The Unique Surface Pattern of Wasp Nests of *Synoeca septentrionalis*, Izabal, Alta Verapaz, Peten and many other areas of Guatemala

Remarkable Wasp Nest Architects, Engineers and Workers

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A Wasp of Guatemala that makes a Nest of Unique Repeated Horizontal Bands around the Outside AND, is Pegged to a Tree Trunk—Not hanging from a Branch or Twig: *Synoeca septentrionalis*

There are five species of genus *Synoeaca*, but most are native to South America and lower Central America. But *Synoeca septentrionalis* is found in many departamentos of Guatemala. We have found it in Izabal (Macho Creek), Peten (Yaxha, PNYNN) and Alta Verapaz (Senahu towards Teleman). On the final page I list where other entomologists have registered lots more nests of S. *septentrionalis*. None have been registered in the locations where we found *Synoeca septentrionalis*.

Our long-range field work and library research on wasps of Guatemala is focused on documenting that many wasps are helpful pollinators, so, like bee pollinators, the pollinating wasps should not be exterminated.

We are also focused on finding, photographing, documenting and publishing FLAAR Reports on all of the many genera and species of wasps native to Guatemala that make edible honey, edible eggs, edible larva, and even their nest is edible (yes, crunchy and honey-sweet).

Most honey wasps do not attack—literally—you can be eating the bottom of the nest with dozens of wasps still on the outside and inside of the nest (but obviously eat only the honeycomb area—don't eat actual wasps and don't harm the queen). All these wasp nests are built to last only one single year so the entire nest will be abandoned at the end of the season anyway--and the queen will fly away to make another nest.

Although most honey wasps do not attack, there are obviously lots of other kinds of wasp, such as *Synoeca septentrionalis*, that not only attack but have dangerous stings. Most species of the genus *Synoeca* are called warrior wasps (GBIF and dozens of other web sites). *Synoeca septentrionalis* can be called the Northern Warrior Wasp because all the other Warrior Wasp species are in lower Central America and South America.

Fortunately, all the panals of *Synoeca septentrionalis* that I have photographed are very high on trees, so I am nowhere near the actual wasps. I am using a 400mm or 800mm Nikon telephoto lens. Since I majored in architecture in college, and since my father, grandfather, great-uncle and two brothers are architects, I am interested in the architecture and engineering of the very large nests of *Synoeca septentrionalis*.

Fig. 1. We found this wasp nest on November 4, 2016, in the Macho Creek area of Izabal, Guatemala. It took a 400mm prime Nikon (Nikkor) lens to achieve this view, since it was high up and far away from where we could reach.

This is “one nest” that actually consists of three “separate” nests, one on top of the upper part of the other.

The tall nest at the bottom was constructed first, then the middle one, and then the upper one is the final. We we will show in photos later on in this FLAAR Reports, there can be as many as five (or six) nests built on top of each other.

Since most wasp nests last only one year and then are abandoned, the question should be raised, is each segment the work of one year? Or are all the segments initiated and finished within the same year?

Fig. 2. This is the upper segment of this 3-segment wasp nest.

All the nests of *Synoeca septentrionalis* are pegged to a tree trunk which means that none of the nests of *Synoeca septentrionalis* are hanging from a branch or twig. Over 90% of nests of other species of nests hang from a branch or twig. Some are pegged to the ceiling of a house or porch.

Would be interesting to learn whether any nests of *Synoeca septentrionalis* are pegged to a wall of a building?

Fig. 3. Wasp nest on upper trunk of palo de jiote tree, Macho Creek, March 23, 2017. So if you are a wasp entomologist, Macho Creek is a good place in Guatemala to find nests of *Synoeca septentrionalis*.

It helps to have a 400mm prime lens (meaning not a zoom lens), and a good camera—in that year I was using a Nikon D810.

Although I am not a wasp entomologist, I estimate that this nest is constructed in five or six sequences and that the sequence starts at the bottom. So the more brown-colored “nest” at the top is probably the most recent addition to this tall nest of sequential spaces.

All photos are by Nicholas Hellmuth, unless otherwise cited (to Javier Archila). All the photos of all the photographers are in the FLAAR Digital Photo Archive of Flora, Fauna and Biodiverse Ecosystems (over 30 TERABYTES of digital photos of the current decade and previous decade).

Fig. 4a. I estimate that the upper section is the most recent one. And, the lower area was the first part of this nest to be initiated.

Synoeca septentrionalis, Macho Creek, Municipio de Livingston, Departamento de Izabal. This is inland from Amatique Bay and the Caribbean Sea.

FLAAR Mesoamerica was asked by the Municipio de Livingston to assist them to find, photograph, document and publish areas of flora, fauna, and biodiverse ecosystems which had not been thoroughly studied by earlier botanists, zoologists, or ecologists. During our many field trips we even found the rare endangered mantled howler monkey—twice. We had an 18 month project in this Caribbean area of Guatemala and inland also (up and down the tributaries flowing into Rio Dulce).

4b

Fig. 5, a and b.

I found the documentation of my estimate that the bottom is constructed first, and then upper areas, on a nest of *Synoeca septentrionalis* on a tree in front of the dining room of hotel El Sombrero Ecolodge, which is at the entrance to the Yaxha part of Parque Nacional Yaxha, Nakum, and Naranjo (PNYNN) of the Reserva de la Biosfera Maya (RBM), Peten. This nest was noticed and photographed on June 6, 2019).

Fig. 6. I show this crop twice to document that the lower nest is built first and then a “second nest” is built over the top. The nest(s) at Macho Creek, Izabal has at least five nests in an overlapping vertical stack.

Another reason I show this close-up twice is because it shows that the area of the cells is vertical and not horizontal. 90% of the nests of other genera that we have found in Guatemala are all horizontal, especially the honeycombs of honey-making wasps.

This amazing wasp nest is an example of the biodiversity that you can find at Parque Nacional Yaxha, Nakum and Naranjo. The comfortable hotel Ecolodge El Sombrero is a great place to stay, plus they have good food in their restaurant—both local Guatemalan food and Italian food. We than Gabriella Moretti and her sons Sebastian de la Hoz and Juan Carlo de la Hoz for their hospitality over many years during our multiple field trips to PNYNN.

A very knowledgeable and helpful local guide in PNYNN and elsewhere in Peten is Teco, Moises Daniel Perez Diaz. He has been a park ranger for over 23 years so knows all the remote areas around Yaxha, Nakum and Naranjo-Sa’al, plus he has accompanied dozens of the FLAAR field trips to study flora, fauna and remote biodiverse ecosystems.

Fig. 7. This wasp nest between Senahu and Teleman, Alta Verapaz, is nearly identical to the *Synoeca septentrionalis* wasp nest at Yaxha, Peten. The upper portion is brown—the lower segments are older and a lighter color.

I also notice that all the nests of *Synoeca septentrionalis* have far fewer wasps repairing or building the outside. Nests of other wasp genera are literally filled with hundreds of wasps.

Do the *Synoeca septentrionalis* wasps work at other times of the day? This photo was taken at 12:54pm, on March 18, 2025, during our second field trip to Alta Verapaz area of Guatemala. Since several of our in-house team are from Senahu, they all speak Q'eqchi' Mayan language. When you study flora, fauna or biodiverse ecosystems in rural areas of Guatemala, it is essential to have team members who speak the local Mayan language.

Fig. 8. These wasps certainly know how to ”glue their entire nest” to the trunk of the tree, plus gluing the new upper segments to the older lower segments.

The left edge of the earlier, lower segment seems worn down. The middle nest seems to have an area that was “punched inwards”?

Since all reports on wasps say that they occupy their nests only for one year, are these two lower nests from two earlier years?

Fig. 9.

Fig. 10. This wasp nest has similar parallel ridges, but otherwise is not identical to all the nests of *Synoeca septentrionalis*. Would help if wasp entomologists can develop a complete documentation with drawings to show the size and shape of wasp nests that each general of wasps in Guatemala construct—so in the future it would be possible to identify at least the wasp genera by the shape and outside pattern of their nests.

The nest in this photo of Javier Archila is from the FLAAR Mesoamerica field trip to the Maya Highlands and cloud forests around Senahu, towards Cahabon, Alta Verapaz. Several of our in-house staff live in Senahu so we know local people plus our team can speak Q'eqchi' Maya language, which is essential if you want to accomplish field work in remote areas of Alta Verapaz.

Fig.11,a,b. This wasp also constructs a nest with horizontal bands. This nest was in front of the doorway to the FLAAR office in 2015.

Fig. 12, a and b. There are so many wasps of Guatemala with yellow all over them, that GoogleImage search shows several genera and lots of species—none of which match precisely.

So we would appreciate the assistance of a knowledgeable wasp entomologist.

This nest was never finished but at least on September 30, 2015, it was possible to photograph what you see here.

These are obviously not *Synoeca septentrionalis* wasps but the nests here in Guatemala City have repeated parallel shape.

Fig. 13, a and b. Here you can see these wasps from every angle, but because they wings are folded down over their abdomen it is not easy to see the pattern of yellow bands across their abdomen. Plus, when you can see their abdomen, one has only two black bands—the others have lots of black bands.

Fig.14,a

Fig. 14,b

Fig. 15, a, b, and c.

Complete nest at the left.

Guatemala City.

We have lots of flowering plants in the FLAAR Ethno-botanical Research Garden so lots of wasps, bees, and butterflies are very happy here.

Fig. 16. My hand is one centimeter from a nest full of scores of large active wasps. But, not one single wasp stings me or even bothers to hover and threaten me.

This is because the wasps see me every day and they know I do not attack their nest or bother them in any other manner.

Same with the stingless bees two meters to the left. Out in the wild they attack even before you are adjacent to their hive. But here in the FLAAR Ethno-botanical Research Garden these bees know we will not bother them.

Fig. 17.

Where *Synoeca septentrionalis* is documented on Biodiversidad.gt/portal/

Suchitepequez (several examples)

Retalhuleu

Escuintla (many examples)

Guatemala (several examples)

El Progreso

Jutiapa

Santa Rosa

Peten

Grete Pasch has documented the most examples.

The team of FLAAR and FLAAR Mesoamerica found *Synoeca septentrionalis* in Izabal (Macho Creek), Peten (Yaxha, PNYNN) and Alta Verapaz (Senahu towards Teleman). Due to their size and shape these nests are really easy to notice and to identify.

To learn more about *Synoeca septentrionalis* wasps just Google their name and you get lots of articles and dozens of web pages.