Golden Wasps,
San Jose Se Raxtul, Senahu,
Alta Verapaz, Guatemala

Guatemalan Honey Wasps, *Polybia emaciata* and their Impressive Wasp Nests

All photographs by Byron Pacay and Franklin Xol, March 4, 2025
Text by Nicholas Hellmuth

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

Introduction to Discovery of Wasp Nests potentially of *Polybia emaciata* in the mountains of Alta Verapaz, Guatemala, in March 2025 by the team of FLAAR Mesoamerica.

We are putting all honey wasps of golden colors in separate FLAAR Reports so that wasp entomologists can see them to provide genus and species names.

The wasp nests of these golden wasps of Aldea San Jose Se Raxtul, Municipio de Senahu, Departamento de Alta Verapaz are of a unique design—with an exit TUNNEL—not merely an exit opening. And, the exit tunnel is not at the bottom, but on the side. Often in the middle but sometimes lower down.

Two of the team each used a cell phone to take photos: Byron used the Google Pixel 8 Pro of FLAAR and Franklin used his own phone.

Fig. 1.

March 4, 2025, Aldea San Jose Se Raxtul, Senahu, Alta Verapaz

Fig. 2, a and b

Fig. 3. Closeup from the previous photos, cropped and processed by Nicholas Hellmuth from photo by Byron Pacay, Raw mode with Google Pixel 8 Pro.

March 3, 2025, Aldea San Jose Se Raxtul, Senahu, Alta Verapaz.

The photo team estimated these wasps were genus *Polybia* and species *emaciata*. Google Images also suggests *Polybia emaciata*, but they are always listed as primarily in South America. But the genus is correct because *Polybia emaciata* have nests very similar to those the team found in Aldea San Jose Se Raxtul, near Senahu, Alta Verapaz.

Portal de Biodiversidad de Guatemala gives no results for *Polybia emaciata*, so I searched for just the genus *Polybia*, and got, LOTS of *Polybia plebeja* de Saussure—but ZILCH for Alta Verapaz. Does this mean that the team of FLAAR Mesoamerica is the first to document *Polybia* wasps in Alta Verapaz?

And, none of the nests for *Polybia plebeja* de Saussure had the tubes sticking out—but all the nests of *Polybia emaciata* have the tube exit-entry structure.

This is another nest in the same area, Aldea San Jose Se Raxtul, Senahu, Alta Verapaz, but a different nest. Here the entry-exit tunnel tube is in the middle.

Fig. 4, a and b.

At the left is another nest in the same area, Aldea San Jose Se Raxtul, Senahu, Alta Verapaz, but a different nest. Here the entry-exit tunnel tube is much lower down.

At the right is the more usual position of this tube.

Most wasp nests are made of plant materials (and thus are edible if it's a honey wasp nest). But this nest is made of mud—so not recommended to eat. That said, local people suggested that these *Polybia emaciata* wasps do make honey and it is edible. But to document this, a nest needs to be opened and inspected inside to see and photograph the honey if it is there.

Fig. 5, a and b.

All these photos are by Byron Pacay with Pixel 8 Pro.

March 3, 2025, Aldea San Jose Se Raxtul, Senahu, Alta Verapaz.

This helpful close-up should allow a wasp entomologist to document what species this is.

I am always amazed that multiple wasps can exit at the same time, squeezing past each other, without fighting with each other.

Fig. 6.

Their nests look like they are made out of mud—so different than paper wasp nests. Web sites say the same: these nests are made from mud.

Studying wasps and wasp nests in Guatemala is excellent exercise for the brain and great physical therapy for brain health. At first I thought the only wasp that made honey was the Mexican Honey Wasp, *Brachygastra mellifica*. Yes, we have found wasp nests of *Brachygastra mellifica* in other parts of Guatemala but our field trips taught us that there are LOTS of other species of wasps, native to Guatemala, that make honey. So I now name *Polybia emaciata* the Guatemalan Honey Wasp! Local Q'eqchi' Maya people told us that these wasps do make honey, but we need to see the honey inside the nest to document them being honey wasps.

To learn that the wasps that design, engineer and construct a nest out of "mud" is amazing. I am very curious to see inside, to see how the honey combs are constructed.

All these photos up to here are by Byron Pacay with Pixel 8 Pro. FLAAR provides its team with mobile photos that take excellent photos.

March 3, 2025, Aldea San Jose Se Raxtul, Senahu, Alta Verapaz.

All subsequent photos are March 4, 2025 by Franklin Xol with his Honor Magic 5 Lite, model RMO-NX3. Quite good photos as you will see.

Fig. 7.

Fig. 8,a.

Fig. 8,b.

Since each wasp species has their own preferred size and shape of nest, it helps to photograph the bottom of the nest. Some species' nests are completely flat, some species have their entrance at the bottom, so it definitely helps to show the bottom of the nest of each species.

All photos from here onward are on March 4, 2025 by Normand Franklin Xol Pop, with his own telephone, for FLAAR Mesoamerica database.

Fig. 9,a

Fig. 9,b.

The photo above shows the bottom of the nest where the entry-exit tunnel is near the bottom. The other photo shows the side of the nest—all made from “mud”.

To reach this nest required not merely hiking up a tall steep hill, but literally climbing up the hill. The grandparents of Senaida Ba live on top of the hill. A decade ago I could still climb the hill and found the thatch roof of their house with maize leaves repairing areas of their otherwise palm thatch roof. Now, at age 80, the younger team climbs the hills and accomplishes the photography.

Curiously, this nest did not have many wasps all over the sides.

Fig. 10, a and b.

The only wasps on the outside are those entering and leaving the nest through the entry-exit tube.

Fig. 11.

Four wasps coming out, one waiting patiently to enter.

Fig. 12.

These wasps are quite large and their entry-exit tube is not very wide.

As said previously, I do not see any stinger, not even in this view of the tail end of the abdomen. But I assume that all wasps do indeed have a stinger.

Fig. 13.

Fig. 14, a and b. Even though out of focus (due to quick movement of the wasps), you can see that this wasp has to push past another wasp trying to exit the nest.

Fig. 15,a.

Fig. 15,b.

Nice view of the head of *Polybia emaciata.*

You can even see the details of the “feet” of the two font legs.

The complete view of this entire wasp is in the following photo, all by Franklin Xol, cropped and processed by Nicholas Hellmuth.

We have a separate FLAAR Reports that we will be publishing later in June that includes the itinerary and other information about this field trip in the first week of March, 2025. We will also have separate FLAAR Reports on the field trip to the same area a few weeks later, this time with Javier Archila and a 200-600mm zoom lens so we could document other nests that a cell photo camera will not easily reach.

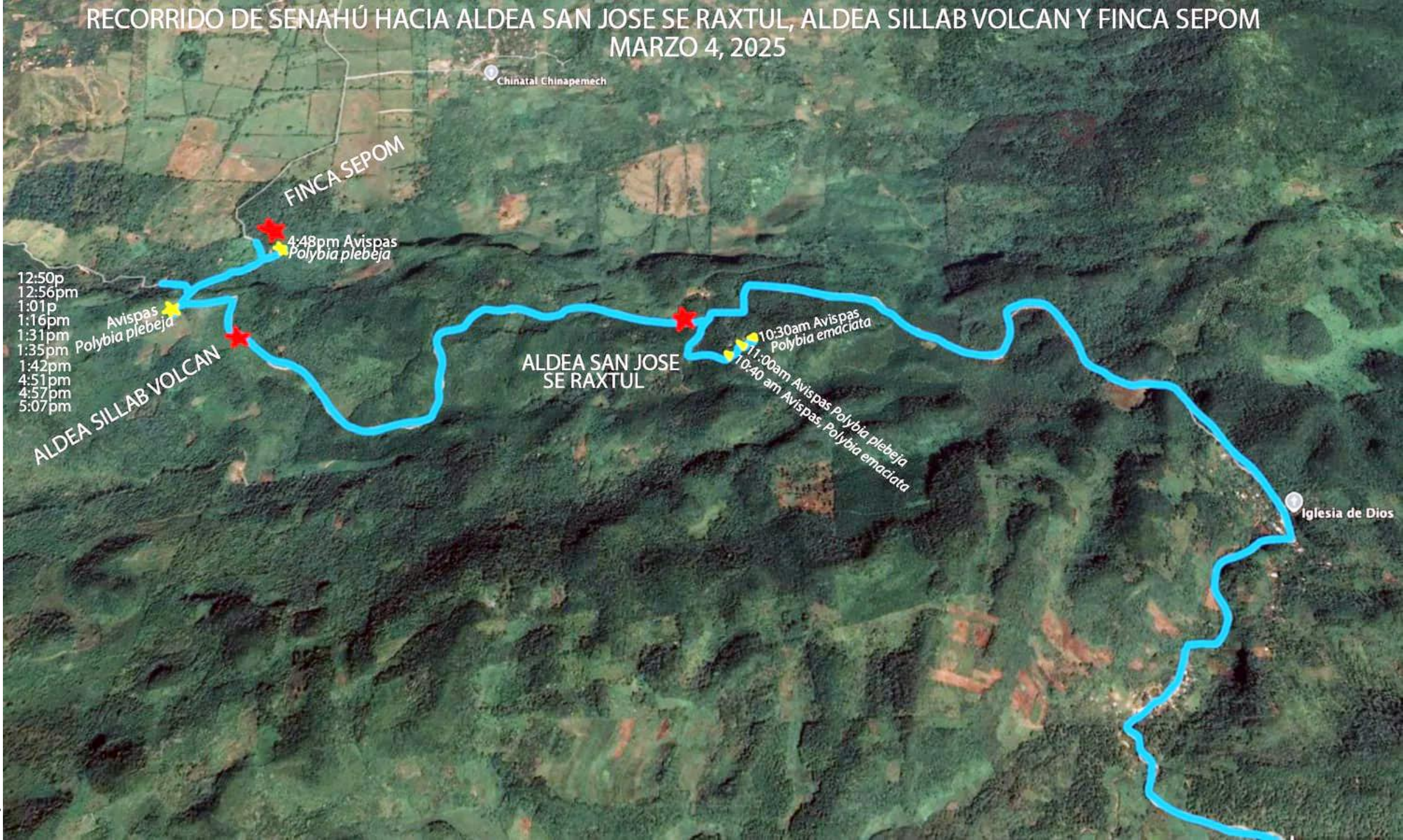
Fig. 16.

This is the best photo so far that shows head, antennae, thorax, waist (petiole), abdomen and even the front of the left leg of *Polybia emaciata*.

So far I have not seen any stinger sticking out the end of any wasp that we photographed (probably because most of the tail end is pointing downward and so the area of the stinger is not visible).

The purpose of our photos is to assist biologists, students, plus to show the general public the natural beauty of wasps of Guatemala.

Fig. 17.



Map by Byron Pacay.

Fig. 18.

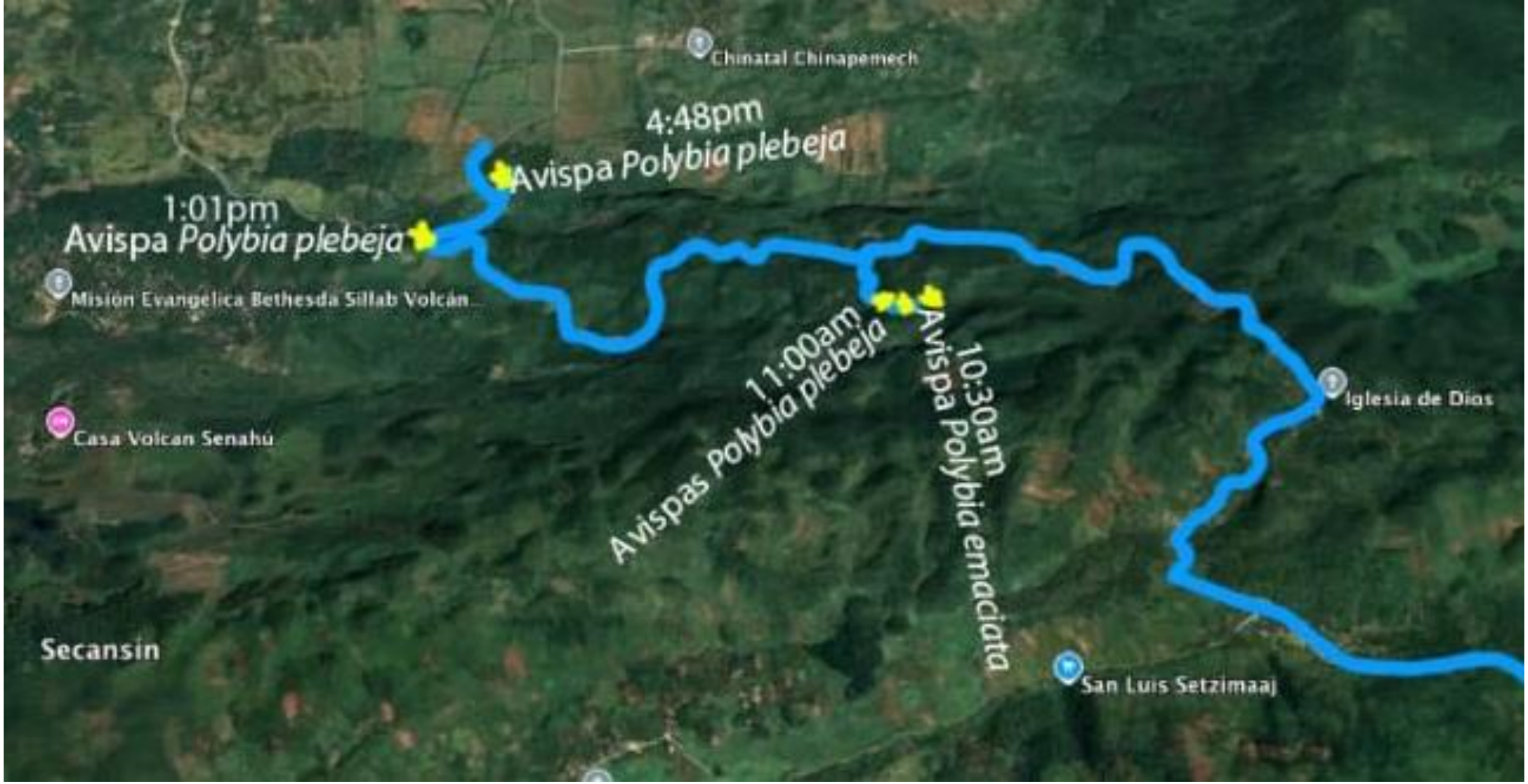


Fig. 19. Map to show the location of nest of *Polybia emaciata* wasps found on March 4, 2025. On March 19th team of FLAAR Mesoamerica found and Javier Archila photographed a *Polybia emaciata* wasp invading a nest of another wasp and stealing a pupa to eat. We show all this in the FLAAR Reports on wasp nests documented on March 19th, 2025 in the same Municipio de Senahu, Alta Verapaz, Guatemala.

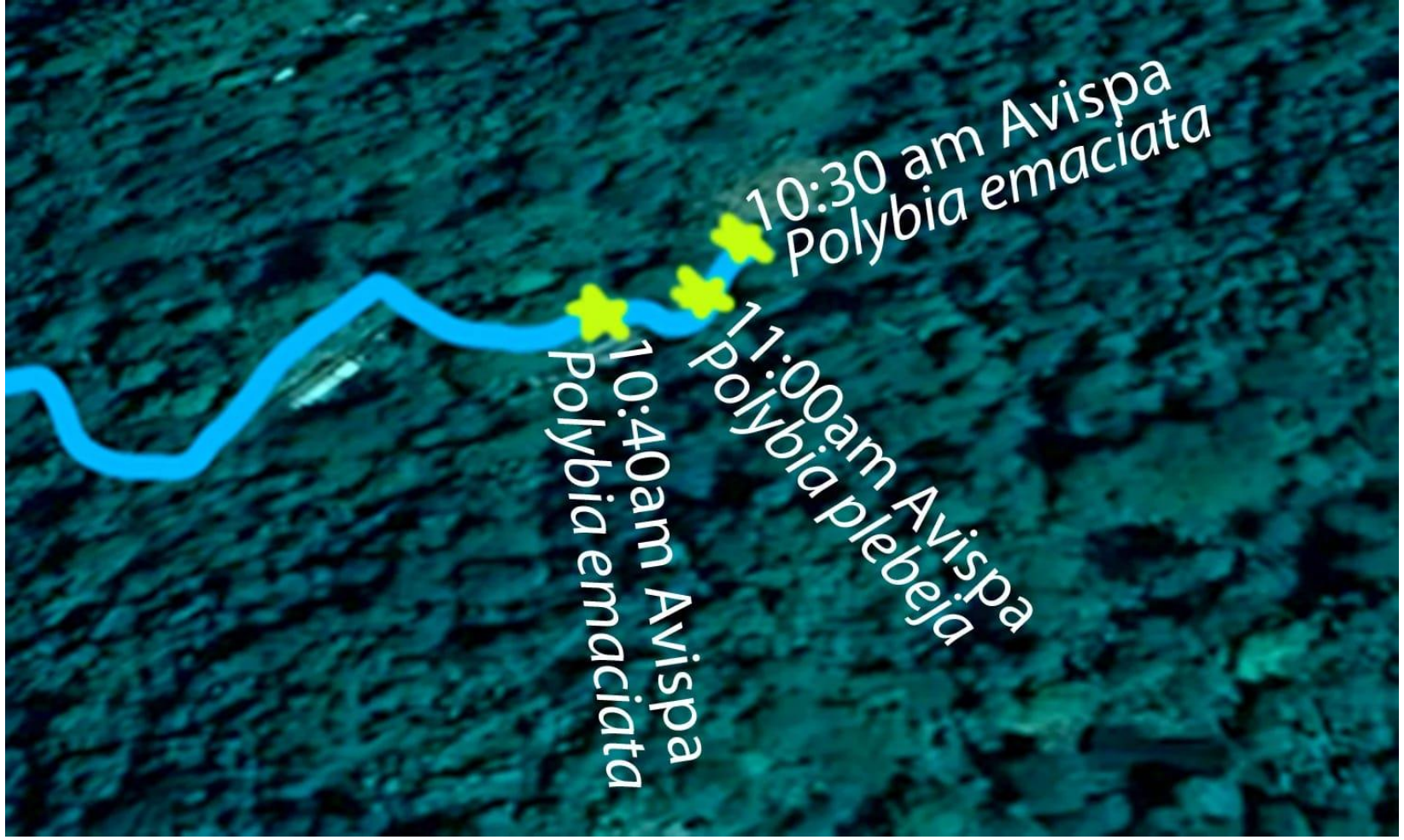


Fig. 20. More detailed map updated to show the locations of nests of *Polybia emaciata*. Remember, a wasp nest is usually automatically abandoned each year, so in year 2026 the same *Polybia emaciate* wasps will have fresh nests, but a short distance from where the team of FLAAR Mesoamerica found them in 2025.

This map by Byron Pacay is to show students and professors where they can find honey wasp nests for their own future research projects.

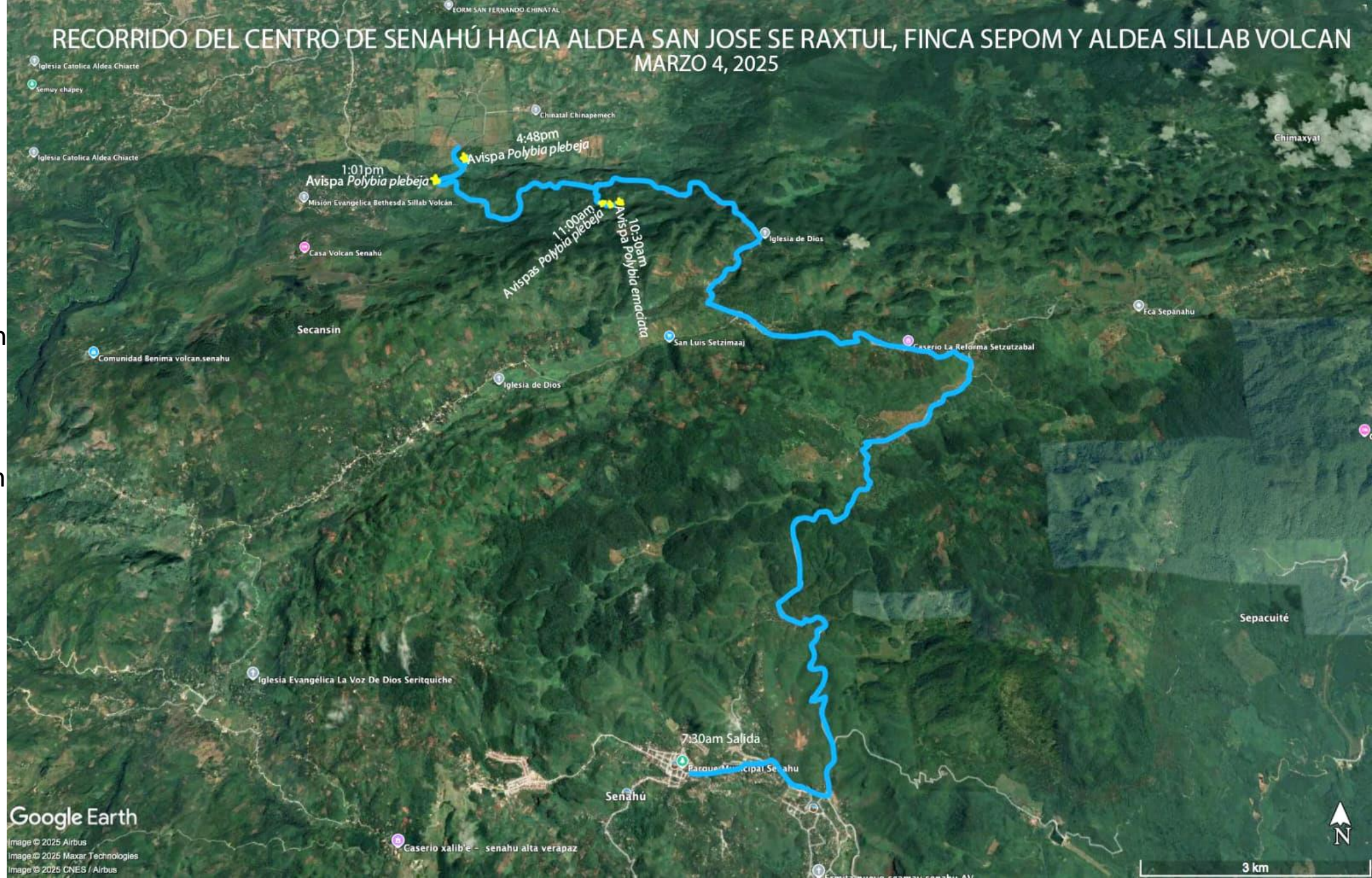


Fig. 21.

There are hundreds of articles on *Polybia* wasps all over Latin America, but our focus is on Guatemala, so we show the following helpful chapter.

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.

Carpenter, Garcete, and Freire list the *Polybia emaciata* species in their helpful chapter on wasps of Guatemala, but I have not yet found other specific discussions of *Polybia emaciata* for Guatemala. Plus I have not yet found another *Polybia* wasp species that are well documented for Guatemala that have a nest with a tubular entry-exit tube. Plus, the nests found by the team were obviously made with mud. This entomological discovery was courtesy of the local guides assisting the FLAAR Mesoamerica team of Senaida and Franklin (who live in Senahu so know local people and local areas) plus Byron (also a photographer) on March 3, 2025.

Although I am obviously not an entomologist, I estimate that the several nests documented by the FLAAR Mesoamerica team are all of *Polybia emaciata*. However if a wasp entomologist can correct me, I will accept their years of experience.

Below is the list of species of wasp genus *Polybia* from the end of the chapter by Carpenter, Garcete and Freire (Appendix 1). The notes are by Hellmuth:

Polybia diguetana du Buysson 1905 is now a synonym for *Polybia plebeja*. Their nests do not have tubular entry/exit shape.
Polybia emaciata Lucas 1879, No mention of location on biodiversidad.gt, so no photos on that web page, but has lots for South America.
Polybia flavitincta Fox 1898, shows *Polybia mediamericana* Chimaltenango, no photos
Polybia occidentalis nigratella du Buysson 1905, Peten, Escuintla, Santa Rosa, Jutiapa
Polybia raui raui Bequaert 1933, no tube on their nests, no results from biodiversidad.gt
Polybia rejecta (Fabricius 1798), Peten, Izabal, Guatemala, but no tube on their nests
Polybia simillima Smith 1862, no results from biodiversidad.gt, no tube on their nests
Polybia tinctipennis tinctipennis Fox 1898, no results from biodiversidad.gt.

Acknowledgements

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