FLAAR
MESOAMÉRICA

HELICONIA

MAYA GOLD,MAYA BLOOD, SPLASH

Heliconia bourgaeana

Livingston, Izabal

NICHOLAS **HELLMUTH**

HELICONIA

MAYA GOLD,MAYA BLOOD, SPLASH

JULY **2020**

FLAAR MESOAMÉRICA

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.

Author
Nicholas Hellmuth

Genus Species Identification Team
Nicholas Hellmuth
Victor Mendoza
Senaida Ba

Bibliography Team
Nicholas Hellmuth
Vivian Hurtado

Editor
Vivian Díaz

Photographers
Nicholas Hellmuth
María Alejandra Gutiérrez
David Arrivillaga

Photography Aassistants
Senaida Ba Mucu
Juan Pablo Fumagalli

Manager of Design and Layout
Andrea Sánchez Díaz

Layout of this English Edition
Jaqueline González

APPRECIATION

Assistance for local Access, Municipio de Livingston
Daniel Esaú Pinto Peña, Alcalde of Livingston (Izabal, Guatemala).

Initiation of the Project of Cooperation, February and March 2020
Edwin Mármol Quiñonez, Coordinación de Cooperación de Livingston (Izabal, Guatemala)

PHOTO FROM FRONT COVER

Heliconia champneiana
Photo by: Nicholas Hellmuth,
FLAAR Mesoamerica, Jun. 18, 2018.
Finca Samoc, Cobán, Guatemala.
Camera: Nikon D810. Lens: Sigma 35 mm DG.
Settings: 1/160 sec; f/1,7; ISO 2,000.

PHOTO FROM TITLE PAGE

Heliconia champneiana
Photo by: David Arrivillaga, FLAAR Mesoamerica, March. 9, 2020. Road to Cueva del Tigre from town of Livingston, Guatemala.
Cámara: Google Pixel 3 XL.

MUNICIPALIDAD DE Livingston

LIVINGSTON
Plants

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FULL BOTANICAL NAME, **HABIT AND DESCRIPTION**

Heliconia bourgaeana Petersen is an accepted name, according to The Plant List

H. champneiana can grow between 2.0- 5.0 m. Its growth habit corresponds to musoid, that means like a banana plant. The inflorescence orientation is erect. This heliconia has a range bract of 5-13 with a distichous arrangement and can be found in yellow or red and its fruits are blue (Santos et-al, 2009). The bracts are leaf-shaped modified structures, so the colorful part you see in the heliconia, even if seems to be the flower, are actually bracts or modified leaves that contains the real flower inside.

(Berry and Kress, 1991).

Known for decades as *Heliconia champneiana* but now named *Heliconia bourgaeana.*

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, Jun. 08, 2018. Finca Samoc, Cobán, Guatemala. Camera: Nikon D810. Lens: Sigma 35 mm DG. Settings: 1/160 sec; f/1,7; ISO 2,000.

SYNONYMS FOR ***HELICONIA BOURGAEANA***

The Plant List also mentions the accepted synonyms:

> *Bihai barqueta* (Loes.) Griggs
> *Bihai bourgaeana* (Petersen) Kuntze
> *Bihai champneiana* (Griggs) Griggs
> *Heliconia barqueta* Loes.
> *Heliconia champneiana* Griggs

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

Photo by: David Arrivillaga, FLAAR Mesoamerica, March. 9, 2020. Road to Cueva del Tigre from town of Livingston, Izabal, Guatemala.
Camera: Google Pixel 3 XL.

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

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, Jun. 8, 2018. Finca Sacmoc, Cobán, Guatemala. Camera: Nikon D810. Lens: Nikon 28-300mm VR. Settings: 1/10 sec; f/1,7; ISO 4,000.

HELICONIA BOURGAEANA **IN CHIAPAS**

According to Kress (2001), *H. champneiana* is found from Southern Mexico to Nicaragua, but no detailed information on the species distribution in Mexico was provided. Santos et-al (2009) complement his data by demonstrating that the species is found in the region of Chajul, Chiapas.

H. champneiana You can see immature flowers and ruined (yellow and greenish petals) by the water that accumulates in the bracts. The bracts are actually what is commonly called a “flower”. Only if you get closer you can see the “true flowers” of the *Heliconia.*

Photo by: María Alejandra Gutierrez, FLAAR Mesoamerica, Agu. 18, 2020. Livingston, Izabal.
Camera: Google Pixel 3 XL.

USES OF ***HELICONIA BOURGAEANA***

Santos et-al (2009) suggest the use of Heliconia in the enrichment of secondary forests and forest fragments as an alternative of combining forest management with biological conservation, considering the ongoing scenario of deforestation and forest fragmentation in the Mesoamerican biodiversity hotspot.

Also, it is well known that the cultivation of Heliconia for cut-flower production, with the correct management can be eco-friendly and an economic income for the locals.

***Heliconia champneiana* Griggs,** now accepted name is *Heliconia bourgaeana* Petersen.

Photo by: David Arrivillaga, FLAAR Mesoamerica, March. 9, 2020. Road to Cueva del Tigre from town of Livingston. Camera: Nikon D5. Lens: AF-S VR Micro-Nikkor 105mm IF-ED. Settings: 1/160 sec; f/6,3; ISO 2,500.

WHEN DOES *HELICONIA* ***BOURGAEANA*** **FLOWER?**

The blooming season occurs from April to November (Santos et-al, 2009).

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

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, March. 9, 2020. Aldea Plan Grande Tatín, Livingston, Izabal. Camera: Nikon D810. Lens: Nikon AF-Micro-NIKKOR 200mm IF-ED Macro. Settings: 1/160 sec; f/13; ISO 3,200.

WHAT ARE THE PRIMARY POLLINATORS **OF *HELICONIA BOURGAEANA* FLOWER?**

Acording to Moya (2017) *H. champneiana* has the ability to self-pollinate.

***Heliconia champneiana* Griggs,** now accepted name is *Heliconia bourgaeana* Petersen.

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, March. 13, 2020. Road to Plan Grande Tatín from town of Livingston, Guatemala.
Camera: Nikon D810. Lens: Nikon AF-Micro-NIKKOR 200mm IF-ED Macro. Settings: 1/160 sec; f/13; ISO 3,200.

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

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, Jun. 8, 2018. Finca Sacmoc, Cobán, Guatemala.
Camera: Nikon D810. Lens: Nikon 28-300mm VR. Settings: 1/125 sec; f/10; ISO 4,000.

REFERENCES CITED ON *HELICONIA BOURGAEANA* **AND SUGGESTED ADDITIONAL READING**

Most helpful articles on this plant

SANTOS, Braulio A., LOMBERA, Rafael and **Julieta BENITEZ-Malvido**

2009 New records of Heliconia (Heliconiaceae) for the region of Chajul, Southern Mexico, and their potential use in biodiversity-friendly cropping systems. Revista Mexicana de Biodiversidad 80: 857- 860.

Downloadable online: www.redalyc.org/pdf/425/42515996027.pdf

ATRAN, Scott, LOIS, Mimena and **Edilberto UCAN Ek'**

2004 Plants of the Peten Itza' Maya. Museum of Anthropology, Memoirs, Number 38, University of Michigan. 248 pages.

Very helpful and nice collaboration with local Itza' Maya people. But would help in the future to have a single index that has all Latin, Spanish, and English plant names so that you can find plants more easily.

Not available as a download.

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

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

BALICK, Michael J. and **Rosita ARVIGO**

2015 Messages from the Gods: A Guide to the Useful Plants of Belize. The New York Botanical Garden, Oxford University Press.

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1991 Heliconia: an identification guide. Smithsonian Institute Press, Washington and London. 334 pages.

BENÍTEZ-Domínguez, Lizeth, GÓMEZ-Merino, Fernando C., TREJO-Téllez, Libia I. and **Alejandra ROBLEDO-Paz**

2011 Anatomía, contenidos de ácido abscísico y nutrimentos y germinación de semillas de heliconia. Rev. fitotec. mex vol.34 no.3 Chapingo.

Available online: www.scielo.org.mx/scielo.php?pid=S0187 73802011000300010&script=sci_arttext

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2005 Biodiversidad del Estado de Tabasco. CONABIO, UNAM, Mexico. 370 pages.

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1992 Heliconia: Botany and Horticulture of a New Floral Crop. Horticultural Reviews, Volumen 1. Edited by Jules Janick, pages 1-57

COOK, Suzanne
2016 The forest of the Lacandon Maya: an ethnobotanical guide. Springer. 334 pages.

Sold online: www.springer.com/la/book/9781461491101

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2000 Etnobotanica Maya: Origen y evolución de los Huertos Familiares de la Península de Yucatán, México.

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2001 Heliconiaceae. In Flora de Nicaragua, W. D. Stevens, C. Ulloa, A. Pool and O. M. Montiel (eds.). Monographs in Systematic Botany from the Missouri Botanical Garden 85. p. 1132-1139.

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1987 Fruits of warm climates. Julia F. Morton, Miami, FL.

STANDLEY, Paul C. and **Louis O. Williams**
1974 Flora of Guatemala. Fieldiana, Botany, Volume 24, Part X, Number 3.

MOYA-Rodríguez, María José
2017 Aspectos de la biología reproductiva y manejo poscosecha de la semilla sexual de Heliconia Champneiana cv Splash, para el posterior establecimiento de almácigos comerciales. Tesis para optar al grado de Licenciado en Agronomía. Universidad de Costa Rica. 82 pages.

Available online: **http://repositorio.sibdi.ucr.ac.cr:8080/jspui/bitstream/123456789/4880/1/42275.pdf**

SANTOS, Braulio A., LOMBERA, Rafael and **Julieta BENITEZ-Malvido**
2009 New records of Heliconia (Heliconiaceae) for the region of Chajul, Southern Mexico, and their potential use in biodiversity-friendly cropping systems. Revista Mexicana de Biodiversidad 80: 857- 860.

Downloadable online: **www.redalyc.org/pdf/425/42515996027.pdf**

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.

THOMPSON, Kim M.
2013 Biodiversity in Forests of the Ancient Maya Lowlands and Genetic Variation in a Dominant Tree, Manilkara zapote: Ecological and Anthropogenic implications.

Free download, but unfortunately you can't copy-and-paste anything. But the dissertation is helpful as is her subsequent field work and articles

VIEGAS-Rodrigues, Paulo Hercílio, ARRUDA, Flávia and **Victor Augusto FORTI**
2018 Slow-grown in vitro conservation of Heliconia champneiana cv. Splash under different light spectra. Scientia Agricola 75(2):163-166.

Full-text available: **www.researchgate.net/publication/322196228_Slow-grown_in_vitro_conservation_of_Heliconia_champneiana_cv_Splash_under_different_light_spectra**

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2002 Homegardens of Maya Migrants in the District of Palenque (Chiapas/Mexico): Implications for Sustainable Rural Development. In: Stepp, J.R., Wyndham, F.S., and R.K. Zarger (eds.). Ethnobiology and Biocultural Diversity. Pp: 631 – 647. University of Georgia Press; Athens, Georgia

WILDTRACKS
2005 Biodiversity Assessment of Payne's Creek National Park. Draft Final Report. Wildtracks. Belize City. 85 pages.

Downloadable on the Internet
http://library.bfreebz.org/Protected%20Areas/Wildtracks%20for%20TIDE,%20Payne's%20Creek%20National%20Park%20Biodiversity%20Assessment,%202005.pdf

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

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

However, most popular web sites are copy-and-paste (a polite way of saying that their authors do not work out in the field, or even in a botanical garden). Many of these web sites are click bait (they make money when you buy stuff in the advertisements that are all along the sides and in wide banners also). So 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://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
Kew gardens in the UK is one of several botanical gardens that I have visited (also New York Botanical Gardens and Missouri Botanical Gardens (MOBOT), in St Louis. Also, the botanical garden in Singapore and El Jardín Botánico, the open forest botanical garden in Guatemala City).

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

WEB SITES SPECIFICALLY ON *HELICONIA BOURGAEANA*

https://colombia.inaturalist.org/taxa/276780-Heliconia-champneiana
Information and distribution map

www.alamy.es/imagenes/heliconia-champneiana.html
Amazing photos

APPENDIX A

WHERE HAS *HELICONIA BOURGAEANA* BEEN STORED IN BOTANICAL HERBARIA THAT ARE LISTED ON THE NEOTROPICAL FLORA DATA BASE

serv.biokic.asu.edu/neotrop/plantae/collections/list.php

If you search for *Heliconia champneiana* you get even more:

Guatemala, Petén, Forest between Finca Yalpemech along Río San Diego and San Diego on Río Cancuen , 16.03 -90.08, 50 - 150m. Two identical samples.

Guatemala, Petén, 1 km N of Modesto Méndez. Thickets along Río Gracias a Díos , 15.9 -89.23. Note from Nicholas: not far from Izabal.

Guatemala, Flora von Guatemala, dept. alta verapaz, Cubluguitz an Waldranderu

¡!

Guatemala, Alta Verapaz, Panzos, A 2 km al S de Jolomylix, Telemán, Panzós. Sierra de las Minas. Bosque mesófilo con elementos de selva alta , 15.27 -89.73, 750m

Guatemala, Izabal, Montañas del Mico, 7-8 km W of Santo Tomás de Castilla on road to microwave tower. Tall forest on limestone, some areas with thin, black soil , 15.68 -88.68, 600 - 650m

Guatemala, Alta Verapaz, Cubilquitz, in changing forest, 350 - 350m

Guatemala, Alta Verapaz, East of Cahaban, Oxec River Valley.

***Heliconia champneiana* Griggs,** now accepted name is *Heliconia bourgaeana* Petersen.

Photo by: David Arrivillaga, FLAAR Mesoamerica, Jun. 8, 2020. Road to Cueva del Tigre, from town of Livingston, Izabal.
Camera: Nikon D5. Lens: AF-S VR Micro-Nikkor 105mm IF-ED. Settings: 1/160 sec; f/6,3; ISO 2,500.

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

Photo by: David Arrivillaga, FLAAR Mesoamerica, March. 9, 2020. Road to Cueva del Tigre from town of Livingston, Izabal.
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Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, March. 9, 2020. Cueva del Tigre, Livingston, Izabal. Camera iPhone Xs.

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Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, Mach. 9, 2020. Cueva del Tigre, Livingston, Guatemala. Camera iPhone Xs.

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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 (since FLAAR-REPORTS research on advanced wide-format digital inkjet printers is a worldwide project for over 20 years. We also utilize the inkjet prints to produce educational banners to donate to schools. On a banner we can show an entire ecosystem at a size even larger than in a coffee table art book.

Vivian Díaz 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). We then utilize our experience to also produce books on ecological rescue concepts for educational projects in local schools in remote areas of Guatemala.

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 Sánchez is a designer who helps prepare the master-plan for aspects of our publications.

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 González 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

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

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 She joined our team in August 2020. He enjoys photography, drawing, painting and design.

Elaborado por: Andrea de la Paz; Amanda Estrada Rodas. FLAAR Mesoamerica 2020

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

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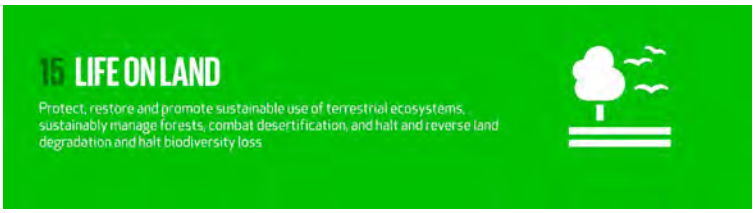
Información de referencia:
- Límites departamentales de Guatemala. (IGN)
- Instituto Geográfico Nacional (IGN) (Hojas 2463 IV y 2463 III)
- Google Map data 2020. Shapes: Sistema Guatemalteco de Áreas Protegidas 2017.
- Cuerpos de agua. Ministerio de Agricultura Ganadería y Alimentación (MAGA)
- Dirección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

Elaborado por: Andrea de la Paz; Amanda Estrada Rodas. FLAAR Mesoamerica 2020



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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www.digital-photography.org
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This report may be cited with this information:

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BACK COVER PHOTO

Heliconia champneiana
Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, March. 9, 2020. Road to Plan Grande Tatín from town of Livingston, Guatemala.

Camera: Nikon D810. Lens: Nikon AF-Micro-NIKKOR 200mm IF-ED Macro. Settings: 1/160 sec; f/13; ISO 3,200.

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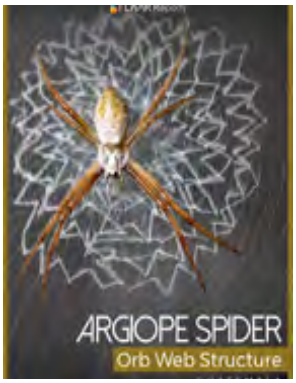

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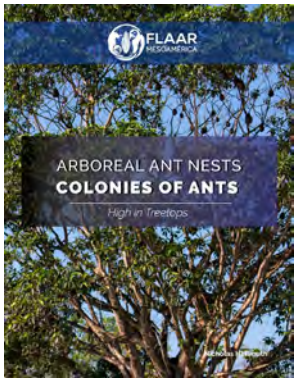

Arboreal ant nests. Colonies of ants
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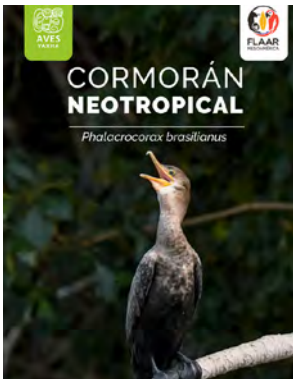

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