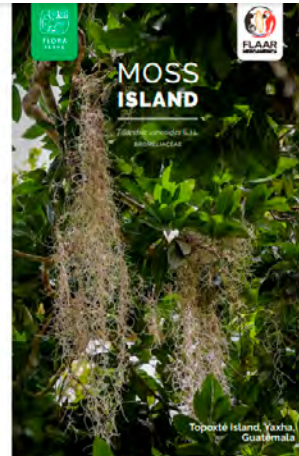
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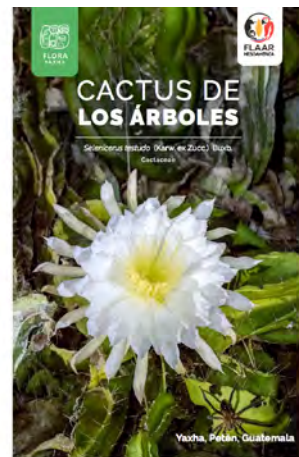
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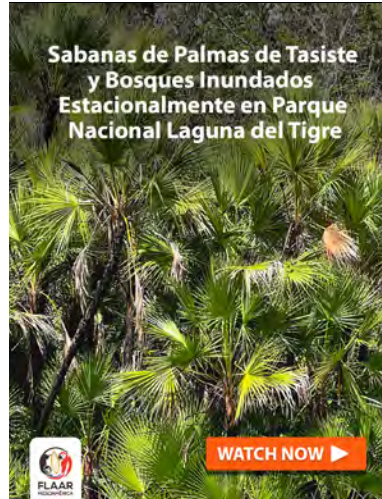
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# VIDEOS OF NATIONAL PARK **LAGUNA DEL TIGRE**



**Exploration of Tasistal  
Savannas- Parque Nacional  
Laguna del Tigre, Petén, RBM**

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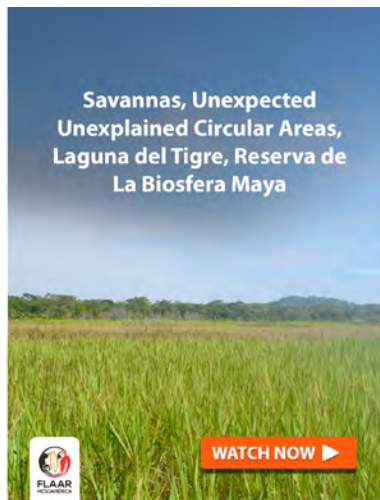
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Tasiste y Bosques Inundados  
Estacionalmente en Parque  
Nacional Laguna del Tigre**

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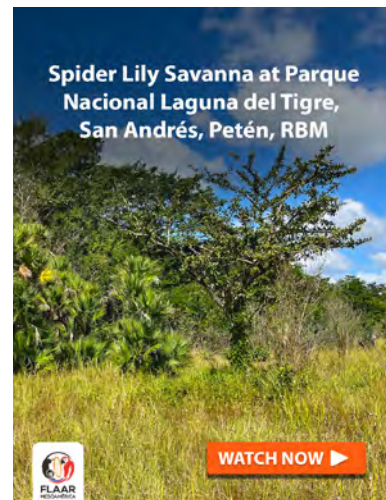
**Savanna #10 far South part  
of Parque Nacional Laguna  
del Tigre, Reserva de la  
Biosfera Maya**

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**Savannas, Unexpected  
Unexplained Circular Areas,  
Laguna del Tigre, Reserva de  
la Biosfera Maya**

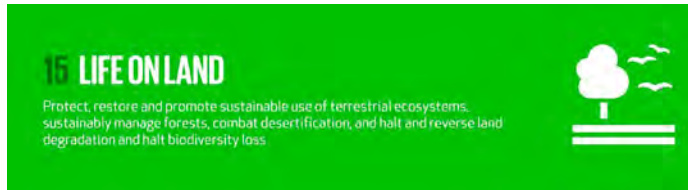
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**Spider Lily Savanna at  
Parque Nacional Laguna del  
Tigre, San Andrés, Petén,  
Reserva de la Biosfera Maya**

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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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- [www.maya-ethnozology.org](http://www.maya-ethnozology.org)
- [www.maya-archaeology.org](http://www.maya-archaeology.org)
- [www.digital-photography.org](http://www.digital-photography.org)
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**BACK COVER PHOTO**  
*Symphonia globulifera*.

Photo by: María Alejandra Gutiérrez, FLAAR Mesoamerica, Sep. 5, 2021, 10:17 a.m. Rio Dulce, Livingston, Izabal. Camera: Canon EOS REBEL T3i. Settings: 1/500; sec; f/10; ISO 4,000.

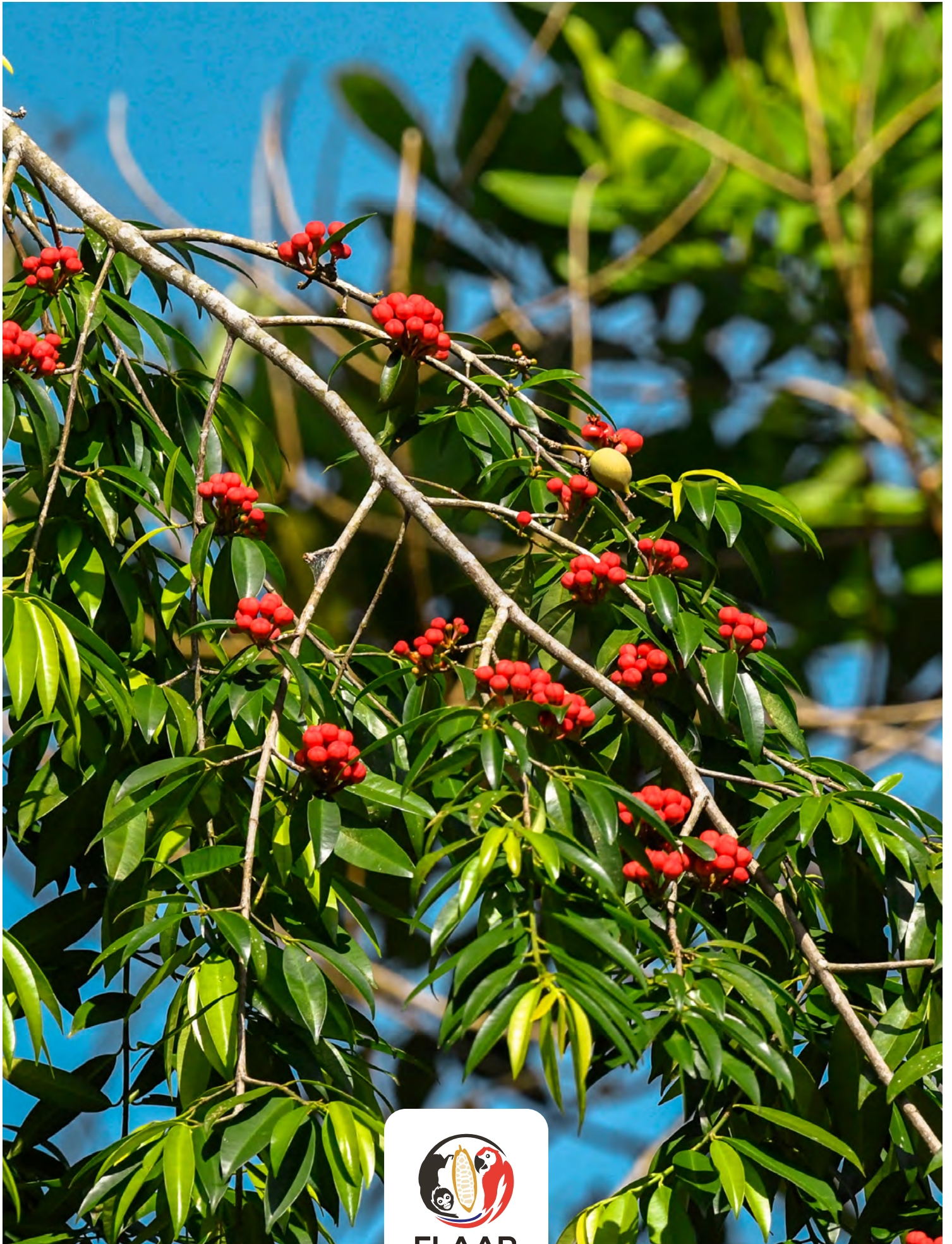
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