Polybia plebeja, synonym: *Polybia diguetana*, Honey Wasps and their Nests

Municipio de Senahu, Departamento de Alta Verapaz, Guatemala

Photographs by Byron Pacay, Franklin Xol and Senaida Ba Mucu, March 5, 2025, Text: Nicholas Hellmuth

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

Introduction to the Honey Wasp Nests of Barrio La Providencia and Barrio Las Delicias, Municipio de Senahu, Departamento de Alta Verapaz, Guatemala

On March 4, March 5, March 6, 2025 the team of Byron Pacay, Franklin Xol, Senaida Ba Mucu and their helpful local Q'eqchi' Maya guides found lots of nests of honey wasps that both Norma Cho and Nicholas Hellmuth have each independently identified as *Polybia plebeja* (see final page for Hellmuth's documentation).

On March 4th the team had found my favorite golden wasps, *Polybia emaciata*. Their nest is made of mud, so they are not "paper wasps". That is a separate report. There are conflicting statements as to whether or not this species of *Polybia* made honey, but in the meantime I have named it the Guatemalan Honey Wasp (in case we can find honey in their nests). During these same days of March 2025, a lot more wasp nests were found, but often not close enough to document the coloration of individual wasps. Some may be *Polybia plebeja* but others may be a different species.

Fig. 1.

There are literally “THOUSANDS” of wasps on the outside. Keep in mind you are seeing only 60% of the nest—so there are more wasps on the other side. Plus LOTS MORE WASPS inside. This is the most wasps that I have seen on the outside of any nest during our multiple weeks of field trips.

I estimate that the bottom of the nest was broken open this same morning and perhaps that resulted in all these wasps on the outside.

A major question is whether this nest is pegged to the painted concrete wall. I ask this because what is the tube of nest material that rises up above the nest, pegged against the pillar?

Photo by Franklin Xol, 9:05am, Barrio Las Delicias, in the town of Senahu, Alta Verapaz. In the following photo by Byron Pacay, there are not as many wasps on the outside.

Fig. 2.

At the top left of this nest it seems it’s glued against the wall. But my question is whether the entire height of the back of the nest is glued to the wall, or only the upper part?

Barrio Barrio Las Delicias, town of Senahu, Departamento de Alta Verapaz, Guatemala.

March 5, 2025.

Fig. 3, a and b.

Photographs in RAW mode by Byron Pacay with Google Pixel 8 Pro camera, cropped and processed by Nicholas Hellmuth, FLAAR Digital Photo Archive of Flora, Fauna and Biodiverse Ecosystems of Guatemala.

Most of the photos are taken in RAW format. Both the original RAW files and the processed files are all kept in the photo archive.

Franklin photographed this wasp nest at 9:05, Byron photographed the same wasp nest at 11:38.

Fig. 4.

Fig. 5.

Fig. 6. Amazing pattern of rows of cells going diagonally-horizontally and going up—but there are “collisions” where the cells are out of order. And at the lower right, to the right of the wasp there, I see cells in triangular shape???

This is one of the widest honey combs we have yet photographed. Accepted name Polybia plebeja, synonym: Polybia diguetana.

Barrio La Providencia, Municipio de Senahu, Departamento de Alta Verapaz, Guatemala, March 5, 2025. Cropped and processed by

Carpenter, Garcete and Freire (2012, Appendix 1) list eight species of genus *Polybia* for Guatemala:

Polybia diguetana du Buysson 1905, Departamento de Guatemala, abdomen has one noticeable yellow band and one faint band, plus wing design is similar to the wings of the Alta Verapaz wasps found by FLAAR Mesoamerica. The current (new) accepted name is *Polybia plebeja* de Saussure, 1867 (results when you ask Google for accepted name).

Polybia emaciata Lucas 1879, no presence on biodivesidad.gt. Has five yellow bands and yellow end of the tail.

Polybia flavitincta Fox 1898, biodiversidad.gt uses *Polybia mediamericana*, Chimaltenango, is "solid black"

Polybia occidentalis nigratella du Buysson 1905, Peten, Escuintla, Santa Rosa, and Jutiapa, has four yellow bands.

Polybia raui raui Bequaert 1933, no presence on biodivesidad.gt, mostly black.

Polybia rejecta (Fabricius 1798), Guatemala, Izabal, Peten, has golden wings and light-brown abdomen.

Polybia simillima Smith 1862, no presence on biodivesidad.gt, "black all over"

Polybia tinctipennis tinctipennis Fox 1898, no presence on biodivesidad.gt, black with unexpected design all across abdomen.

So, I conclude that the wasps of Aldea San Jose Se Raxtul, March 6, are definitely *Polybia plebeja.*

Wikipedia has a helpful bibliography on *Polybia occidentalis* (https://en.wikipedia.org/wiki/Polybia_occidentalis), so below I only add a chapter that helps know how many species of wasps were known in Guatemala in the previous decade.

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.

Norma Cho suggested that these are *Polistes oculatas*.

But since all these wasps have their dark wings folded over the top of their bodies, all you can see is their golden and yellow colored face and the golden colored areas on top of their head—so a challenge to recognize which genus and which species. I tentatively suggest *Polybia plebeja.*

Portal de Biodiversidad de Guatemala has no findings for this species. The list of wasp species in Guatemala (Carpenter et al: Appendix 1, page 279) also does include *Polistes oculatus* (and eight other species of Genus *Polistes*.

11:26am, March 5, 2025.

Photos taken by Senaida Ba Mucu.

Fig. 7.

Fig. 8.

How in the world can the weight of a wasp nest be attached with such a thin bit of material??? And, why is that area black and dark brown on the nest itself? Is that the “adhesive material”?? So a lot to learn which is why I enjoy initiating wasp nest field trip research projects. In the future we will also be studying more wasp nests in PNYNN of the Reserva de la Biosfera Maya, RBM, Peten.

Very interesting that Google AI Overview says that this species constructs their nests on hills and structures. It was precisely on a roof beam that this nest was found in a barrio of Senahu, Alta Verapaz, and photographed by Byron Pacay. There are no photos by Franklin Xol of this nest.

AI Overview says that *Polistes oculatas* wasps to not make honey. That said, this AI occasionally makes errors—but to document whether or not they make honey would be necessary to find a complete nest and look inside.

Fig. 9.

Carpenter, Garcete and Freire (2012, Appendix 1, page 279) list nine species of genus *Polistes* for Guatemala:
Polistes apicalis de Saussure 1858, Municipios de Guatemala and Alta Verapaz. More black than brown.
Polistes canadensis canadensis (Linnaeus 1758), Huehuetenango, Solola. Completely "golden" so not the brown wasp we found.
Polistes carnifex carnifex (Fabricius 1775), Guatemala, Peten, Izabal, Jutiapa, Solola. Mostly light yellow.
Polistes dorsalis neotropicus Bequaert 1940, Guatemala. More golden especially the wings.
Polistes franciscanus Richards 1978, Alta Verapaz, Peten. End of tail is yellow as are wings.
Polistes instabilis de Saussure 1853, Guatemala, Chimaltenango, Quiche, Sacatepéquez, Alta Verapaz, Baja Verapaz, Aacapa, El Progreso, Jutiapa, Izabal, Peten. So this is the most common of all *Polistes* species across most of Guatemala. Completely different colors.
Polistes major major Beauvois 1818, Guatemala, Alta Verapaz. Abdomen completely different color.
Polistes oculatus Smith 1857, no results in Guatemala for Portal de Biodiversidad de Guatemala. Similar but photos on line suggest its abdomen is not identical—that said, this is the closest we have found so far.
Polistes pacificus Fabricius 1804, only one documented, Departamento de Guatemala. Thorax is black, not brown like we found.

So, definitely not eight of the nine options. *Polistes ocultus* is the most similar—but I am not yet totally convinced. Our snapshots are not perfect but two close-ups do show a lot of detail, so hopefully a wasp entomologist can comment further. Or, is there another species of Genus *Polistes* that has not yet been documented?

CARPENTER, James Michael, GARCETE Battett, Bolivar Rafael and Joseph Aledander FREIRE
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Notes by the FLAAR Mesoamerica team for March 5, 2025

Miercoles March 5, 2025

Este dia lo hemos utilizado para un recorrido un poco mas central al Municipio de Senahu, con los mismos objetivos, basandonos en el conomiciento de nuestros guias que nos comentaron que habia la posibilidad de lograr encontrar mas avispas. Por lo que recorrimos Barrio la Providencia, Santiaguila, Cementerio, Nuevo se Amay, lugares a los cuales logramos tomar fotos de las avispas pegadas a las casas y lugares con algo de vegetación. Se logro encontrar varias casas con panales de la avispa de miel posiblemente de la especie *Polybia occidentalis*.

Seguidamente encontramos la avispa amarilla que es avispa posiblemente de la especie guardiana dorada *Priocnemis gravesi*. Todos con ubicación geograficas en las cordenadas: 15.488, -89.852, 15.492, -89.851, 15.491, -89.854

Nicholas Hellmuth and Norma Cho Cu have been updating the genus and species names in the captions and comments. The first nest is now documented by Hellmuth as probably *Polybia plebeja*. The other wasp, in Aldea Seamay, is now documented by Hellmuth to be *Parachartergus colobopterus*.

The first nest, on the outside of a house, was first photographed by Franklin at 9:05am when we went to get the Tuk Tuk that the team rented for the rest of the day. Then the team went slowly through many areas of Senahu looking for wasp nests but did not photograph any more inside the town itself. By 11:38 they arrived again to the northwest of Barrio Las Delicias, and Byron took more photos of what Franklin had photographed several hours earlier. Senaida Ba Mucu arranged for the local guides and also took photos of the wasp nest at 11:26am.

Map prepared by Byron Pacay to show locations of each wasp nest.

GPS is in the text of the itinerary.

Fig. 10.


RECORRIDO MARZO 5, 2025
Estadio Municipal Las Delicias
Iglesia Catolica
11:38am Avispas
Polybia plebeja
9:05a m
BARRIO LAS DELICIAS
NUEVO SEAMAY
4:55pm Avispas
Pardchartergus
colobopterus

Fig. 11.

This is the third wasp nest found and photographed on March 5, 2025. Since this is a different genus and because we have lots of photos, we show these golden-brown wasps in a separate FLAAR Reports.

Aldea Seamay, Senahu, Alta Verapaz.

Fig. 12.

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, please contact Vivian Hurtado via email: flaar-mesoamerica@flaar.org You can write in English o en español. Please include Sergio Jerez, botany-zoology@flaar.org