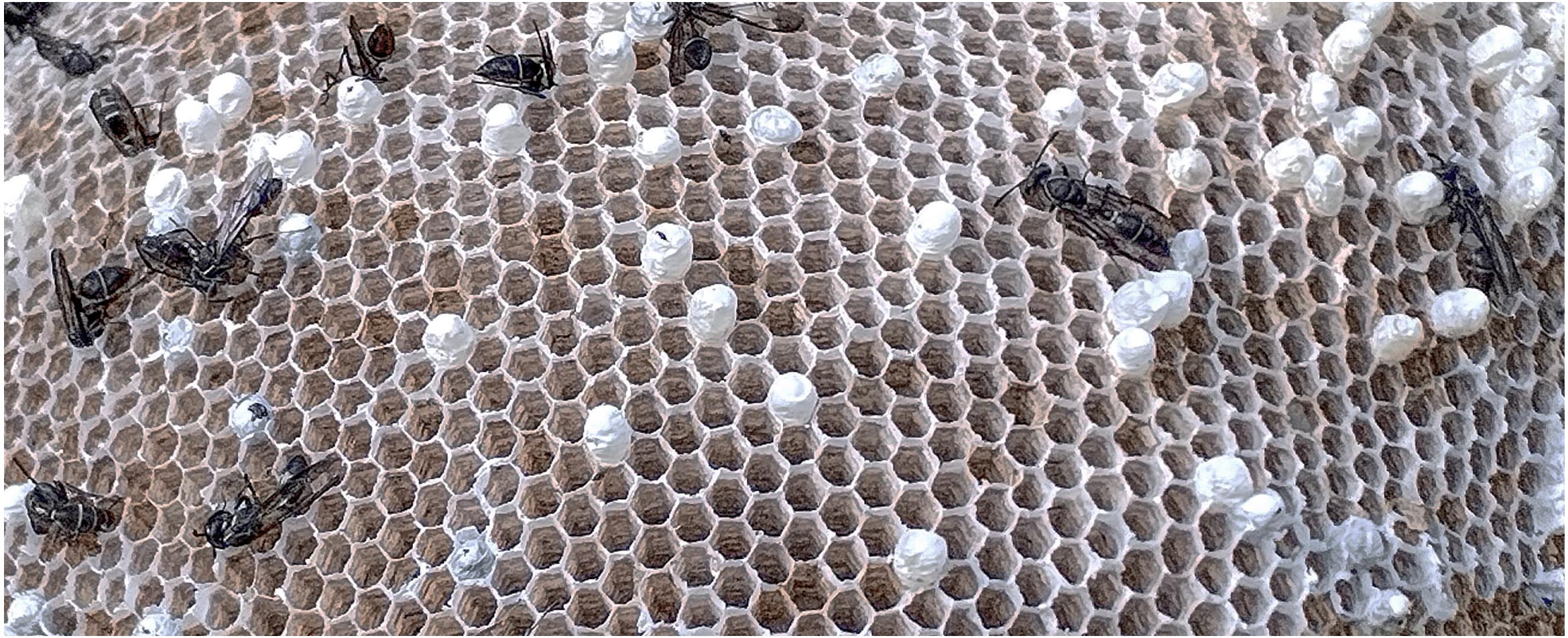
Honey Wasp Nests,

Polybia plebeja and another Species not yet Identified



Finca 3 Valles, Municipio de Senahu, Alta Verapaz, Guatemala, March 7, 2025

Photographs by Byron Pacay and Franklin Xol

FLAAR Reports, FLAAR (USA) and FLAAR Mesoamerica (Guatemala), June 2025

Introduction to the Honey Wasp Nests of two different Species, Finca 3 Valles area, Municipio de Senahu, Alta Verapaz

The first honey wasp nest seems to be glued to a dead leaf or part of the peeled off outside of the trunk of a palm or banana tree, instead of hanging down from a twig or vine or other plant part.

The honeycomb cells of this wasp nest also seem to have possible eggs in them—but that is an estimate, since I have never before seen web pages or articles that show what the eggs of a Guatemalan wasp look like inside a honeycomb. I estimate this nest is of *Polybia plebeja*.

This nest was photographed by Franklin Xol and also by Byron Pacay, on the late morning of March 7, 2025, in Finca Tres Valles, Alta Verapaz, Guatemala. Finca Tres Valles is in the Municipio de Senahu, about 27 kilometers from the town of Senahu. Senaida Ba Mucu assisted with field trip organization and guides, since she has lived in this area for two decades.

One additional wasp nest was found and photographed an hour later. This second nest we have not yet identified the species.

This field trip was from March 3rd to March 7th, in the mountainous Senahu area of Alta Verapaz. Enough honey wasp nests were found to produce several FLAAR Reports.

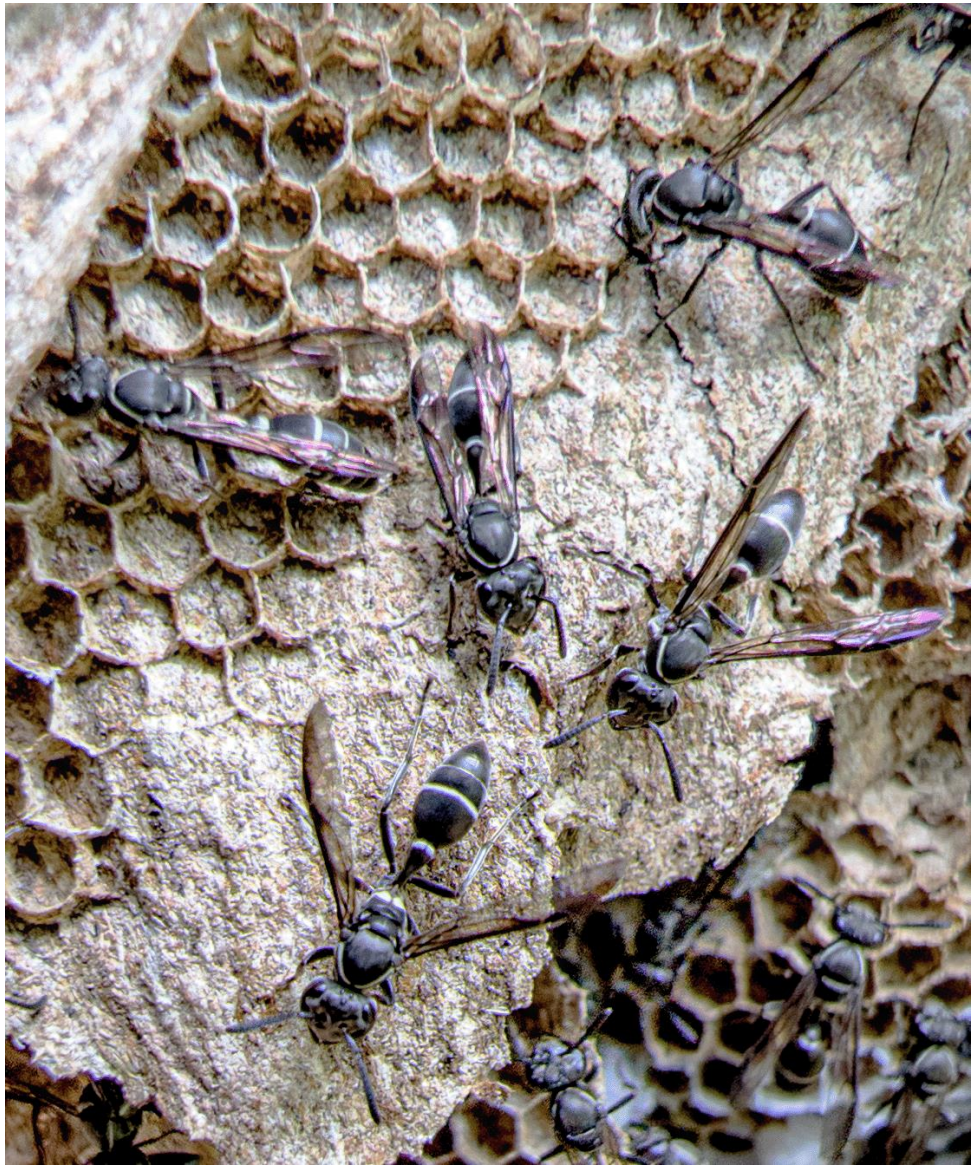


Fig. 1.

As usual, wasps are all over the outside of the nest.

All these wasps on the outside have their wings raised up diagonally.

11:18am, photo by Franklin Xol, March 7, 2025.

Fig. 2.

Finca Tres Valles, Alta Verapaz.

The wasps this morning have three rows of yellow color around their black abdomen.

This nice photo by Franklin Xol even shows the details of the wings.

11:18am.

The wasp on the next page was photographed at 12:45 and would help to have a wasp entomologist conclude whether or not this is a different species.

Fig. 3.

12:45pm, Finca Tres Valles

The wasp on the previous page was from the nest photographed at 11:18am. The wasp shown on the present page was photographed on another nest at 12:45pm. Both nests are in the area of Finca Tres Valles, Municipio de Senahu, Departamento de Alta Verapaz, Guatemala.

This angle of view allows you to see that this other wasp species has four thin bands of yellow color around its abdomen.

JPG photo by Franklin Xol processed in RAW mode by Nicholas Hellmuth.

Fig. 4.

Now we return to the wasp nest found at 11:18am.

The wasps here have one yellow band of medium width and one yellow band that is so narrow that often you don't notice it (unless you know it should be there for this species).

There is also a yellow band at the start of the abdomen. So I estimate this is *Polybia plebeja.*

Photo by Franklin Xol.

Fig. 5.

This photo helps you notice that the honey-combs in this nest are vertical—not horizontal. And, these honeycomb layers wander down the sides and even seem to turn down around towards the bottom of the nest.

11:17am, photo by Byron Pacay.

Fig. 6, a and b.

11:19am, March 7, 2025, photo by Franklin Xol.

The out-side of the nest is a slightly different color than the inside.

11:17am

Photo by Byron Pacay.

Fig. 7, a and b.

No long stinger visible on the wasp of the lower middle.

These wasps have two rings of yellow around their abdomen. One possibility is that these are *Polybia plebeja*.

But the other wasps, photographed an hour later, have four yellow rings around their abdomen, so are probably a different species.

11:20am.

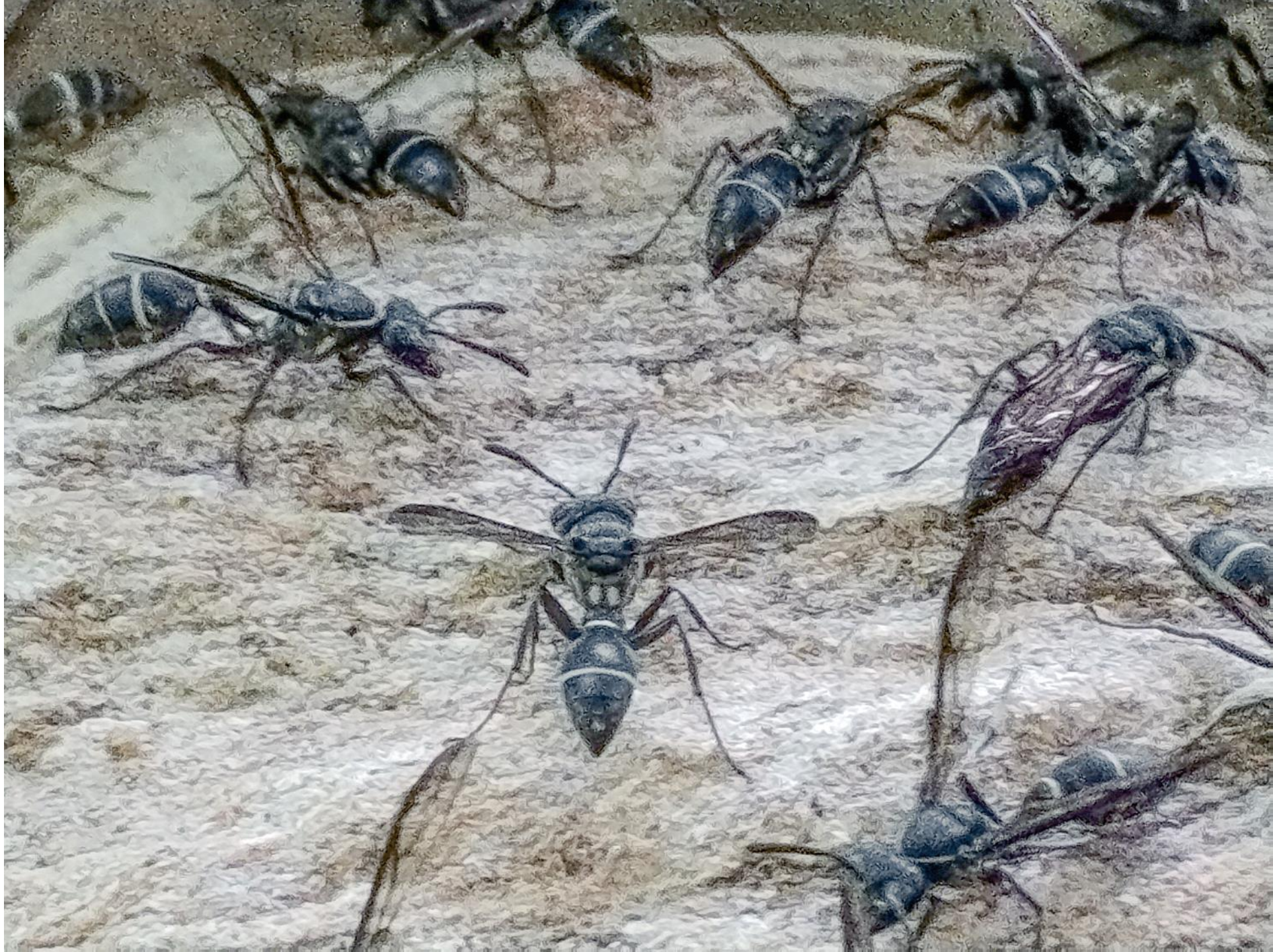


Fig. 8.

Again, no long stinger visible.

This wasp nest seems to be attached to this giant dead leaf of the plant part that peels off the trunk of banana trees and some palms. So this nest is not hanging from a twig. Most *Polybia plebeja* wasp nests hang from twigs or vines or stems.

11:20am, March 7, 2025, photo by Franklin Xol, FLAAR Mesoamerica.

Fig. 9.

Fig. 10.

LOTS of wasps on each layer of the honeycombs. How in the world can all these wasps keep track of where they are supposed to be, and what they are supposed to be doing.

And how do they keep from fighting each other as they bump into each other or are about to be crawling over each other.

11:22am, Finca Tres Valles.

Fig. 11.

This nest is very low (unless the person in blue shirt is holding the part of the tree trunk that has peeled off that the nest is attached to).

11:23am, photo by Franklin Xol.

Now on the following pages we show the photos of this same wasp nest by Byron Pacay.

Fig. 12.

Finca 3 Valles, Alta Verapaz, March 7, 2025.

On a later page we again document that these wasps are *Polybia plebeja*.

On some wasps (depending on the angle of view and the angle of light on the abdomen), you can see only the yellow band around the middle of the abdomen.

But in other angles of view you can also notice the thinner band of yellow that is not so bright.

Fig. 13.

Good example of the hexagons wandering around and not all the same size or shape in many locations.

11:19am, photo by Franklin Xol, processed in RAW mode by Nicholas Hellmuth.

Fig. 15.

Wasps all over the place, but most honey wasps do not attack.

11:24am, photo by Byron Pacay, FLAAR Mesoamerica.

Fig. 16.

Wasp Nest Photographed at 12:34pm

The local guide has removed the bottom.

Notice that although the honey combs at the bottom are curving, the large honey comb at the top is curving vertical! So the common comment “that wasp nest honeycombs are horizontal” can now be corrected based on photography from field trips of FLAAR Mesoamerica.

This is a different wasp nest, photographed an hour later than the one on the previous pages.

12:34pm.

Fig. 17.

Most wasp nests are maintained only for one year. Then the queen moves elsewhere and when she is ready, she moves to a new nearby location to found a new nest. So these nests are not permanent whatsoever.

The local Maya people eat the honey, the larvae, and often the nest.

As you can see here, not one single wasp is attacking the guide. In fact none are even leaving the nest.

Most (but not all) wasps that make edible honey are the same. As long as you are gentle, they do not attack you at all. Obviously there are exceptions, so always be careful.

Photo by Byron Pacay, 12:33pm, March 7, 2025.

Fig. 18.

These are the “horizontal” honey combs, that are indeed stacked on top of each other. But they are not completely flat, they are rounded.

And, at the left you can see that not all the cells here are identical size. All are hexagons but some are slightly “crushed” by both adjacent sides.

12:34pm

Fig. 19.

This meandering honey comb is definitely not horizontal.

12:34pm, photo by Byron Pacay.

Fig. 20, a and b.

A lot of these wasps have their heads down inside the cell.

Photo by Franklin Xol, 12:38pm.

Fig. 21.

This honey comb is definitely neither flat nor horizontal.

The bottom of the cells on the middle and right half have an interesting pattern at their bottom. In order to see down inside the cells, unless you have portable lighting, you need either a RAW file or use RAW option on a JPG. Then, with a single click, you can see down inside.

Photo by Franklin Xol, 12:38pm.

Fig. 22.

Gorgeous design and engineering of this “curving” honeycomb.

Some wasps seem to have their heads down inside a cell.

The cells around the outside have no white material nor white-wrapped larvae sticking out.

12:40pm.

Photo by Franklin Xol.

Fig. 23.

This honey comb is “flat and horizontal” only in it’s middle. The rest of this honeycomb heads straight down the steep side.

The more wasp nests that the helpful local people show us the insides of, the more different designs we find inside—so the common statement, that wasp honey combs are horizontal, can now be updated. They are usually stacked but not always (if one honeycomb is wandering…).

Photograph by Franklin Xol, 12:37pm.

Fig. 24.

Fig. 25.

At the left, lots of cells seem to have larvae emerging or ready to emerge as wasps.

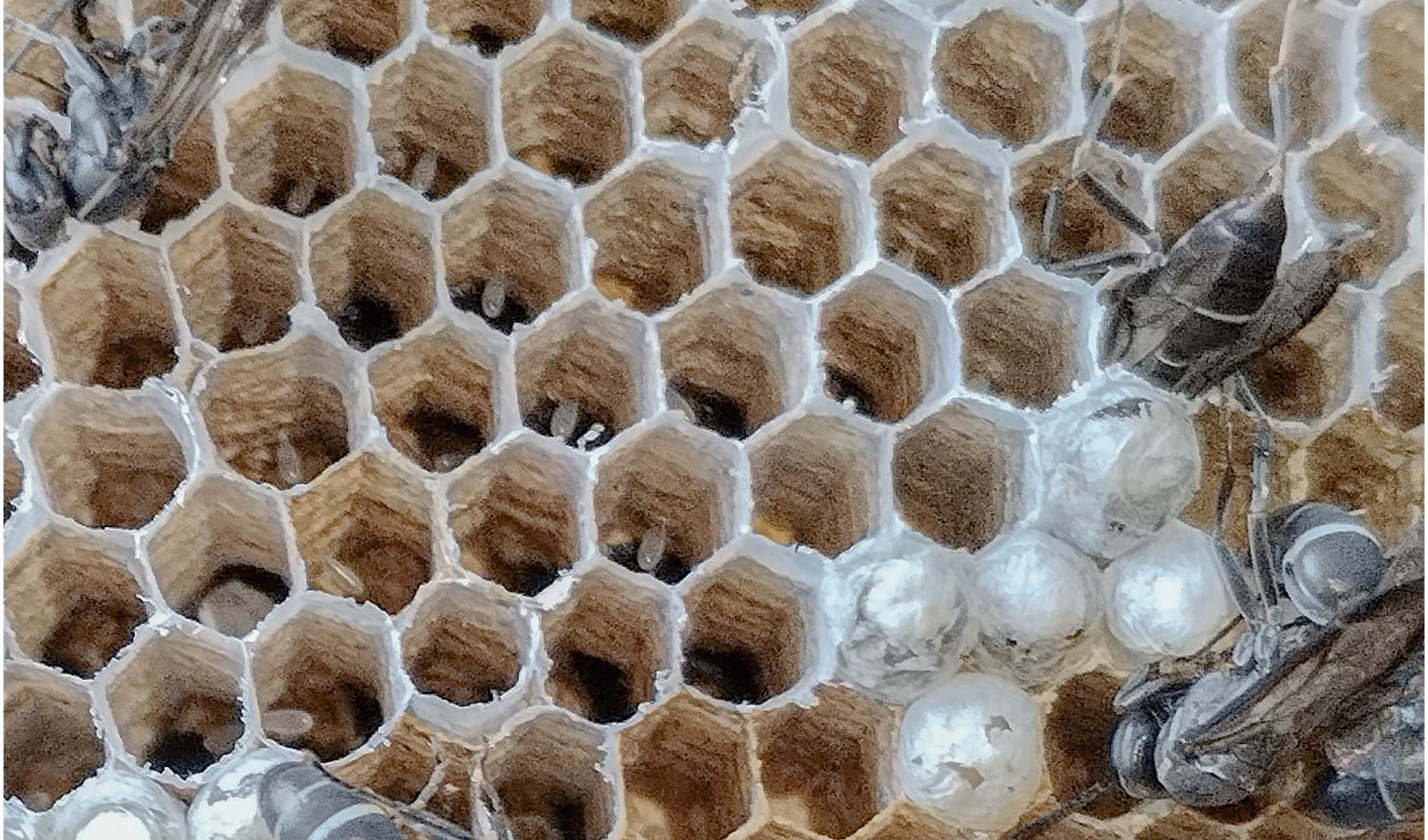
Lots of cells across the lower portion have spheres of honey in them.

In the following page I show closer view of what may be eggs inside some of these cells.

12:38pm,

Photo by Franklin Xol.

Fig. 26.



Lots of the cells across the upper layer, and a few in the middle and right, have a long oval shape sticking out horizontally.

Are these the wasp eggs?

It is not easy to find any photo like this on-line that shows eggs of *Polybia plebeja*, so I am only estimating what these shapes may be.

In the lower middle these shapes have grown much larger.

Fig. 26.

12:38pm

Photo by
Franklin Xol.

All his photos were taken in JPG mode but Hellmuth found that there is a way to process them in RAW mode if you click on the correct side of the software it offers you can option to Open in Raw.

Fig. 29.

Fig. 30. One bubble of honey is visible, that I also call a sphere of honey. Others can also be seen. Photo by Franklin Xol, 12:43pm.

Fig. 31. Lots of bubbles of honey, and these are seemingly “transparent” and not honey-gold color??

Photo by Franklin Xol.

Closer view.

You can “see through” each sphere? Are these water and not honey? Or is this the color of honey of this wasp species?

Fig. 32.

Photo by Franklin Xol.

Fig. 33.

Fig. 34

Photo by Byron Pacay. At least one “honey bubble” may be reflecting light. You can see more in closer view on the following page.

In this closer view, processed by Nicholas Hellmuth, you can now see several spheres of “honey” bubbles in the top row, one in the next now, a possible one outside (above) the next row, and three below the left end of the bottom row.

Fig. 35.

Norma Cho found a similar-looking wasp as *Euodynerus leucomelas*, but that species is not in Biodiversidad de Guatemala Portal.

Only *Euodynerus crypticus* is listed for Guatemala (Carpenter et al. Appendix 1). And that species has a totally different arrangement of yellow bands on its thorax and abdomen.

So best to wait until a helpful wasp entomologist can identify the wasps of the two different nests photographed by FLAAR Mesoamerica on March 7, 2025. At least we have a nice set of photos that show details not available elsewhere for these Guatemalan wasps.

CARPENTER, James Michael, GARCETE Battett, Bolivar Rafael and Joseph Aledander FREIRE

2012 Las Vespidae (Hymenoptera: Vespoidea) de Guatemala. Chapter, pages 269-279 in Biodiversidad de Guatemala, Volumen 2, Universidad del Valle de Guatemala.

Available as helpful download from ResearchGate and elsewhere.

Fig. 36. Photo by Franklin Xol.

Aknowledgements

The itinerary of this field trip was organized by Senaida Ba and her husband Franklin Xol, since they both live in Senahu. Franklin is a Tuk Tuk driver when not working for FLAAR Mesoamerica, so for this field trip the team rented a Tuk Tuk and Franklin drove them. Byron Pacay assists on all field trips plus he is a good photographer with our Google Pixel 8 Pro. Byron also prepares the highway maps to show where and at what hour we stopped to photograph each wasp nest.

We sincerely appreciate the assistance of the Q'eqchi' Maya guides that told us which areas had wasp nests with edible honey.

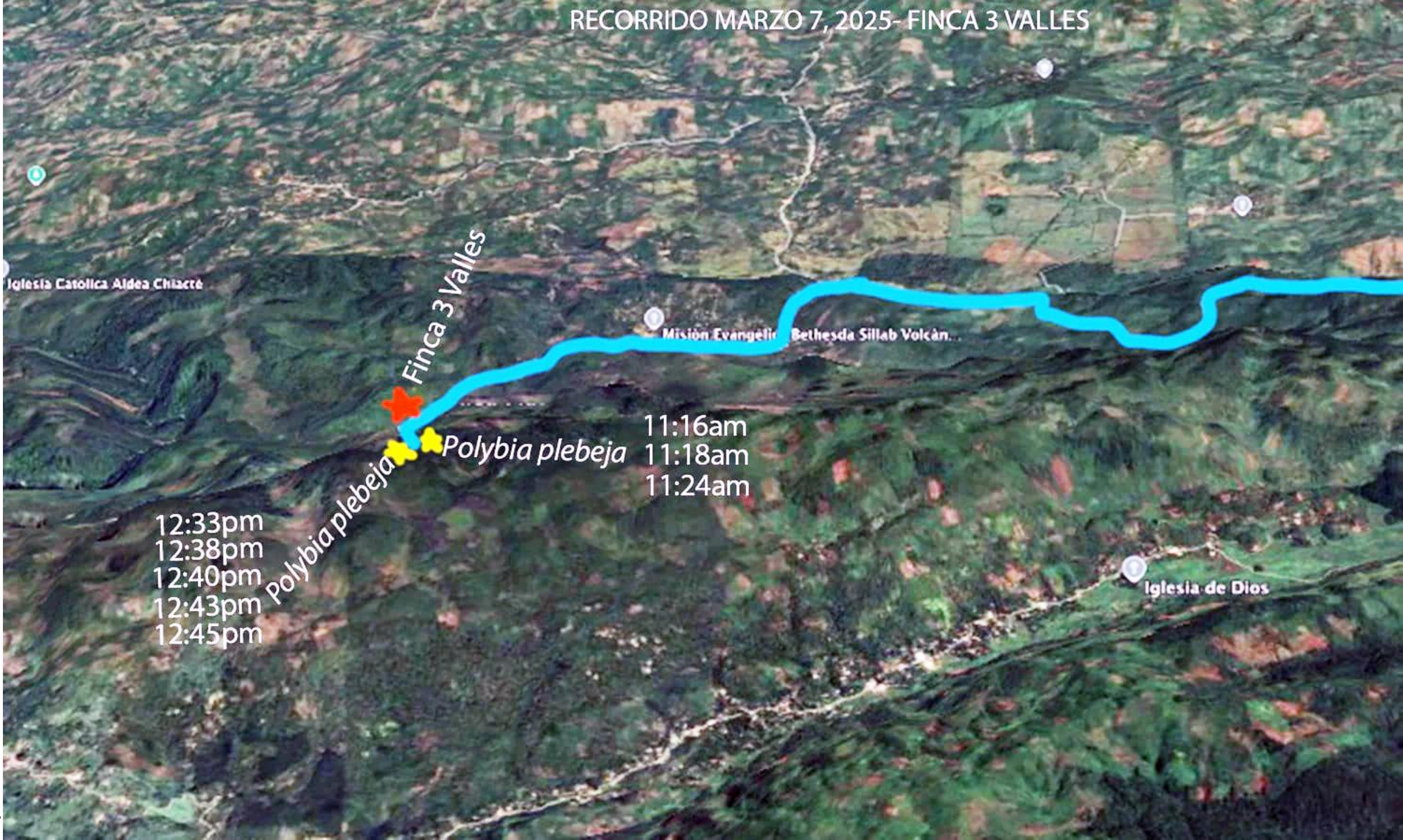
Vivian Hurtado is research project manager for FLAAR Mesoamerica. She works from her home office and from the office of FLAAR Mesoamerica.

If you are a wasp entomologist we would welcome your suggestions for genus and species of the wasps that we have been photographing. Please contact Vivian Hurtado via email: flaar-mesoamerica@flaar.org You can write in English o en español. Please also include Sergio Jerez, botany-zoology@flaar.org

Drawing by Byron Pacay on Google Earth Pro satellite view.

The town of Senahu is down at the bottom. This is where we spent each night.

Fig. 37.



Crop from the map of Byron Pacay with his text and route placed on top of Google Earth Pro satellite view.

Fig. 38.