Healthy Honey from Happy Healthy Bees

Meliponia Honey, Available on route to Yaxha, Peten, Guatemala
Healthy Honey from Happy Healthy Bees

MAY 2021

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ASSISTANCE FOR KNOWLEDGE OF STINGLESS BEES OF PETEN & IZABAL
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PHOTO FROM FRONT COVER
Honey “boxes” from stingless bees at Don Goyo local business.
Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, May 6, 2021, Road to Parque Nacional Yaxha.
Camera: iPhone 12 Pro Max.

PHOTO FROM TITLE PAGE
Stingless bees
Photo by: David Arrivillaga, FLAAR Mesoamerica, Jul. 9, 2019, Naranjo Park.
Camera: Nikon D5. Lens: Nikon AF-S Micro NIKKOR 60mm G ED. Settings: 1/250 sec; f/6.3; ISO 4,000.
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INTRODUCTION TO STINGLESS BEES OF GUATEMALA

We are preparing more than six FLAAR reports on stingless bees of Guatemala, with most on stingless bees of Parque Nacional Yaxha, Nakum y Naranjo (PNYNN, Peten). So, the present report is a chapter in a long-range project on stingless bees of the Reserva de la Biosfera Maya of Peten, Guatemala, Central America.

Although stingless bees are in many parts of the world, most of us worry about the dedicated African Bees or bumble bees, or know Maya the Bee (animated cartoon character from Germany).

Here in Guatemala the most important bees to protect are the native stingless bees. They come in diverse sizes and colors (see the infographic drawings at the end of the report); and in multiple genera and species names. All the information on these entomological aspects you can find by going through our bibliography and then downloading suggested articles.

If you have a good local guide, and if you ask him to find local stingless bee nests, your guide can find and show you the columnar tubes that stick up out of the ground or from a fissure in a tree. So, the almost healthy sized nests or hives are underground or inside holes in trees or in rotten tree trunks (or inside ant nests or termite nests).

There are stingless bee tubes sticking out of the cracks in walls of Maya palaces at Tikal. Lots of stingless bees in various places in Parque Nacional Yaxha, Nakum y Naranjo. Easiest place to see them is to stop along the road leading to the Yaxha park; where Don Goyo raises two species and offers tasty honey.

From the highway entrance (where the dirt road begins at La Maquina to the park) Don Goyo honey garden is 7.1 km far. From the park entrance gate (or as if you were coming out the park) you can find him and his family at 3.9 km away.
Stingless bees hive

Doncellas Bees, Honey “boxes” from stingless bees at Don Goyo local business.

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, May 6, 2021, Road to Parque Nacional Yaxha.

Camera: iPhone 12 Pro Max.
Doncellas Bees, Honey “boxes” from stingless bees at Don Goyo local business.

Photo by: Nicholas Hellmuth, FLAAR Mesoamerica, May 6, 2021, Road to Parque Nacional Yaxha.
Camera: iPhone 12 Pro Max.
I know stingless bees since living at Tikal for 12 months in 1965 as a student intern for the University of Pennsylvania museum project (archaeology, architectural recording of palaces, pyramids and acropolises, and architectural photography). Their project archaeologists offered me the internship so I took a year off from Harvard to learn about the Classic Maya in Guatemala.

I then saw more stingless bees while mapping Yaxha, Nakum and doing research on Topoxte Island in the 1970’s (several months field work each year for several years). In later decades I learned from biologist Mirtha Cano in Peten and from stingless bee specialist Scott Forsythe, in Izabal. During 12 months of 2018-2019 the PNYNN asked us to assist them in doing high-resolution photography and make lists of flora and fauna within the park, so we found and photographed more stingless bees.

Now, in mid-2021, we have a 5-year project of coordination and cooperation between CONAP and FLAAR (FLAAR Mesoamerica coordinated with FLAAR, USA). The focus is on PNYNN and the areas that the CONAP team there has alliances with (so all surrounding areas). Now we will focus on stingless bees and all other interesting, curious, important insects throughout the Reserva de la Biosfera Maya -RMB (but working the first years in PNYNN and adjacent areas).

A key goal in the 5-year project is to assist local people to help them support their families. So:

- encouraging eco-tourism (to experience remarkable tropical flowers, monkeys, etc.)
- encouraging bird-tourism (to showhere, in what months, which bird species are present)
- and obviously the cultural heritage of the Mayan people of Peten.

We all tend to forget the importance of insects. But….

- stingless bees are part of eco-tourism.
- stingless bees were raised for thousands of years by the Mayan people of Peten (and Yucatan and all over Mesoamerica).
- stingless bees produce healthy honey that can be sold to visitors as well as to residents.
- And most bees are helpful pollinators: most plants need a pollinating insect or other creature to visit their flowers to pollinate this species to produce seeds for the next generation.

The CONAP co-administrator of PNYNN, Ing. Mario Vazquez, mentioned local bee keepers as one of many categories that would appreciate help. So, during our initial May visit to PNYNN we stopped twice at the house and bee area of Don Goyo, a stingless bee honey location about 3 kilometers from the entrance to the Yaxha part of the park.
Month by month, year by year, we will find and visit other native stingless honey bee households. We will study the same bees out in the wild. We will improve our annotated bibliographies. We will prepare for next year a ZOOM conference on stingless bee honey (especially for the local registered guides of Peten). We will ask bee-specialists Mirtha Cano and Scott Forsythe to answer questions from the audience.

GENUS SPECIES NAME

There are 700-page monographs on bees of the world; there are giant books on the families of bees. But in the present report we are focusing on helping you note where you can stop (as you drive towards Yaxha park) to see these bees in-person. And you can help Don Goyo and his hard-working family by buying a bottle of honey (I bought two bottles since I wanted one mixed with pollen and one of pure honey). All the other team members each bought a bottle of the honey.

The happy friendly bee is most likely Melipona beecheii (we will have a second edition with more entomological information, but we wanted to get the basics out first).

The productive black stingless bees are of different attitude; they like to aim for your head and burrow into your hair. I am very used to this. These may be Cephalotrigona zexmeniae or a relative.

LOCAL NAMES FOR STINGLESS BEES

Local name for Melipona beecheii is doncella. Local name for the slightly larger black stingless bees, Cephalotrigona zexmeniae, is tamagás (a word also used for a local snake).

MAYAN NAMES FOR STINGLESS BEES

In the Madrid Codex you see lots of images of Mayan stingless bees. Linguists could find lots of different names, but Xunan ka is the Mayan name you see the most. In a Mayan community with lots of experience with stingless bees for generations you can expect to have a long list of local Mayan names (keeping in mind there are over 22 Mayan languages in Guatemala alone; plus, the Xinca language). On the Caribbean coast of Izabal there is the Garifuna language since after the Spanish conquest.
Stingless bees, All bees in all beekeeper yards are in boxes or hollow logs or ceramic containers. So if you see a stingless bee entrance/exit tunnel sticking out of a tree or out of the ground, this is out in the wild (and can’t be harvested because you don’t want to chop down an entire tree just to get inside). We will have lots of upcoming FLAAR reports on stingless bees out in the wild (on Topoxte Island, Naranjo, road from Nakum to Yaxha, and Yaxha area of PNYNN). Photo by: David Arrivillaga, FLAAR Mesoamerica, May. 4, 2019, Naranjo Park. Camera: Nikon D5. Lens: Nikon AF-S Micro NIKKOR 60mm G ED. Settings: 1/160 sec; f/4.5; ISO 3,200.
IS THERE POTENTIAL MEDICINAL USAGE OF STINGLESS BEES HONEY AND POLLEN BY LOCAL PEOPLE

Yes, lots of products of what the bees produce are medicinal (so more than just the honey). Naturally, since this is a local honey (not manufactured) there is no paperwork, and so technically we can’t state what is medicinal and what is not. But I eat honey every day and now I am eating honey + pollen (in reasonable amounts; not excessive). Just passed a medical exam in St Louis (during May 2021) and so obviously honey helps my health.
The purple bottle cap honey has pollen. The green and the red one are pure tamagás honey.
This peculiar glass bottle is called an "octavo" (125 ml) of honey with ginger.
Miel con a té de piña
Dos octavos de miel
Q750

Miel de la bella
da Puesto

Miel de
gengibre
Q700
Miel con polen
Q 700

Tamagases
Q 225
CONCLUDING DISCUSSION AND SUMMARY ON STINGLESS BEES

The local guides on the tour buses know where Don Goyo’s honey and beekeeping house is located (right along the road to the Yaxha park entrance, about 3.9 kilometers from the entrance gate or 7.1 kilometers from the main highway entrance).

If you are driving yourself, the photos here should help you find this house; the bees are on both sides. Obviously don’t walk around unless Don Goyo or his children are with you.
Go to the Mundo Maya airport in Santa Elena and then you will find a service of tourist vehicles to go to the archaeological site. If you want to go by car from Guatemala City, take the following route: Río Dulce - Poptún-Flores. At the junction further on you will find on the left the route to Tikal. Go straight on to the right towards Yaxha (towards Melchor de Mencos). In km. 521 at the village La Máquina, turn left to the site. Ecolodge El Sombrero is 50 meters before the entrance to National Park Yaxha - Nakum - Naranjo.

Here is a map of you getting the last 11 kilometers to Yaxha from the main highway. I have hiked it, but best with a car-and-driver. There is no public bus service (but you can hire the Ecolodge El Sombrero hotel vehicle to come get you).

To get to the Nakum portion you go north from Yaxha.

To get to the Topoxte Island portion you hire a lancha and boatman (lanchero) from the Visitor's Center or from the nearby hotel.

To get to the Naranjo portion of PNYNN you go to Modesto Mendez and, with a local guide, traverse the hour+ drive to Naranjo. In the wet season ONLY with a high-axel 4WD. A SUV will not reach either Nakum or Naranjo if it's been raining a lot. Pumped up 4WD are not allowed since their tires cause the ruts to be much deeper.

Naranjo is very different from Yaxha and Naranjo and worth the effort.

Nakum is different than Yaxha and Naranjo and worth the drive from Yaxha.

Topoxte Island and adjacent Rio Ixtinto are worth walking through the island and then taking a boat ride up the river to see and photograph all the flowering vines, trees, and wetland plants. If you are lucky you will see the Boat-billed Heron, the deity logo bird of the thousand-year-pre-Maya Olmecs and of the Teotihuacan occupants of Guatemala's Costa Sur area in the 4th-5th centuries AD.
MUCH MORE TO COME ON STINGLESS BEES

While hiking down the Blom Causeway with Teco (Moises Daniel Perez Diaz) park ranger (and guide) to Maler’s Group, along the east edge of the sacbe, we noticed a colony of arboreal ant nests with bee hives inside about 80% of them.

When we returned in May 2021 not one single hive remained; we don’t know whether they blew down or were accidently cleared when cleaning vegetation at edge of the sacbe.

Teco (in 2019) also found another colony to the east of the IDAEH offices (near the dry cenote). In May 2021 only one ant nest remained (the others had probably been blown down during heavy wind storms perhaps during the two hurricanes earlier this year).

So, the photos taken by FLAAR Mesoamerica team at Yaxha in 2019 are among the largest reference archive in Guatemala for the phenomenon of stingless bee nests in active ant nests. We are preparing a report on these (also to include a stingless bee entrance tunnel sticking out from an abandoned termite nest on a trail from Nakum deeper into the remote rain forest there).

If you buy several bottles of this tasty healthy honey, the family will offer you a tour of the bee nests. They will open the lids of the boxes so you can see the hard-working stingless honey bees at work. If you have a good mobile phone camera you can get good photos to send your social media networks. iPhone 11pro and 12pro produce outstanding photos from several feet or a yard away. Google Pixel 3, 3XL and 4XL produce excellent close-up photos so you can see the individual bees.

Photo by: Roxana Leal, FLAAR Mesoamerica, May, 6, 2021. Road to Parque Nacional Yaxha.
Camera: Google Pixel 4A.
Tamagas bees, photographed by Boris Llamas, a student from Universidad del Valle de Guatemala from Biology bachelor’s degree, who also works with FLAAR Mesoamerica on research and field trips relating to flora and fauna of Guatemala.

Camera: Nikon D810. Lens: Nikon AF-S NIKKOR 28-300mm ED VR. Settings: 1/100 sec; f/7.1; ISO 2,000.
Tamagas bees, photographed by Boris Llamas, a student from Universidad del Valle de Guatemala from Biology bachelor’s degree, who also works with FLAAR Mesoamerica on research and field trips relating to flora and fauna of Guatemala.

Camera: Nikon D810. Lens: Nikon AF-S NIKKOR 28-300mm ED VR. Settings: 1/100 sec; f/7.1; ISO 2,000.
Do you give the honey a name, a brand or a label?

The name of the bees. For example, this her name is “doncella” (maiden, literally translated in English). The other honey is from tamagás.

What is tamagás?

They (another kind of bee) are the black ones. They are different bees, this are bigger. The only thing is that the “doncellas” do not attack you, but the tamagás does.

The native bee, which gives white honey, does not bother you. There are quite a few species of bees here.

Do you have more ingredients?

Yes this one, if you already have, you have three classes of another so that it works very well.

But three kinds of the same honey?

No, two kinds of honey plus a separate ingredient.

And this is how you buy the dose or are they smaller?

No, this is because it, is the complete treatment (Q.150.00)

And does it ever expire?

Does it have an expiration date?

It does not have, never because this does not have a gram of water, at once it comes out of the box (each hive is called a box). It can be 4 years, 5 years as you see it. Now as another honey is available, it is harvested.

When someone wants to buy directly from you, does he come here (to your house 3 kilometers or so away from the PNYNN National Park) or can he place an order at some point?

No, they come directly. Just like in the park, there are quite a few park rangers who work in the park and a few guides that know that our family and the honey is here. Here I prepare honey, I prepare a lot and I use it as medicine.

This is doncella’s honey, but this is already prepared with medicine, especially when the person gets a lot of pimples or mud or stain or the person has stained their face. This honey as medicine in these cases is no longer eaten, only a cotton ball is used and made as an ointment.
The Tamagás honey I already prepare it for its very strong vitamins, more than pure honey, this can be drunk by anyone, if the person feels tired or bored or has any body pain then they have to use a teaspoon in the morning and one in the afternoon and he doesn’t feel any pain. It is the same honey but it already has pollen. The child or anyone who exercises a lot that drinks a teaspoon before exercise, he can go on the road as much as he wants.

Now this is honey with peppermint, if the person needs to drink honey with pepper tea then it already has pepper.

Now this honey, this is from tamagás, this is also prepared, especially for that virus that is now, that epidemic, this eighth liter is already prepared as medicine. It has 125ml of honey (“un octavo” is the popular way of referring to eighth of a liter which is equivalent to 125ml), it has ginger, also I use one eighth of a liter (125ml) of “waro” (liqueur), plus “un octavo” of lemon juice and save it.

The person who gets a fatigue or a cough or a headache immediately drinks a teaspoon. That is well proven because I treated a person that had that coronavirus, I didn’t even finish it (the treatment), and he got halfway through it, very good.

Now this honey, doncella honey removes the cataract on the eyes and also the person who had an operation, where the operation is, they put a little bit (of honey) in the afternoon or at the middle of the day, so they apply it where the operation is (the scar) and they feel no pain. If the person is broken (a broken bone), it sets like plaster, but it needs another ingredient. Look, that seals the bone no matter what. I have cured several.

The bees have helped me so I have tried to search, I go far to see where I can find them, so I already bring them in boxes, I give them three days in the field and I am going to bring them and I put them away.

Are those the different products that you take out of those bee hive boxes?

Yes

In those boxes for the bee hives, don Goyo, what is the process to extract the honey?

I lowered the boxes; it depends on what one needs. If you need pollen, you don’t touch where the honey is, only where the pollen is.

And all those divisions are inside the box?

Yes, inside the box we will see it right now.
APPENDIX B

Needed are Infographic Posters on Stingless Bees

It would help to have an illustrator visit the apiary of Don Goyo and do line drawings of each species; in correct size relationship.

Then do line drawings of every other species of Parque Nacional Yaxha, Nakum and Naranjo.

Then find drawings of comparable bees of Chiapas, Tabasco, and the Yucatan Peninsula (Yucatan, Campeche and Quintana Roo), then Belize, western Honduras and western El Salvador (all are the home of Mayan people for thousands of years).

Then an infografia of the most common stingless bees to compare and contrast them with the size of honey bees, African bee.

Then an infographic poster to show all the other insects that mimic bees (size, shape, and manner of flying or otherwise pretending to be bees).

Since it will take a while to find a good insect illustrator who is available to work with the Don Goyo family for several days to do the drawings, we found an excellent start on the Internet: we cite it’s authors, illustrators, etc. so you know where it can be seen in original quality.

Guía de Campo ASA más comunes
Eduardo Herrera, Ingrid Aguilar and Mario Gallardo with drawings by Claudia Aragon

One source is https://www.scribd.com/document/453289943/Guia-de-Campo-ASA-mas-comunes (though the drawing is an instant download by itself simply from Google)
GUÍA DE CAMPO DE LAS ABEJAS MÁS COMUNES EN COSTA RICA

Elaborado por: Eduardo Herrera, Ingrid Aguilar y Mario Gallardo

**Melipona beecheii**  
(Jicote gato, jicote estrella)  
Tamaño entre 8-10 mm, en el tórax debajo de la inserción de las alas un mechón de color anaranjado, bandas amarillas muy fuertes en el abdomen.

**Melipona costaricensis**  
(Jicote barcino-ocutar)  
Tamaño entre 8-10 mm, cabeza oscura sin dibujos, en el tórax debajo de la inserción de las alas un mechón de color negro.

**Cephalotrigona zexmeniae**  
(Tamaga)  
Tamaño 8.5 mm, cabeza y tórax negro, abdomen amarillo, clípeo elevado entre las antenas con puntuación fuerte.

**Scaptotrigona pectoralis**  
(soncuano)  
Tamaño 5 mm, tórax negro, mancha negra alrededor de los ocelos.

**Scaptotrigona subobscuripennis**  
(Picusaro)  
Tamaño 5 mm, cabeza y tórax negro, coloración clara abajo de la base de las antenas.

**Trigona fulviventris**  
(Culo de buey, culo de señora)  
Tamaño 6 mm, cabeza y tórax negro, abdomen amarillo, con keirotrichia, mandíbula con dientes.

**Tetragonula ziegleri**  
(Mariola, miel de leche o baba de buey)  
Tamaño 6 mm, mitad de su cara amarilla, apariencia a mariola pero más grande.

**Nannotrigona perilampoides**  
(Chicopipe)  
Tamaño 4-5 mm, con 4 puntos amarillos en su tórax.

**Tetragonisca angustula**  
(Mariola- Mariseca)  
Tamaño 4-5 mm con dibujos en cara y tórax, abdomen delgado, presencia de keirotrichia.

Dibujos por: Claudia Aragón.
APPENDIX C

Reserva de la Biosfera Maya (RBM), Peten, Guatemala, Central America

The Maya Biosphere Reserve is about 4.3 million acres (1.7 million hectares) so we have a lot of field work and lots of healthy hiking into the rain forests in the coming five years of the current new project of coordination and cooperation between CONAP and FLAAR (FLAAR Mesoamerica).

The Reserva de la Biosfera Maya (RBM) is a great place to learn about happy stingless bees whose honey is that good for your health. We also like to study beetles of amazing diversity of size, shape, structure, and colors. And I must admit I like to do macro photography of the engineering of hornet nests (wasp nests).
LIST OF SUGGESTED READING ON STINGLESS BEES

We are preparing a complete bibliography, so these are just a sample (from the larger bibliography prepared by Vivian Hurtado):

AYALA, R., GONZÁLEZ, V. H. and M. S. ENGEL

Available online: https://link.springer.com/chapter/10.1007/978-1-4614-4960-7_9#citeas

DARDÓN, María José MALDONADO, C. and E. ENRÍQUEZ


ENRÍQUEZ Cottón, María Eunice and María José DARDÓN Peralta
2007 Caracterización de la Miel de Meliponinos de Distintas Regiones Biogeográficas de Guatemala


GUTIÉRREZ, M. G., ENRÍQUEZ, E., LUSCO, L., RODRÍGUEZ, A., PERSANO, O. and P. VIT

HEARD, T. A.

Available online: https://www.annualreviews.org/doi/full/10.1146/annurev.ento.44.1.183

JONES, R.

Available online: https://link.springer.com/chapter/10.1007/978-1-4614-4960-7_14#citeas

MALDONADO, C. M., DARDÓN, M. J., VÁSQUEZ, M. A., ENRÍQUEZ, M. E. and B. ESCOBAR
2011 Determinación de vitaminas en miel de Melipona beecheii. Universidad de San Carlos de Guatemala Dirección General de Investigación INFORME FINAL 2011 Co-financiado por la DIGI. VAIL, Gabrielle

SAMPLE OF WEB PAGES SPECIFICALLY ON DONCELLA STINGLESS BEES

www.ecosur.mx/mieles/miel-de-melipona/
ECOSUR is one of the best research institutes in southern Mexico.

https://reservanativa.com/es/sabias-que/abeja-melipona
80% of the helpful web pages on stingless bee honey of Mesoamerica are from the Yucatan Peninsula and adjacent Chiapas (so not many web pages for stingless bees of Guatemala).

Video specifically on Stingless Bees, mostly Doncella kind

Perfect color, steady camera; short and sweet.

https://elperiodico.com.gt/noticias/domingo/2020/02/23/las-abejas-de-los-tropicos/
21 seconds showing the tunnel-like entrance to the nest.

www.youtube.com/watch?v=IpovKD5gh4Y
22 minutes, a good educational video (for Colombia, South America, but basically same semi-wild stingless bees as Mesoamerica).

www.youtube.com/watch?v=3TLkk1A8cvo
A 19 minute course on stingless bees (by same entity as the one above).

Note: since the present edition is a work-in-progress this bibliography also is a work-in-progress.
I thank Gabriella Moretti, owner of Ecolodge El Sombrero, for providing hotel room and meals while we have been doing field work at Parque Nacional Yaxha Nakum Naranjo. We also appreciate the hospitality of her sons Sebastian de la Hoz and Juan Carlo de la Hoz. Every workday is exhausting because we are carrying and then using very heavy cameras, super-telephoto lenses, sturdy tripods, large gimbals or ball tripod heads. Thus it is crucial for my health to be able to rest and totally recuperate every night in order to be ready for the following day of botanical and zoological adventures in Parque Nacional Yaxha Nakum Naranjo.

Equally crucial is having a place to charge the batteries of the computers, or all the cameras, and of the cell phones. Solar power is great, but it lasts only an hour, or less, if you plug in multiple computers and cameras and flash batteries to charge. So a place with enough electricity to charge the entire mass of essential field work equipment is essential and thus very much appreciated.

Contact Info: +502 5460 2934, VentasElSombrero@gmail.com or WhatsApp.
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All national parks, nature reserves, and comparable are welcome to have and use our reports at no cost.

USAC, UVG, URL, and other Guatemalan universities and high schools, and schools, are welcome to post our reports, at no cost.

TO PUBLISH PHOTOGRAPHS

Hellmuth’s photographs have been published by National Geographic, by Hasselblad Magazine, and used as front covers on books on Mayan topics around the world. His photos of cacao (cocoa) are in books on chocolate of the Maya and Aztec both by Dr Michael Coe (all three of editions) and another book on chocolate by Japanese specialist in Mayan languages and culture, Dr Yasugi. We naturally appreciate a contribution to help cover the costs our office expenses for all the cataloging, processing, and organization of the photos and the field trip data.

FOR YOUR SOCIAL MEDIA

You can post any of the FLAAR Mesoamerica PDFs about the Municipio of Livingston on your Social Media sites; you can send any of these PDFs to your friends and colleagues and family: no cost, no permission needed.

We hope to attract the attention of professors, botanical garden clubs, orchid and bromeliad societies, students, tourists, experts, explorers, photographers and nature lovers who want to get closer, to marvel at the species of flowering plants, mushrooms and lichen that FLAAR Mesoamerica finds during each field trip each month.

PHOTO FROM BACK COVER

In a beekeeper’s yard, each box has a hole drilled in it so the bees can make their entrance/exit tunnel. In this photo in Don Goyo’s yard next to his house you can see the Melipona, doncel-la bees busy at work on the tube-like exit/entrance tunnel.


Camera: iPhone 12 Pro Max.
Doncellas Bees, Honey “boxes” from stingless bees at Don Goyo local business.

Photo by: Roxana Leal, FLAAR Mesoamerica, May 4, 2021, Road to Parque Nacional Yaxha.

Camera: Google Pixel 4A.
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