



FLAAR  
MESOAMÉRICA

# HELICONIA PARADISE

*Heliconia aurantiaca*  
*Heliconia bourgaeana*  
*Heliconia latispatha*

Municipio de Livingston  
Izabal Guatemala,  
Central America

NICHOLAS HELLMUTH





# HELICONIA PARADISE

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*Heliconia aurantiaca*  
*Heliconia bourgaeana*  
*Heliconia latispatha*

Livingston, Izabal

JUNE 2020



## 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 category are, not the same for each report.

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#### *Heliconia aurantiaca*

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, Mar. 13, 2020. Road to Plan Grande Tatin, Livingston, Izabal.

Camera: Nikon D810. Lens: Nikon 200mm AF-D Tele-Macro. Settings: 1/200 sec, f/14, ISO 500.

### TITLE PAGE PHOTOGRAPH

#### *Heliconia latispatha*

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, Mar. 13, 2020. Road to Plan Grande Tatin from town of Livingston.

Camera: Nikon D810. Lens: Nikon 200mm AF-D Tele-Macro. Settings: 1/250 sec; f/14; ISO 1,250.



# CONTENTS

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Heliconia plants you will see, experience and can photograph in route to Cueva del Tigre from the town of Livingston _____	7
Heliconia plants are common throughout much of Guatemala _____	14
So...Let's remember to study Heliconia plants as part of Mayan culture _____	17
<i>Heliconia latispatha</i> , Livingston, Plan Grande Tatin, Cueva del Tigre _____	20
What habitats does <i>Heliconia latispatha</i> thrive in? _____	24
<i>Heliconia aurantiaca</i> Livingston, Plan Grande Tatin, Cueva del Tigre _____	27
<i>Heliconia champneiana</i> , <i>Heliconia bourgaeana</i> Livingston, Plan Grande Tatin, Cueva del Tigre _____	28
Relatives of Heliconia and/or big-leaf Plants that look very similar _____	30



# CONTENTS

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Concluding remarks on Heliconia en route to Cueva del Tigre Municipio de Livingston, Izabal, Guatemala	35
Introductory Bibliography	41
Acknowledgments to FLAAR Mesoamerica	48
Livingston: The Caribbean biodiversity wonderland of Guatemala	50
FLAAR Mesoamerica	51





***Heliconia latispatha***

Photo by: David Arrivillaga, FLAAR Mesoamerica, Mar. 13, 2020. Road to Plan Grande Tatin from town of Livingston.  
Camera: Nikon D5. Lens: AF-S VR Micro-Nikkor 105mm IF-ED. Settings: 1/250 sec, f/8., ISO 800.



## HELICONIA PLANTS YOU WILL SEE, EXPERIENCE AND CAN PHOTOGRAPH IN ROUTE TO CUEVA **DEL TIGRE FROM THE TOWN OF LIVINGSTON**

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While going from the town of Livingston along the several kilometers to the Cueva del Tigre I saw more **masses of Heliconia** plants than I have seen in the previous decade. Yes, there are literally “fields full of wild native Heliconia” in many other moist areas of Guatemala (especially in Alta Verapaz and Izabal). But, perhaps because we were up in the back of a pickup truck for an hour from Livingston to Plan Grande Tatin that I had a nice view the entire trip. When you are standing up in the back of a pickup truck you can see down on everything on your side of the pickup. The road was muddy (height of a rainy week in March, albeit not a normally rainy month, and unpaved so the pickup driver carefully and thoughtfully drove slowly. And slowly also helped notice the literal “millions” of Heliconia on both sides of the road.



**Standing up** in the back of a pickup truck while reaching Cueva del Tigre, you can see down on everything on your side of the pickup.

Photo by: Juan Pablo Fumagalli, FLAAR Mesoamerica, Mar. 13, 2020. Road to Plan Grande Tatin from town of Livingston.

Camera: Pixel 3 XL.



Then, when there was no more road, we hiked by foot the final several kilometers to the cave. So now we were down at ground level and could see the height of the masses of *Heliconia* along the road.

On the way back to Livingston (after attending a meeting in at Q'eqchi' Mayan school in Plan Grande Tatin and after exploring the cave), about 25% away from the aldea I got out of the pickup and walked back on foot half the way. By walking it was easier to stop every time there was a photogenic *Heliconia* (with thousands in front of you, you could pick-and-choose the ones that you liked most). Keep in mind they were usually so thick it was not realistic to even attempt to walk off the road and deeper into the "jungle of solid *Heliconia*."

The first third of the route from Livingston to the west was cattle pastures (without much *Heliconia*). The rest was often SOLID *Heliconia*, especially on hillsides and flat wetlands. Even in the milpa areas you could see *Heliconia* everywhere.

I estimate that 80% or more was one species: *Heliconia latispatha*. There were also occasional small clusters of *Heliconia champneiana*. These were very noticeable due to totally different size, thicker shape, and splotchy color of bracts. The modern botanical name for this is *Heliconia bourgaeana*.



**Reaching Cueva del Tigre** from Plan Grande Tatin we left behind landscapes full of *Heliconia* plants.

Photo by: Juan Pablo Fumagalli, FLAAR Mesoamerica, Nov. 13, 2020. Road to Plan Grande Tatin from town of Livingston, Izabal

Camera: Pixel 3 XL.





***Heliconia latispatha***. Family Heliconiaceae.

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, Mar. 2020. Road to Plan Grande Tatin from town of Livingston.

Camera: Nikon D810. Lens: Nikon AF-Micro-NIKKOR 200mm IF-ED macro. Settings: 1/320 sec; f/14; ISO 4,000.



There were also lots of attractive orange-yellow flowered *Heliconia aurantiaca* scattered around. Their leaves are much shorter as are the inflorescences. So each of the three species are very very different (and thus easy for our Heliconia specialist, Senaida Ba Mucu, to tell the difference). Even I have now learned their names (but I have another dozen that I will need to learn on upcoming field trips).

Due to the sheer number and solid masses of Heliconia along this road (and along the foot trail several kilometers away from the aldea Plan Grande Tatin to the entrance of Cueva del Tigre), we are preparing the following separate additional reports (since it helps to keep the Megabyte file size reasonable to make it easier to attach to emails and share it with colleagues, family, friends, students, social media contacts, etc).



**Muddy road** with heliconia plants side by side. The FLAAR Mesoamerica photography and research team are always ready to face extreme weather.

Photo by: Juan Pablo Fumagalli, FLAAR Mesoamerica, Nov. 13, 2020. Road to Plan Grande Tatin from town of Livingston.  
Camera: Pixel 3 XL.





***Heliconia aurantiaca* Ghiesbr.**

Photo by: David Arrivillaga, FLAAR Mesoamerica, Mar. 2020. Road to Plan Grande Tatin from town of Livingston.

Camera: Nikon D5. Lens: AF-S VR Micro-Nikkor 105mm IF-ED. Settings: 1/250 sec; f/8; ISO 800.

**So, we are preparing:**

Separate report on *Heliconia latispatha* throughout Guatemala, especially in Alta Verapaz, Izabal, and Peten, and adjacent areas of Mexico, Belize and Honduras. This report will have dozens more photographs of *H. latispatha* from the road to the cave (we have so many photos that we need two volumes to show them).

Separate report on *Heliconia aurantiaca* in Guatemala, especially in the Lagunita Creek area of the Municipio de Livingston (in the northeast corner, not far from the Rio Sarstun border with adjacent Belize). We will also share our experience with *Heliconia aurantiaca* on Alta Verapaz and Peten, and our library research for adjacent areas of Mexico, Belize and Honduras.

Separate report on *Heliconia champneiana*, whose new botanical name is *Heliconia bourgaeana*.

A complete bibliography on all *Heliconia* species of Guatemala and adjacent areas of Mexico, Belize and Honduras.

A report with a list of all *Heliconia* species within the Neotropical Flora data base for Alta Verapaz, Izabal, and Peten (Guatemala).



*Heliconia latispatha*. Family Heliconiaceae. "Expanded lobster claw" its common name in English. "Ave del paraiso" called in some Spanish speaking countries.

Photo by: Maria Alejandra Gutiérrez, FLAAR Mesoamerica. Mar. 13, 2020, Road to Plan Grande Tatin from town of Livingston.  
Camera: Sony RX10 IV. Lens: Sony FE 90mm Macro G OSS. Settings: 1/1,250 sec; f/13; ISO 3,200.





***Heliconia aurantiaca* Ghiesbr.**

Photo by: David Arrivillaga, FLAAR Mesoamerica, Mar. 13, 2020. Road to Plan Grande Tatin from town of Livingston, Izabal.  
Camera: Nikon D5. Lens: AF-S VR Micro-Nikkor 105mm IF-ED. Settings: 1/250 sec; f/8; ISO 800.



***Heliconia latispatha* Benth.**

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, Mar. 13, 2020. Road to Plan Grande Tatin from town of Livingston, Izabal.  
Camera: Nikon D810. Lens: Nikon AF-Micro-NIKKOR 200mm IF-ED macro. Settings: 1/250 sec; f/14; ISO 1,250.



***Heliconia aurantiaca* Ghiesbr.** is a synonym, now the accepted name is *Heliconia bourgaeana* Petersen.  
Photo by: Juan Pablo Fumagalli, FLAAR Mesoamerica, Mar. 13, 2020. Road to Plan Grande Tatin from town of Livingston.  
Camera: Pixel 3 XL.



If funding was available, we would like to have reports on all the *Heliconia* we found in past years throughout humid mountains of Alta Verapaz. As our Q'eqchi' Mayan team come from the mountains of Senahú, Alta Verapaz, through them we get the permission to enter fincas and haciendas to study *Heliconia* on these properties.

*Heliconia* of Guatemala has been overlooked (frankly ignored) due to all the *Heliconia* that are easier and more comfortable to study in Costa Rica and the traditional research stations of Panama. Wild native *Heliconia* species are not always featured in books that focus more on glorifying modern manipulated hybrids. The nice photo album of garden varieties by Jerome (2017) is an excellent example (Lacking both Guatemala and lack of wild native *Heliconia*).

So... let's now enjoy a photographic introduction to three of the multitude of species of wild native *Heliconia* that are waiting for you in the Municipio de Livingston, Izabal, Guatemala.



**Senaida** with *Heliconia latispata*

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, Dec. 3, 2019. Road to Plan Grande Tatin from town of Livingston, Izabal.

Camera: iPhone XS.

## HELICONIA PLANTS ARE COMMON THROUGHOUT MUCH OF GUATEMALA

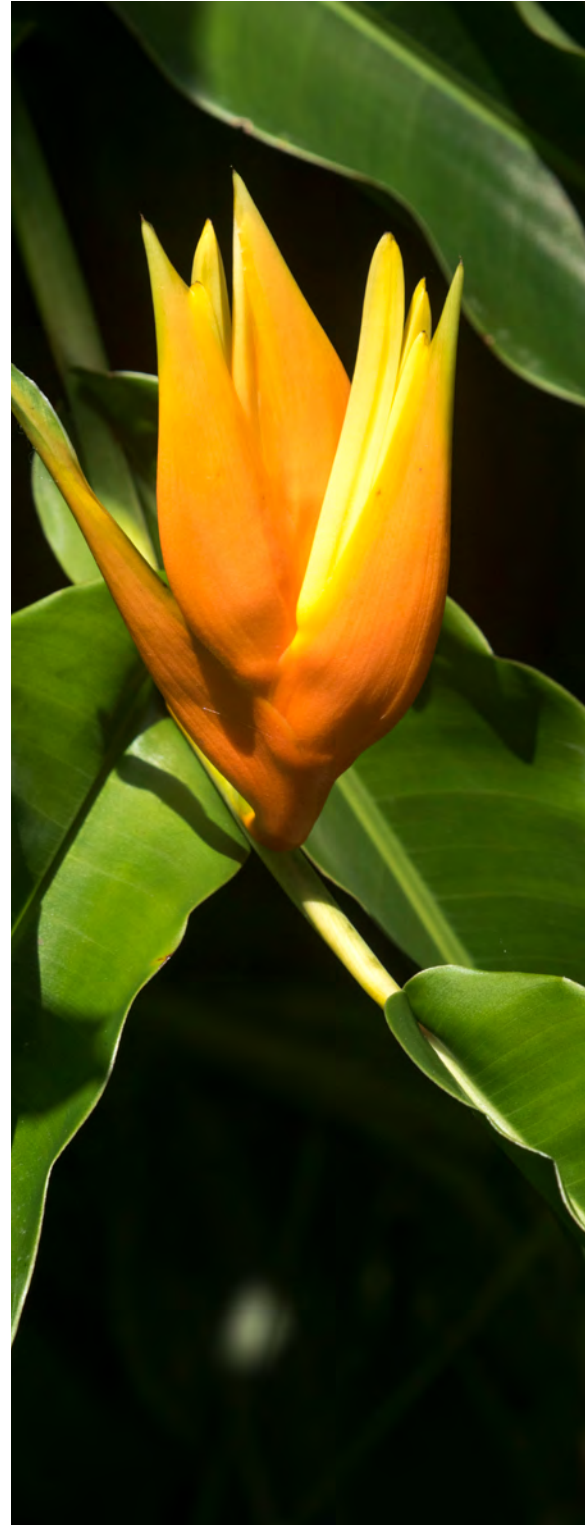
You find heliconia plants as decoration in the gardens of many hotels, haciendas, and other locations throughout Mexico, Guatemala, Belize, Honduras, and into lower Mesoamerica. Even more, wild heliconia plants are so common they are considered roadside weeds in Peten, Alta Verapaz, Izabal and many other areas of Guatemala. So, we have been pleasantly surprised to discover that the Mayan people, especially the Q'eqchi' Mayan, use heliconia species for utilitarian purposes.

To my knowledge, heliconia is rarely mentioned as a utilitarian plant for pre-Columbian civilizations. So now the FLAAR discoveries can add this plant to the list of useful plants of ancient civilizations. So far, the book by Balick and Arvigo have the most uses listed per Heliconia species of Belize (2015).



If you know of citations to use by Mayan or Xinca people of Guatemala (other than as ornament or as tamale wrap) please let us know:

[botany-zoology@flaar.org](mailto:botany-zoology@flaar.org)

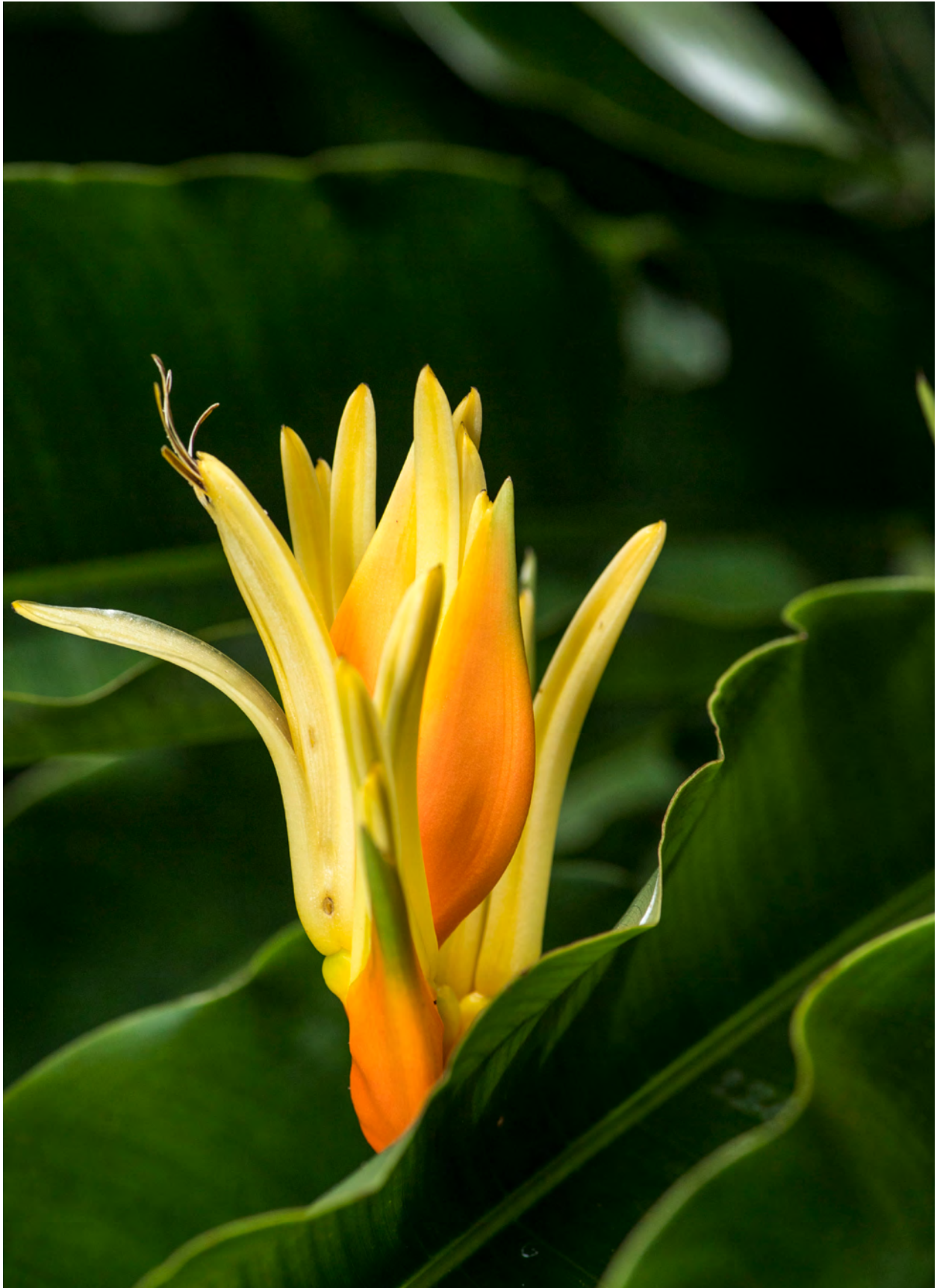


***Heliconia aurantiaca* Ghiesbr.**

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, Mar. 13, 2020. Road to Plan Grande Tatin from town of Livingston.

Camera: Nikon D810. Lens: Nikon AF-Micro-NIKKOR 200mm IF-ED macro. Settings: 1/200 sec; f/14; ISO 500.





***Heliconia aurantiaca* Ghiesbr.**

Photo by: David Arrivillaga, FLAAR Mesoamerica, Mar. 13, 2020. Road to Plan Grande Tatin from town of Livingston.  
Camera: Nikon D5. Lens: AF-S VR Micro-Nikkor 105mm IF-ED. Settings: 1/250 sec; f/8; ISO 800.



We hope to find that someone else noticed other uses before we did. Studies of traditional Maya house architecture only occasionally mention “platanillo” as thatch for information temporary sheds. However, we found several aldeas and communities where lots of the local Q’eqchi’ Mayan houses were roofed with platanillo leaves: not with palm, not with grass: but with local wild Heliconia leaves. As our team includes Q’eqchi’ Mayan speakers and since we have a lot of contacts in these areas of Alta Verapaz, we have permission from the village elders and from the home owners to visit their houses and take notes on the Heliconia thatched roofs.



**Platanillo** leaves are the main material that covers the roof on a traditional Q’eqchi’ maya house. Photo by: Melanny Quiñonez, FLAAR Mesoamerica, May, 2016. Alta Verapaz, Guatemala. Camera: Canon T3i. Lens: Canon EF 24-105mm IS USM. Settings: 1/600 sec, f/9, ISO 100.



***Heliconia champneiana*** (synonym), now accepted name is *Heliconia bourgaeana*.

Photo by: Juan Pablo Fumagalli, FLAAR Mesoamerica, Mar. 2020. Road to Plan Grande Tatin from town of Livingston  
Camera: Pixel 3 XL.

## SO... LET'S REMEMBER TO STUDY HELICONIA PLANTS **AS PART OF MAYAN CULTURE**

It is ironic that when studying «Plants of the Mayan world» you don't find Heliconia "flowers" represented in Classic Maya murals or on ceramics. Have we overlooked them somehow? Why is an inflorescence of this giant size and brilliant colors, with leaves that can be over FIVE METERS TALL not pictured in Classic Maya art?

This super tall *Heliconia mariae* species is one we have studied in Alta Verapaz with the assistance of Q'eqchi' Mayan botanical assistant Senaida Ba and her family. Alta Verapaz and Izabal are the two areas of Guatemala where the most species of Heliconia are easy to find. Since the local Mayan people have Heliconia plants available, we look forward to learning about their use.

However, the present report is on the first three species of Heliconia that we have photographed during our March field trip to remote areas of the Municipio de Livingston, Izabal. If you want to experience these awesome plants, in the wild, Rio Dulce and nearby areas of Municipio de Livingston, Izabal, are the places to start.





Not only ornamental but useful plants.  
Three heliconia species found in one  
single place!

**PAGE 19.**

***Heliconia aurantiaca* Ghiesbr.**

Photo by: David Arrivillaga, FLAAR Mesoamerica, Mar. 2020. Road to Plan Grande Tatin, Livingston. Camera: Nikon D5. Lens: AF-S VR Micro-Nikkor 105mm IF-ED. Settings: 1/500 sec; f/10; ISO 640.

On the present page we show the information for the illustrations on page #20.

**PAGE 20. PHOTOGRAPH 1**

***Heliconia aurantiaca* Ghiesbr.**

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, Mar. 2020. Lagunita Creek, Livingston. Camera: Pixel 3 XL.

**PAGE 20. PHOTOGRAPH 2**

***Heliconia champneiana* Griggs.**

(now accepted name is *H. bourgaeana*)  
Photo by: Juan Pablo Fumagalli, FLAAR Mesoamerica, Mar. 2020. Road to Plan Grande Tatin from town of Livingston. Camera: Pixel 3 XL.

**PAGE 20. PHOTOGRAPH 3**

***Heliconia aurantiaca* Ghiesbr.**

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, Mar. 2020. Lagunita Creek, Livingston. Camera: Pixel 3 XL.

**PAGE 20. PHOTOGRAPH 4**

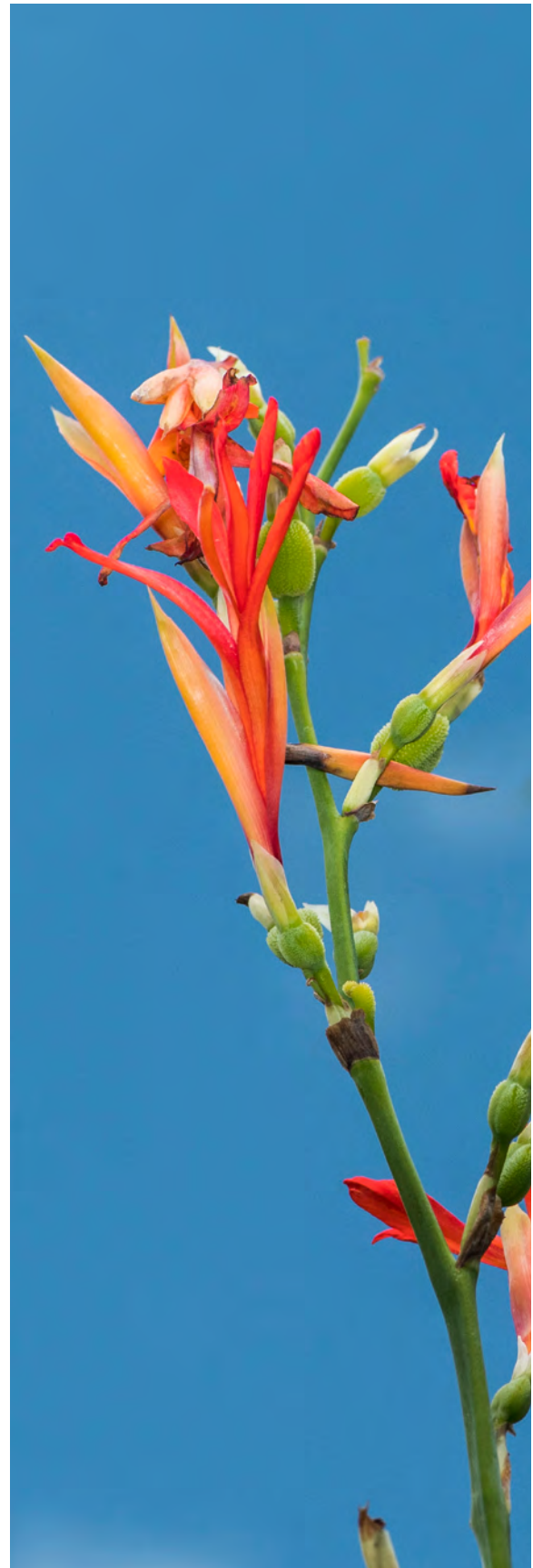
***Heliconia latispatha* Benth.**

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, Mar. 2020. Road to Plan Grande Tatin from town of Livingston. Camera: Nikon D810. Lens: Nikon AF-Micro-NIKKOR 200mm IF-ED macro. Settings: 1/250 sec; f/14; ISO 1,250.

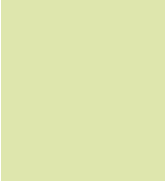
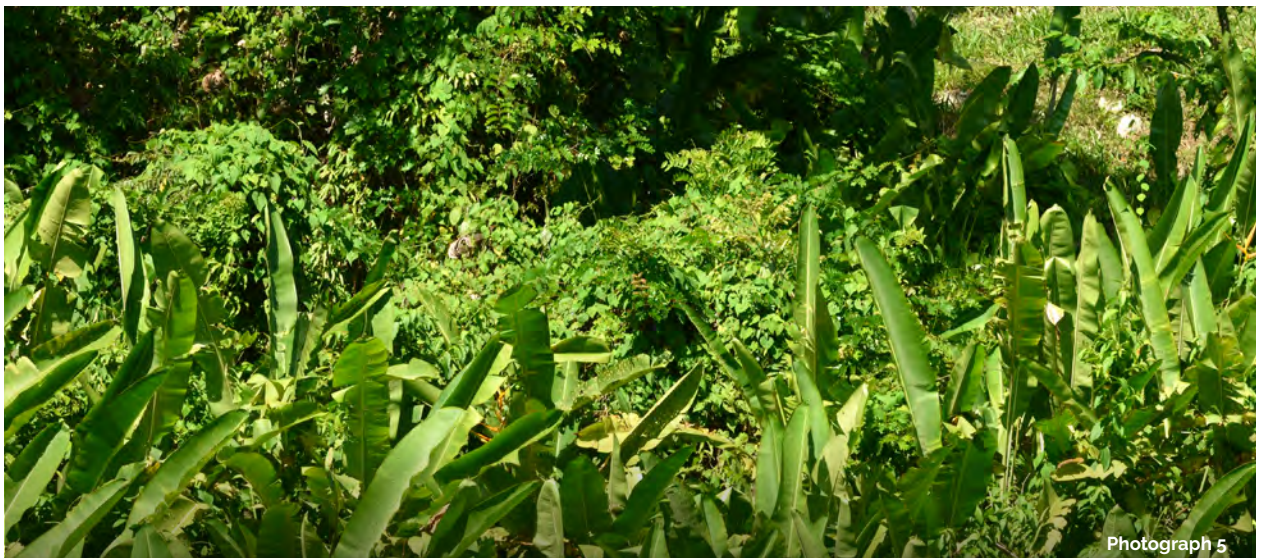
**PAGE 20. PHOTOGRAPHY 5**

***Heliconia latispatha***

Photo by: David Arrivillaga, FLAAR Mesoamerica, Mar. 2020. Road to Plan Grande Tatin from town of Livingston. Camera: Nikon D5. Lens: AF-S VR Micro-Nikkor 105mm IF-ED. Settings: 1/500 sec; f/8; ISO 500.









## *HELICONIA LATISPATHA*, LIVINGSTON, **PLAN GRANDE TATIN, CUEVA DEL TIGRE**

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Between the town of Livingston and aldea Plan Grande Tatin, and from there to Cueva del Tigre, we found OVER ONE MILLION: (literally) heliconia plants of the species *Heliconia latispatha*. There were areas of the roadside with SOLID heliconia plants for as far as the eye could see. Even in the milpas (maize fields) you could see baby heliconia leaves sprouting up from the ground (so by the time the maize is harvested the heliconia will take over the entire field).

I have not yet noticed any book or peer-reviewed journal article on slash-and-burn Maya agriculture that mentions Heliconia as a primary ground cover! Hopefully a colleague can remind me of a report (that I have not yet read) that mentions Heliconia as the PRIMARY ground cover. As we have visited other areas of Guatemala that are also literally filled with native wild Heliconia plants, usually of several species in one area.

Very simple, 80% of the reports on milpas are in ecosystems where Heliconia is not as prominent as in the humid areas between Livingston and the Q'eqchi' Mayan settlement of Plan Grande Tatin (from here you hike by trail to Cueva del Tigre).



***Heliconia latispatha* Benth.** Expanded lobster claw" its common name in English. "Ave del paraíso" called in some Spanish speaking countries.

Photo by: David Arrivillaga, FLAAR Mesoamerica, Mar. 13, 2020. Road to Plan Grande Tatin from town of Livingston. Camera: Nikon D5. Lens: AF-S VR Micro-Nikkor 105mm IF-ED. Settings: 1/500 sec; f/10; ISO 640.



***Heliconia latispatha* Benth.**

Photo by: María Alejandra Gutiérrez, FLAAR Mesoamerica, Mar. 2020. Road to Plan Grande Tatin from town of Livingston.

Camera: Sony RX10 IV. Lens: Sony FE 90mm Macro G OSS. Settings: 1/1250 sec; f/13; ISO 3,200.



If you are studying milpa agriculture and would like to report on something new and different, aldea Plan Grande Tatin is available to visit.

To reach Aldea Plan Grande Tatin simply take a boat shuttle from the CA13 highway bridge in the town of Rio Dulce, or take a boat shuttle from the municipal dock of Puerto Barrios. So all boat shuttles go to Livingston. There is also a boat shuttle from southern Belize.

There is a second route for tourists to reach Aldea Plan Grande Tatin - Jaguar Cave: from Rio Dulce up a creek and then all uphill. We have not yet had time to climb this route. But it will definitely be in our "to do" list for later this year FLAAR Mesoamerica designers team have created very usefull maps of Livingston, its protected areas, highways, places of natural and touristic interest. Look for the maps on page 52 and 53 so you can have a reference from this Heliconia Paradise.

There are plenty of hotels of every price range in Livingston. Ask around for a local guide and vehicle to take you to Plan Grande Tatin and from there to hike to Cueva del Tigre. If you intend to study the Heliconia be sure your team includes a Q'eqchi' Mayan speaking guide.





***Heliconia latispatha* Benth.** Expanded lobster claw" its common name in English. "Ave del paraíso" called in some Spanish speaking countries.

Photo by: María Alejandra Gutiérrez, FLAAR Mesoamerica, Mar. 13, 2020. Road to Plan Grande Tatin from town of Livingston.  
Camera: Sony RX10 IV. Lens: Sony FE 90mm Macro G OSS. Settings: 1/2500 sec; f/13; ISO 3,200.



Here is what botanists Standley and Steyermark have to say about *Heliconia latispatha* in Guatemala.

***Heliconia latispatha* Benth. Bot. Voy. Sulph. 170. 1844.**

**Pico de gurrion (Santa Rosa); Bijao (Peten); Platanillo; Suc (Quecchi).**

Wet forest or thickets, often abundant in second growth, ascending from sea level to about 1,400 meters, but most abundant at low elevations; Peten; Alta Verapaz; Izabal; Santa Rosa; Escuintla; Suchitepequez; Retalhuleu. Southern Mexico; British Honduras to Panama; Colombia. Plants glabrous or nearly so, rather stout, commonly 1.5-2.5 meters high; leaves long-petiolate, oblong, often a meter long, mostly 20-30 cm. wide, short-acuminate, rounded to subacute and usually oblique at the base, slightly glaucous or green beneath; inflorescence erect, pedunculate, the bracts deep or bright red, widely spaced, narrowly lanceolate, spreading, the lowest often dilated at the apex into large green blades, often tinged with orange or yellow, or sometimes yellow or orange throughout, the middle ones about 15 cm. long and 1.5-2 cm. high at the base, long-attenuate; flowers 3-3.5 cm. long, pedicellate, the pedicels glabrous or pilose, the perianth greenish yellow.

The inflorescences are sometimes called "cuchillos" in Salvador. On the Pacific slope this species is particularly plentiful, growing not only in ravines of the foothills but far out upon the plains, in either forest or open places. Some of these habitats become very dry in the verano but are doubtless exceedingly wet during the rainy season.

(Standley and Steyermark 1952: 182-183)



***Heliconia latispatha* Benth.**

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, Mar. 13, 2020. Road to Plan Grande Tatin from town of Livingston.  
Camera: Nikon D810. Lens: Nikon AF-Micro-NIKKOR 200mm IF-ED macro. Settings: 1/320 sec; f/14; ISO 800.





***Heliconia latispatha* Benth.** Expanded lobster claw" its common name in English. "Ave del paraíso" called in some Spanish speaking countries.

Photo by: María Alejandra Gutiérrez, FLAAR Mesoamerica, Mar. 13, 2020. Road to Plan Grande Tatin from town of Livingston.  
Camera: Sony RX10 IV. Lens: Sony FE 90mm Macro G OSS. Settings: 1/2,500 sec; f/13; ISO 3,200.



## WHAT HABITATS DOES *HELICONIA* *LATISPATHA* THRIVE IN?

Livingston is at sea level (it faces Amatique Bay, an inlet from the Caribbean Sea). Obviously the road from Livingston to Plan Grande Tatin is no longer at sea level; indeed the masses of tens-of-thousands of the *Heliconia latispatha* grow on the sides of hills. But I doubt elevation goes much beyond 100m.

When driving along the road from Livingston to Plan Grande Tatin, between all the individual maize plants there were lots of 10 cm high young *Heliconia latispatha* sprouts; so once the maize is harvested the Heliconia grows larger. This results in the masses of *Heliconia latispatha* growing all over hillsides. When local people get ready to prepare a milpa (slash and burn agriculture) the thousands of Heliconia get chopped down with machetes and burned. But they sprout back up before that next maize crop is harvested. Additionally, Heliconia can be found in forest or swamp edges where no maize is grown (though clearly Heliconia prefers sunlight, it can adapt to some shade from nearby trees).



***Heliconia latispatha* Benth.**

Photo by: María Alejandra Gutiérrez, FLAAR Mesoamerica, Mar. 13, 2020. Road to Plan Grande Tatin from town of Livingston.

Camera: Sony RX10 IV. Lens: Sony FE 90mm macro G OSS. Settings: 1/1,250 sec; f/13; ISO 3,200.



Although Cahabon is not as wet as the Municipio of Livingston and is twice the altitude. We have found *Heliconia latispatha* growing around Cahabon, Alta Verapaz.

Several reports list *Heliconia latispatha* as growing along the sides of rivers (Meerman 1999: 17) but the thousands (potentially literally millions) of *Heliconia latispatha* growing along the road between Livingston and Plan Grande Tatin were on hillsides. Moist areas: yes; and some areas would have standing water during a rainy season but not many rivers or creeks until you get closer to the Cueva del Tigre.

*Heliconia latispatha* were also found by Meerman in other habitats (Ibid.; 20, 21).

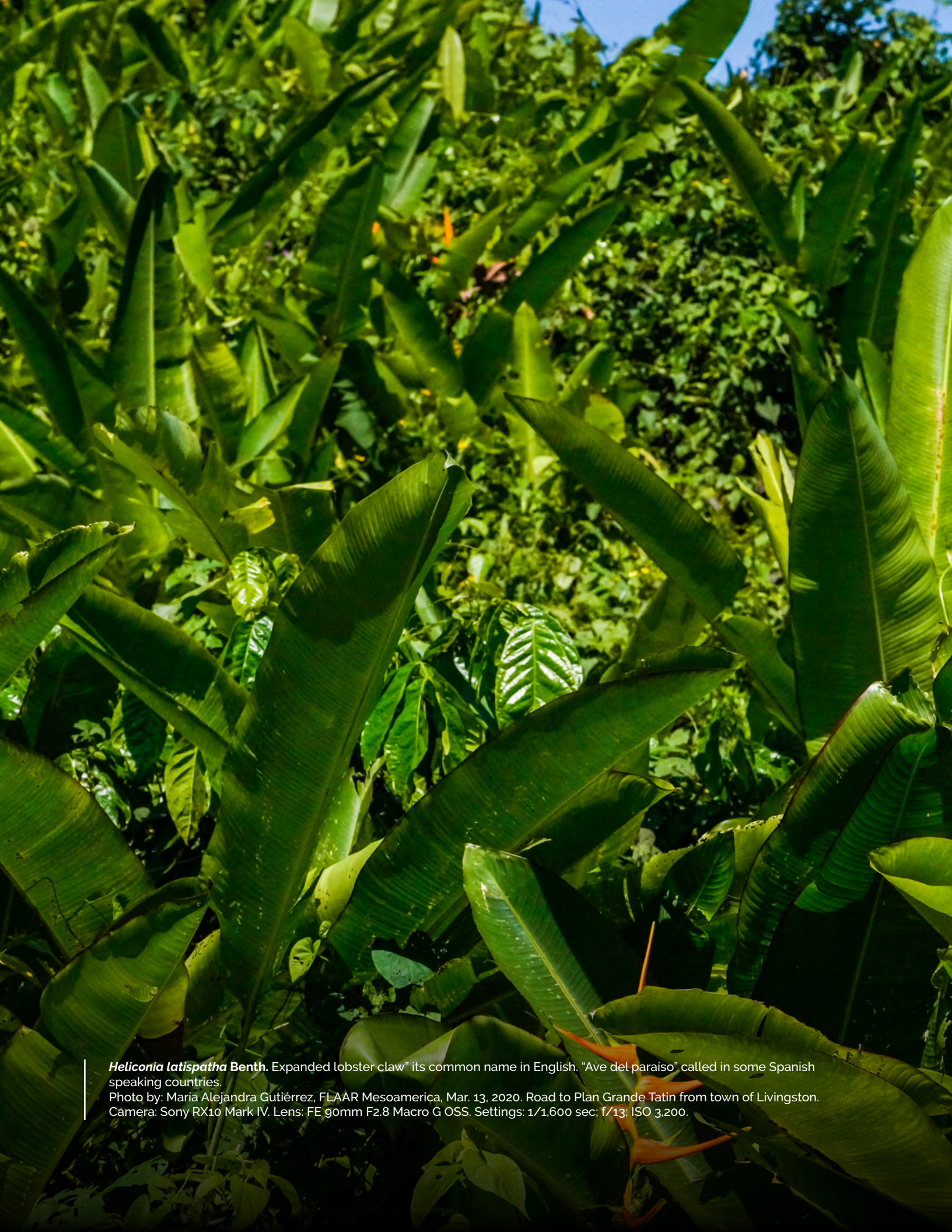
Since *Heliconia latispatha* is found all over Mesoamerica (more than most other species), I estimate it is more adaptable than other species.

***Heliconia latispatha*** leaves.  
Photo by: María Alejandra Gutiérrez, FLAAR Mesoamerica, Mar. 13, 2020. Road to Plan Grande Tatin from town of Livingston.

Camera: Sony RX10 IV. Lens: Sony FE 90mm Macro G OSS. Settings: 1/1,600 sec; f/13; ISO 3,200.







*Heliconia latispatha* Benth. Expanded lobster claw" its common name in English. "Ave del paraíso" called in some Spanish speaking countries.

Photo by: María Alejandra Gutiérrez, FLAAR Mesoamerica, Mar. 13, 2020. Road to Plan Grande Tatin from town of Livingston. Camera: Sony RX10 Mark IV. Lens: FE 90mm F2.8 Macro G OSS. Settings: 1/1.600 sec; f/13; ISO 3,200.



## *HELICONIA AURANTIACA* LIVINGSTON, **PLAN GRANDE TATIN, CUEVA DEL TIGRE**

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Neither *Heliconia aurantiaca*, nor *Heliconia bourgaeana* are in any book on Flora of Guatemala by Standley and his colleagues (that I have yet found). This is curious since they had access to Izabal and to Alta Verapaz, thus, the glaring absence of both of these species from the thousands of pages of Flora of Guatemala is all the more encouragement to us to add these attractive *Heliconia* plants to the botanical and ethnobotanical documentation of Guatemala.

Since we also found *Heliconia aurantiaca* far to the northeastern part of the Municipio de Livingston, we will have a separate publication on *Heliconia aurantiaca* of Lagunita Creek nature area (near Rio Sarstun, also spelled, in English, Rio Sarstoon). However, since *Heliconia aurantiaca* was also present along the road and trail from the village of Livingston west to Cueva del Tigre, we also include a few photos here. But by far the most common was *H. latispatha*; and rarest was *H. champneiana* (*H. bourgaeana*).



***Heliconia aurantiaca* Ghiesbr.** The word "aurantiaca" derives from the Latin epithet meaning "golden". Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, Mar. 13, 2020. Lagunita Creek, Livingston. Camera: Pixel 3 XL. Settings: 1/170 sec; f/1.8; ISO 375.





***Heliconia aurantiaca* Ghiesbr.**

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, Mar. 13, 2020, Road to Plan Grande Tatin from town of Livingston.  
Camera: Nikon D810. Lens: Nikon AF-Micro-NIKKOR 200mm IF-ED macro. Settings: 1/320 sec; f/14; ISO 800.





***Heliconia aurantiaca* Ghiesbr.** The word "aurantiaca" derives from the Latin epithet meaning "golden".  
Photo by: David Arrivillaga, FLAAR Mesoamerica, Mar. 13, 2020. Road to Plan Grande Tatin from town of Livingston.  
Camera: Nikon D5. Lens: AF-S VR Micro-Nikkor 105mm IF-ED. Settings: 1/250 sec, f/8, ISO 800.



***Heliconia aurantiaca*.** "Lobster claw" its common name in English.  
Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, Mar. 13, 2020. Road to Plan Grande Tatin from town of Livingston.  
Camera: Nikon D810. Lens: Nikon AF-Micro-NIKKOR 200mm IF-ED Macro. Settings: 1/320 sec; f/14; ISO 800.



## *HELICONIA CHAMPNEIANA*, *HELICONIA BOURGAEANA* **LIVINGSTON, PLAN GRANDE TATIN, CUEVA DEL TIGRE**

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I have no earthly idea why this wild native Heliconia would be named Purple Heliconia, as there is no purple in front of my eyes when I am standing in front of a *Heliconia champneiana* in Izabal. Probably some variants in botanical gardens or growing in Florida are purple! The designation on other web sites of Maya Gold is closer, but it's a natural raw gold out in the wild: not a smooth polished manufactured jewel.



***Heliconia champneiana* Griggs.**

Photo by: Juan Pablo Fumagalli, FLAAR Mesoamerica, Mar. 13, 2020. Road to Plan Grande Tatin from town of Livingston.  
Camera: Pixel 3 XL.





I estimate that over 60% of botanical publications use the older designation *Heliconia champneiana*. Even reports by botanists focused on *Heliconia*, as recently as 2017, still use *Heliconia champneiana*.

Officially the accepted name is *Heliconia bourgaeana* (with all the botanist's names of past centuries stuck on the end).

A Panama checklist of *Heliconia* lists *Heliconia bourgaeana* as a synonym of *Heliconia wagneriana* AND of *Heliconia bihai*.

<http://legacy.tropicos.org/Name/21500044?projectid=4&langid=66>

Does "legacy" mean that was a misunderstanding in a past century? It must, because the book dates to 1890! So, I stick with [www.ThePlantList.org](http://www.ThePlantList.org) for modern accepted synonyms and names.



***Heliconia champneiana***. "Cachete colorado" is one of the name given on different Spanish speaking countries. Photo by: David Arrivillaga, FLAAR Mesoamerica, Mar. 13, 2020. Road to Plan Grande Tatin from town of Livingston. Camera: Nikon D5. Lens: AF-S VR Micro-Nikkor 105mm IF-ED. Settings: 1/500 sec, f/10, ISO 640.





***Heliconia champneiana*** (synonym), now accepted name is *Heliconia bourgaeana*

Photo by: Juan Pablo Fumagalli, FLAAR Mesoamerica, Mar. 13, 2020. Road to Plan Grande Tatin from town of Livingston.  
Camera: Pixel 3 XL.



It is easy for a first time viewer to confuse *Heliconia wagneriana* with *Heliconia champneiana* out in the fields and forests. However, if you see lots of one and memorize their size shape, structure of the inflorescence, etc. and then do the same for the other species, you can gradually tell the difference when you are on a field trip standing in front of multiple species of different *Heliconia* all in the same habitat.

The other issue is that not all examples of *Heliconia wagneriana* are the same color. Same with *Heliconia champneiana*. as the size, shape, and how far the bracts have expanded depends on the local habitat, how old the inflorescence is, whether the plant is in lots of sun or partial shade, etc.

And, I would not be surprised if each species looks one way in Alta Verapaz and not always identical in Izabal. But the conclusion of Senaida Ba Mucu, our in-house *Heliconia* plant scout, is that the ones we photographed in mid-March 2020 in Izabal were *Heliconia champneiana* (that is the most popular synonym; the technical name is *Heliconia bourgaeana*).

If you work only in herbaria it may be easier to learn the structural differences because there are no more colors preserved on dead dried withered specimens. Thus, the size and position of the bracts is easier to remember.



**Photographers** David and Nicholas entering the heliconia fields to photograph *H. champneiana*. (*Heliconia champneiana* Griggs is a synonym of *Heliconia bourgaeana* Petersen)

Photo by: David Arrivillaga, FLAAR Mesoamerica. Mar. 13, 2020. Road to Plan Grande Tatin from town of Livingston.

Camera: Nikon D5. Lens: AF-S VR Micro-Nikkor 105mm IF-ED. Settings: 1/500 sec; f/10; ISO 640.





***Heliconia champneiana* Griggs** (synonym), now accepted name is *Heliconia bourgaeana* Petersen.  
Photo by: Juan Pablo Fumagalli, FLAAR Mesoamerica, Mar. 13, 2020. Road to Plan Grande Tatin from town of Livingston.  
Camera: Pixel 3



Bananas and “platanos” are popular and edible relatives of Heliconia but are not native. Bananas and platanos are growing around people’s houses in almost all ecosystems of Guatemala, in fact, I have giant banana plants growing in my garden. Since 1500 meters elevation is nowhere near their preferred growing area, they grow for five to seven years before they produce flowers and edible fruits growing taller than a two-story building. This variety has a red trunk. I must admit that I absolutely love these plants surrounding my office even though they are not native. These bananas, and the thicker platanos that require cooking, are in every Mayan village market. as well as in every supermarket also. However, some Heliconia do have edible parts, not yummy giant healthy fruits like bananas and platanos though. Heliconia are primarily visible wonders of natural Neotropical flora that remind me of the remarkable plants that need better research and publication.



***Calathea crotalifera***. Family: Marantaceae

Photo by: David Arrivillaga, FLAAR Mesoamerica, Mar. 2020. Biotopo Chocón Machacas, El Golfete, Livingston.  
Camera: Nikon D5. Lens: AF-S VR Micro-Nikkor 105mm IF-ED. Settings: 1/160 sec; f/8; ISO 1,600.

There are several other local native plants in the Mayan-speaking areas, such as *Canna indica*, mashan (hoja de sal, *Calathea crotalifera*), and others, that have large leaves which are also used for wrapping. Several of these also grow in the Municipio de Livingston and others are in kitchen gardens surrounding the homes of local people. In the future we will also provide a list of all these plant names and provide an annotated bibliography for each one, but as a starter we show one long leaf plant in the Biotopo Chocon Machacas, El Golfete, Rio Dulce, Municipio de Livingston.



***Calathea crotalifera***

Photo by: David Arrivillaga, FLAAR Mesoamerica, Mar. 2020. Biotopo Chocón Machacas, El Golfete, Livingston.

Camera: Nikon D5. Lens: AF-S VR Micro-Nikkor 105mm IF-ED. Settings: 1/160 sec; f/8; ISO 1,600.



**Crab on *Calathea crotalifera***

Photo by: David Arrivillaga, FLAAR Mesoamerica, Mar. 2020. Biotopo Chocón Machacas, El Golfete, Livingston.

Camera: Nikon D5. Lens: AF-S VR Micro-Nikkor 105mm IF-ED. Settings: 1/160 sec; f/8; ISO 1,600.





***Calathea crotalifera* S.Watson.**

Photo by: David Arrivillaga, FLAAR Mesoamerica, Mar. 2020. Biotopo Chocón Machacas, El Golfete. Guatemala.  
Camera: Nikon D5. Lens: AF-S VR Micro-Nikkor 105mm IF-ED. Settings: 1/250 sec; f/8; ISO 1,000.



***Calathea crotalifera***

Photo by: David Arrivillaga, FLAAR Mesoamerica, Mar. 2020. Biotopo Chocón Machacas, El Golfete, Livingston.  
Camera: Nikon D5. Lens: AF-S VR Micro-Nikkor 105mm IF-ED. Settings: 1/160 sec; f/8; ISO 1,600.



***Heliconia*** leaves. As mentioned before, one of the common names for this leaf is "hoja de sal" in Spanish, which translated literally means "leaf of salt". On the back of the leaf you can see "salt" or white flour.

Photo by: Juan Pablo Fumagalli, FLAAR Mesoamerica, Mar. 2020. Biotopo Chocón Machacas, El Golfete, Livingston.  
Camera: Nikon D810. Lens: Nikon AF-Micro-NIKKOR 200mm IF-ED Macro. Settings: 1/250 sec; f/10; ISO 500.

## CONCLUDING REMARKS ON HELICONIA EN ROUTE TO CUEVA DEL TIGRE MUNICIPIO DE LIVINGSTON, IZABAL, GUATEMALA

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Our team went to Cueva del Tigre because we are making a list of all caves worth visiting in the area of the Municipio de Livingston itself. In Maya mythology caves are the entrance to Xibalba, the Underworld.

We found that the flowering and fruiting plants along the road and on both sides of the trail were awesome. The cave was remarkable because of the raging river flowing into its entrance (into, not coming out of). We have a separate FLAAR report on the cave itself.



### *Calathea crotalifera*

Photo by: David Arrivillaga, FLAAR Mesoamerica, Mar. 2020. Biotopo Chocón Machacas, El Golfete. Guatemala.  
Camera: Nikon D5. Lens: AF-S VR Micro-Nikkor 105mm IF-ED. Settings: 1/250 sec; f/8; ISO 1,000.





We found lots of other photogenic flowering plants all along the route but the first ones we will present are the remarkable masses of several *Heliconia* species.

*Heliconia latispatha* is probably also the species most often found in Guatemala, Belize and Honduras. Obviously not “everywhere;” there are some areas primarily with other species of *Heliconia*. But the *H. latispatha* is in many habitats. *Heliconia latispatha* Benth. is the *Heliconia* most often found in the majority of the states of Mexico: CAM, CHIS, GRO, HGO, OAX, QRO, QROO, SLP, TAB, VER.

(Villaseñor 2016: 768).

*Heliconia latispatha* often grows in dense masses and are relatively tall, such masses look very impressive (as you can see along the road to Tatin).

Since *Heliconia latispatha* is so common, it would be great to find uses for the leaves, as wrapping to replace plastic and as roof material to replace tin. Frankly if I were a hotel owner, and wanted tourists to NEVER, EVER forget my hotel, I would roof it with Heliconia leaves. I would also serve guests with a Heliconia leaf as a table place mat and I would have infographic posters on the walls showing, one by one, each local species of Heliconia and where they could be found.

Because a Heliconia grows from its underground portion, harvesting leaves for a roof or to make place mats (or to press and make serving dishes) does not destroy the plant. The part under the ground (rhizome) will sprout up again.

So far, we also found several other species of Heliconia along the same route. So, the Municipio de Livingston has the potential to become “Heliconia Heaven” and “Heliconia Paradise” for eco-friendly visitors from around the world. We estimate that on future field trips to this part of Izabal we will be able to find even more species.

Since Heliconia are photogenic, are bright colors, and are of majestic height, photographs of these Heliconia plants in Izabal can make this a desired travel destination.



***Heliconia champneiana* Griggs.**

Photo by: Juan Pablo Fumagalli, FLAAR Mesoamerica, Mar. 13, 2020. Road to Plan Grande Tatin from town of Livingston. Camera: Pixel 3 XL.





*Heliconia aurantiaca* Ghiesbr.

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, Mar. 13, 2020. Road to Plan Grande Tatin from town of Livingston.  
Camera: Nikon D810. Lens: Nikon AF-Micro-NIKKOR 200mm IF-ED macro. Settings: 1/320 sec; f/14; ISO 800.





The botanical web site, [www.naturalista.mx/taxa/84964-Heliconia](http://www.naturalista.mx/taxa/84964-Heliconia) shows scores of *Heliconia* throughout Belize, Chiapas and Tabasco; lots all across Yucatan (that are shown nowhere else), but about zilch for Peten: one single solitary lonely specimen.

Also, two lonely specimens for the Municipio de Livingston (one in Rio Dulce that would more likely be a garden specimen) and one closer to where we found them.

But, why did we find a dozen of *Heliconia bourgaeana* and probably a dozen of *Heliconia aurantiaca* along one road and all the capable botanists of the world collected only a single specimen?



***Heliconia aurantiaca*.**

Photo by: David Arrivillaga, FLAAR Mesoamerica, Mar. 13, 2020. Road to Plan Grande Tatin from town of Livingston. Camera: Nikon D5. Lens: AF-S VR Micro-Nikkor 105mm IF-ED. Settings: 1/250 sec; f/8; ISO 800.





***Heliconia latispatha* Benth.** Expanded lobster claw" its common name in English. "Ave del paraíso" called in some Spanish speaking countries.  
Photo by: María Alejandra Gutiérrez, FLAAR Mesoamerica, Mar. 13, 2020. Road to Plan Grande Tatin from town of Livingston.  
Camera: Sony RX10 IV. Lens: Sony FE 90mm Macro G OSS. Settings: 1/2,500 sec; f/13; ISO 3,200.

## HELICONIA BIBLIOGRAPHIES IN GENERAL WITH FOCUS ON WHICH ARE NATIVE TO **MESOAMERICA, AND ESPECIALLY GUATEMALA**

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This bibliography was initiated by Estefani Serrano in 2015 with additions by Linda Bac in 2017. Senaida Ba Mucu also added more references later and through 2017. Their work was put into the present format during 2020 by Nicholas Hellmuth and Vivian Hurtado, bibliography manager of FLAAR Mesoamerica. In the coming months we will be preparing bibliographies of each species of Heliconia which are found in Guatemala.

We are issuing a more comprehensive bibliography on Heliconia as a separate FLAAR report, but on the following pages are the sources for the comments and citations in the present report.

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1981        Revision of Heliconia sect. Heliconia (Musaceae). Nordic Journal of Botany, Vol. 1, Issue 6, December 1981, pages 759-784.

Demands excessive payment for download.

### **BALTAZAR, B. O. FIGUEROA R. K. A.**

2009        Flores que atrapan tu Mirada. Estudio de vida de florero y comercial de flores ornamentales de la zona centro del estado de Veracruz. Colegio de Postgraduados, México. 80 Pages.

### **BERRY, F. and KRESS, W. J.**

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Wonderful book but definitely not based on much field work in Izabal nor Peten.

### **BREEDLOVE, D.E.**

1986        Flora de Chiapas. Listados Florísticos. México. Vol. 4. Pages.1-246.

### **BRUNNER, Byron**

2017        Flores tropicales y su Cultivo: Las Heliconias. Tropical Flower Cultivation: The Heliconias. 418 pages.



A helpful monograph, but (as is typical of 90% of monographs on *Heliconia*) does not include field work on *Heliconia* of Guatemala. So *Heliconia spissa* is conspicuously missing in his nice species-by-species descriptions. *Heliconia spissa* is only in miscellaneous lists without the information of the kind that is needed here in Guatemala.

We found about ten *Heliconia spissa* plants in one area of the mountains of Alta Verapaz, Guatemala, so we know it is native to Guatemala.

Large page size, soft cover. No publisher listed anywhere whatsoever on the book. Spanish and English text.

**Chávez Quiñones, Evelia, José Roldán Toriz, Blanca Estela Sotelo Ortiz, Julio Ballinas Díaz, and Erika Judith LOPEZ Zúñiga**

2017 PLANTAS COMESTIBLES NO CONVENCIONALES EN CHIAPAS, MÉXICO. Hospital General Zona II, Instituto Mexicano del Seguro Social (Tuxtla Gutiérrez, Chiapas; México).

Free download:

[www.respyn.uanl.mx/x/2/comunicaciones/comunicación-plantas\\_comestibles\\_chiapas.htm](http://www.respyn.uanl.mx/x/2/comunicaciones/comunicación-plantas_comestibles_chiapas.htm)

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2009 Catálogo taxonómico de especies de México Vol. 1. In Capital Nat. México. México City.

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Free to download and easy to download:

[www.jstor.org/stable/pdf/2478584.pdf](http://www.jstor.org/stable/pdf/2478584.pdf) or [www.jstor.org/stable/i321715](http://www.jstor.org/stable/i321715)

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Not "free and easy to download"

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**JEROME, Raymond J**

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Lots of nice photos but mostly garden varieties. No bibliography. Most Heliconia species of Guatemala are not included whatsoever. Thus a better title would be Nice Photos of Gorgeous Heliconia Flowers for your Garden.

No publisher listed anywhere, but Amazon lists CreateSpace Independent Publishing Platform. Amazon lists 112 pages but the last three pages are blank so I list 109 pages.

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Available online: [www.asociaciontikal.com/pdf/068\\_Trabanino.pdf](http://www.asociaciontikal.com/pdf/068_Trabanino.pdf)

Mentions, in passing, that leaves are used to wrap tamales

**VILLASEÑOR, José Luis**

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1972 A Highland Maya People and their Habitat: The Natural History, Demography and Economy K'ekchi' PhD dissertation. 475 pages.

His field work was near San Pedro Carcha, which is now a suburb of Coban, Alta Verapaz. The climate is moist due to moist clouds during many times of the year. A tad of mention of Heliconia species but this plant was clearly not a focus of his research. The main issue is that he did not identify each species.

All is available as free download, plus there is an entire web site devoted to the chapters of this PDF. It is very rare that a professor's web site continues after he passes away. The web site of the popular University of Texas professor of Maya ethnobotany had disappeared within a few months after he passed away. His web site was filled with helpful information: now all is lost unless you know how to go back in time and find the web site before it was erased (this possibility has worked for us in past years but it is always done by our webmaster).



## WEB SITES WITH GOOD COVERAGE OF **HELICONIA SPECIES OF MESOAMERICA**

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<http://colplanta.org/taxon/urn:lsid:ipni.org:names:119314-2#sources>

This kind of distribution map is the worst I have seen; these are copied and pasted on Wikipedia and used by copy-and-paste websites. Almost NO plant whatsoever is in every part of where this sad and unfortunate and totally erroneous map shows. For Kew Botanical Gardens, one of the top ten in the world, one would expect better.

This map is better: [www.gbif.org/species/2760787](http://www.gbif.org/species/2760787)

Except I can't click on each specimen circle to get the information.

Notable that the prestigious web site system [www.gbif.org/species/2760787](http://www.gbif.org/species/2760787), does not show one single solitary specimen of *Heliconia bourgaeana* for the Municipio de Livingston. Only one to the south (near the border with the adjacent Municipio) and one along Rio Sarstun (so part corner of Petén).

[www.entnemdept.ufl.edu/Frank/heliconiabiota/helbib.htm](http://www.entnemdept.ufl.edu/Frank/heliconiabiota/helbib.htm)

A bibliography of Insects and Other Animals Associated with Heliconia.

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

Heliconia Society International.

[www.htbg.com/search.php?family=Heliconiaceae#HEL-010-6-5-037](http://www.htbg.com/search.php?family=Heliconiaceae#HEL-010-6-5-037)

Professional list of Heliconia species and in which country they are found.

<http://members.iinet.net.au/~meckms/Heliconia%20collinsiana%20-%20Buyers%20info.pdf>

Description, Cultivation and planting instructions.

[www.tropicos.org/Name/21500170](http://www.tropicos.org/Name/21500170)

Photos, references, distributions, etc.

[http://vereda.ula.ve/jardin\\_botanico/areas-tematicas/selva-nublada/platanillo/](http://vereda.ula.ve/jardin_botanico/areas-tematicas/selva-nublada/platanillo/)

Bijao o Platanillo, *Heliconia bihai* L. Las hojas se utilizan en la cocina para envolver alimentos (en cocción como hallacas, u horneado como pescado) para dar un sabor muy particular a la comida

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650000

680000

710000

740000



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1760000  
1740000  
1720000  
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1680000



**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



Bahía de Amatique

# Aldea Plan Grande Tatin, Livingston



**Izabal**

- 1. Reserva Protectora de Manantiales Cerro San Gil
- 2. Biotopo Protegido Chocón Machacas
- 3. Área sin protección
- 4. Parque Nacional Río Dulce
- 5. Área de Usos Múltiples Río Sarstún
- Acceso terrestre
- - - Acceso de tierra



**Información de referencia:**

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- Dirección de Análisis Geoespacial del (CONAP), Marzo/2017.





***Heliconia aurantiaca***

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, Mar. 13, 2020, Road to Plan Grande Tatin from town of Livingston.  
Camera: Nikon D810. Lens: Nikon AF-Micro-NIKKOR 200mm IF-ED macro. Settings: 1/320 sec; f/14; ISO: 800.





## ACKNOWLEDGEMENTS TO FLAAR MESOAMÉRICA

The reports are a joint production between the field trip team and the in-house office team. So here we wish to cite the full team:

**Flor de María Setina** is the office manager, overseeing all the diverse projects around the world (including FLAAR-REPORTS research on advanced wide-format digital inkjet printers, a worldwide project for over 20 years). We also utilize the inkjet prints to produce educational banners to donate to schools.

**Vivian Díaz** environmental engineer, is project manager for flora, fauna projects (field work and resulting reports at a level helpful for botanists, zoologists and ecologists, and for university students). Also coordinates activities at MayanToons, division where educational material for kids is prepared.

**Victor Mendoza** identifies plants, mushrooms, lichen, insects, and arachnids. When his university schedule allows, he also likes to participate in field trips on flora and fauna research.

**Vivian Hurtado** prepares the bibliography for each subject and downloads pertinent research material for our e-library on flora and fauna. All of us use both these downloads plus our in-house library on flora and fauna of Mesoamerica (Mexico through Guatemala into Costa Rica).

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

**Senaida Ba** is photography assistant for many years. She knows the Canon, Nikon and is learning the two new Sony mirrorless cameras. She prepares, packs, sets-up, and helps the photographers before, during, and after each day's field trip.

**Jaqueline Gonzalez** is a designer who puts together the text and photographs to create the actual report (we have several designers at work since we have multiple reports to produce).

**Roxana Leal** is Social Media Manager for flora and fauna research and publications, and MayanToons educational book projects

**María Alejandra Gutierrez** is an experienced photographer, especially with the Canon EOS 1D X Mark II camera and 5x macro lens for photographing tiny insects, tiny flowers, and tiny mushrooms. Work during and after a field trip also includes sorting, naming, and processing. And then preparing reports in PDF format.

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

**Juan Carlos Hernandez** takes the material that we write and places it into the pertinent modern Internet software to produce our web pages (total network is read by over half a million people around the world).

**Paulo Nuñez** 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.

**Valeria Aviles** 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.

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

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

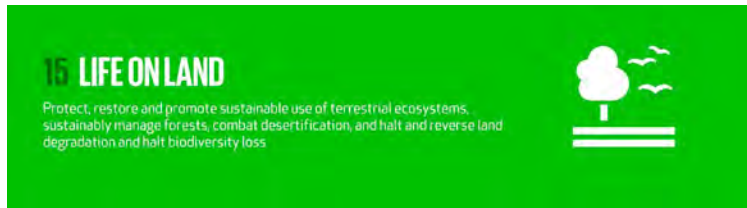
**Laura Morales** is preparing animated videos in MayanToons style since animated videos are the best way to help school children how to protect the fragile ecosystems and endangered species

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

**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.



The current Alcalde of Livingston, Mr. Daniel Pinto, together with his team of International Cooperation division, Mr. Edwin Mármol, have 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. From this agenda, FLAAR Mesoamerica will collaborate to achieve Sustainable Development Goal (SDG) number 15 "Life on Land".

Throughout this cooperation project, different materials have been prepared, like this Photo Essay, that helps to collect information on species, different ecosystems: terrestrial, wetlands and fresh water biodiversity. This information would also be useful as part of a strategy to protect threatened species and prevent their extinction. The municipality's goals include to promote the sustainable use, conservation and research of the species of flora and fauna of the terrestrial, wetlands and aquatic shore and coastal ecosystems of the Guatemalan Caribbean. Learn more about this project and the SDG indicators at: <https://flaar-mesoamerica.org/rain-forests-rivers-lakes-bays-ocean-caves-canyons-livingston-the-caribbean-biodiversity-wonderland-of-guatemala/>

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Hellmuth, N. (2020) Heliconia Paradiice, *Heliconia aurantiaca*, *Heliconia champneiana*, *Heliconia latispatha* place. Municipio de Livingston, Izabal, Guatemala, Centroamérica: FLAAR Mesoamerica.

#### BACK COVER PHOTO

##### ***Heliconia latispatha***

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, Mar. 13, 2020. Road to Plan Grande Tatin from town of Livingston.

Camera: Nikon D810. Lens: Nikon 200mm AF-D Tele-Macro. Settings: 1/250 sec; f/14; ISO 1,250.

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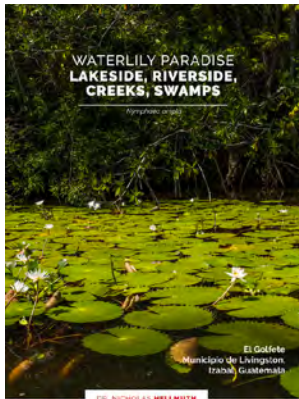
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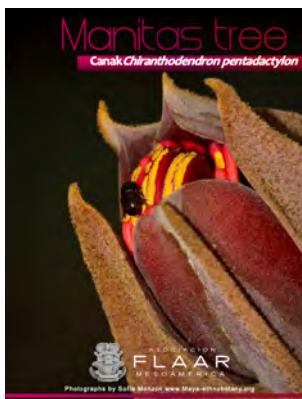
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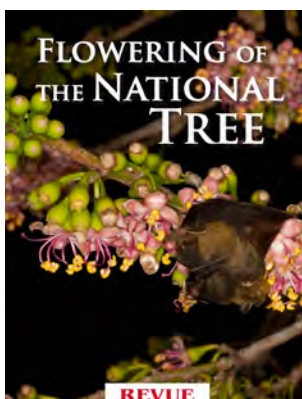
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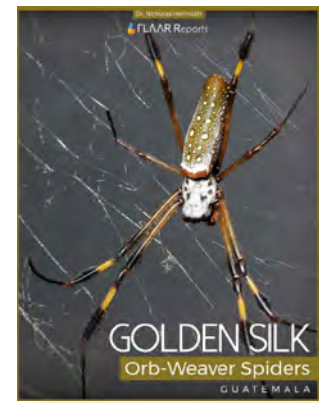
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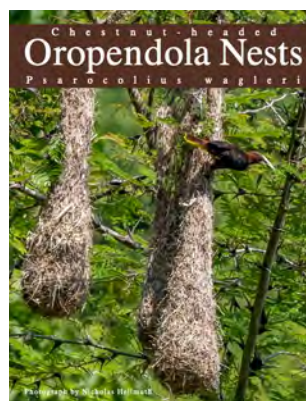
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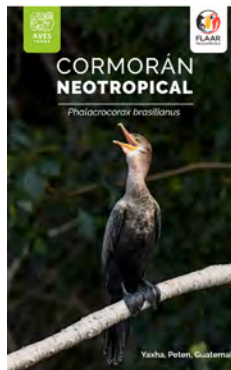
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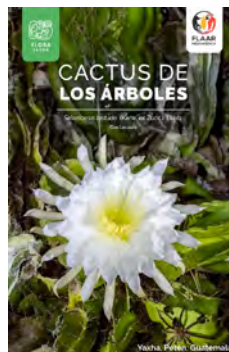
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