

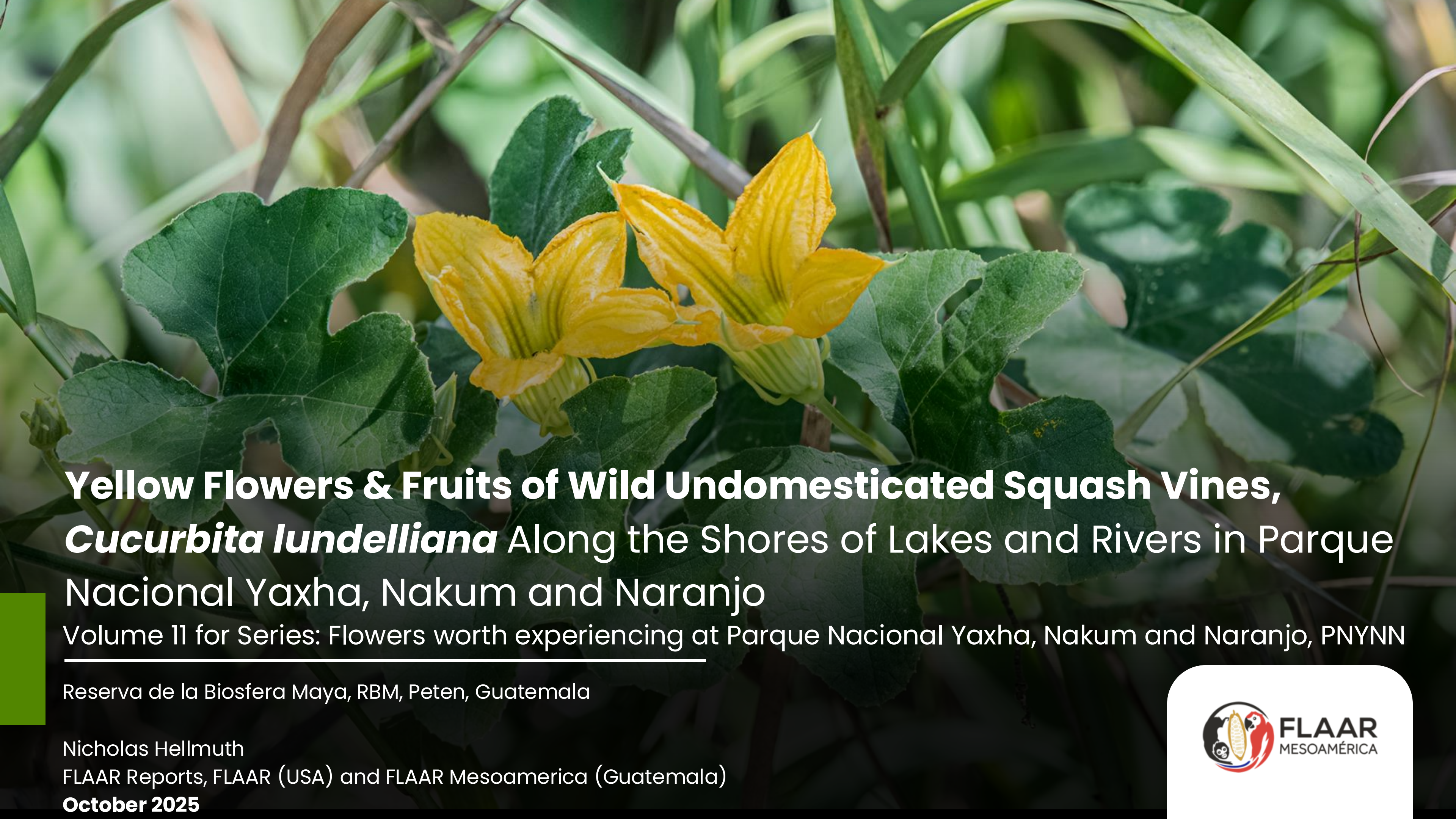
**Yellow Flowers & Fruits of Wild Undomesticated Squash Vines,
Cucurbita lundelliana
Along the Shores of Lakes and Rivers in Parque Nacional Yaxha, Nakum
and Naranjo**



Volume 11 for Series:
**Flowers worth experiencing at
Parque Nacional Yaxha, Nakum
and Naranjo, PNYNN**
Reserva de la Biosfera Maya,
RBM, Peten, Guatemala



Nicholas Hellmuth, FLAAR Reports, FLAAR (USA) and FLAAR Mesoamerica (Guatemala)
October 2025



Yellow Flowers & Fruits of Wild Undomesticated Squash Vines, *Cucurbita lundelliana* Along the Shores of Lakes and Rivers in Parque Nacional Yaxha, Nakum and Naranjo

Volume 11 for Series: Flowers worth experiencing at Parque Nacional Yaxha, Nakum and Naranjo, PNYNN

Reserva de la Biosfera Maya, RBM, Peten, Guatemala

Nicholas Hellmuth

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

October 2025



CONTENTS

Introduction to Wild Squash Vines, <i>Cucurbita lundelliana</i> , at PNYNN	1
Chapter 1	
<i>Cucurbita lundelliana</i> , along shore of Lake Yaxha in South West Cenote Area or nearby Rio Ixtinto, Jan 22, 2018	2
Chapter 2	
<i>Cucurbita lundelliana</i> , along south shore of Lake Yaxha, Feb. 16, 2019	6
Chapter 3	
<i>Cucurbita lundelliana</i> , along shore of Laguna La Guitarra, PNYNN, Mar. 26, 2019	9
Chapter 4	
<i>Cucurbita lundelliana</i> , along banks of Rio Ixtinto, PNYNN, June 5, 2019	15
Chapter 5	
<i>Cucurbita lundelliana</i> flowering in December, 22, 2018	18
Chapter 6	
Botanical and Ethnobotanical Information on <i>Cucurbita lundelliana</i>	20

Introduction

Wild Squash Vines, *Cucurbita lundelliana*, at PNYNN

The FLAAR team has found wild squash blooming and fruiting along the banks of Rio Ixtinto (west side of Topoxte Island) and along the shore of Lake Yaxha it self. This wild squash is known as *Cucurbita lundelliana* L.H. Bailey.

The dried fruit shell can be used as a small container; the inside material as a soap substitute (Lira and Caballero 2002: Table I).

We have also found *Cucurbita lundelliana* along the south shore of Laguneta El Juleque (also known as Laguneta La Guitarra) which is less then a kilometer from the west end of Lake Yaxha. We show a map as the last page of this report.

Considering that the ancient Maya had so many sizes, shapes, and colors of domesticated squash it is interesting that wild original squash still grows in Peten--and in all adjacent areas around Peten, such as Chiapas, Tabasco, Campeche and Quintana Roo (Villaseñor 2016: 711).

In the primary list of plants in Plan Maestro of Parque Nacional Yaxha, Nakum and Naranjo, *Cucurbita lundelliana* is missing. So the FLAAR teamworking with the IDAEH-CONAP personnel August 2018 through July 2019 have contributed another plant to help create a more complete botanical inventory of plants of the bio-diverse eco-systems here in PNYNN, Reserva de la Biosfera Maya, Peten, Guatemala.

Cucurbita lundelliana L.H.Bailey is the accepted name. There are no synonyms. Family name is Cucurbitaceae.

The present FLAAR Reports is an update in horizontal format for Hellmuth 2021.



Chapter 1

Cucurbita lundelliana, along shore of Lake Yaxha in South West Cenote Area or nearby Rio Ixtinto
Jan 22, 2018



In addition to *Cucurbita lundelliana* the shore of Lake Yaxha and the banks of Rio Ixtinto have lots of Acacia bushes that can survive seasonal inundation during the rainy season.

The present FLAAR Reports uses horizontal format so we can show photos at a larger size than the vertical format of Hellmuth 2021.

The present report is focused on photos found in folders from the IDAEH-CONAP project for 2018-2019.





The tendrils are easier to see in this closeup view.

The tendrils of this vine remind me of the passion-flower vines that also grow along other parts of the banks of Rio Ixtinto.



By growing on the shore, with the flowers facing the lake or river, these flowers and the vines receive full sun much of the day.

This photo by Nicholas Hellmuth of *Cucurbita lundelliana* and the previous pages are all along the shore of Lake Yaxha in the SouthWest Cenote Area or nearby Rio Ixtinto, Jan 27, 2018.

The next chapter is on *Cucurbita lundelliana* photographed Feb. 16, 2019. This species elsewhere was still flowering in March 2019 and in other months.



Chapter 2

Cucurbita lundelliana, along south shore of Lake Yaxha, Feb. 16, 2019



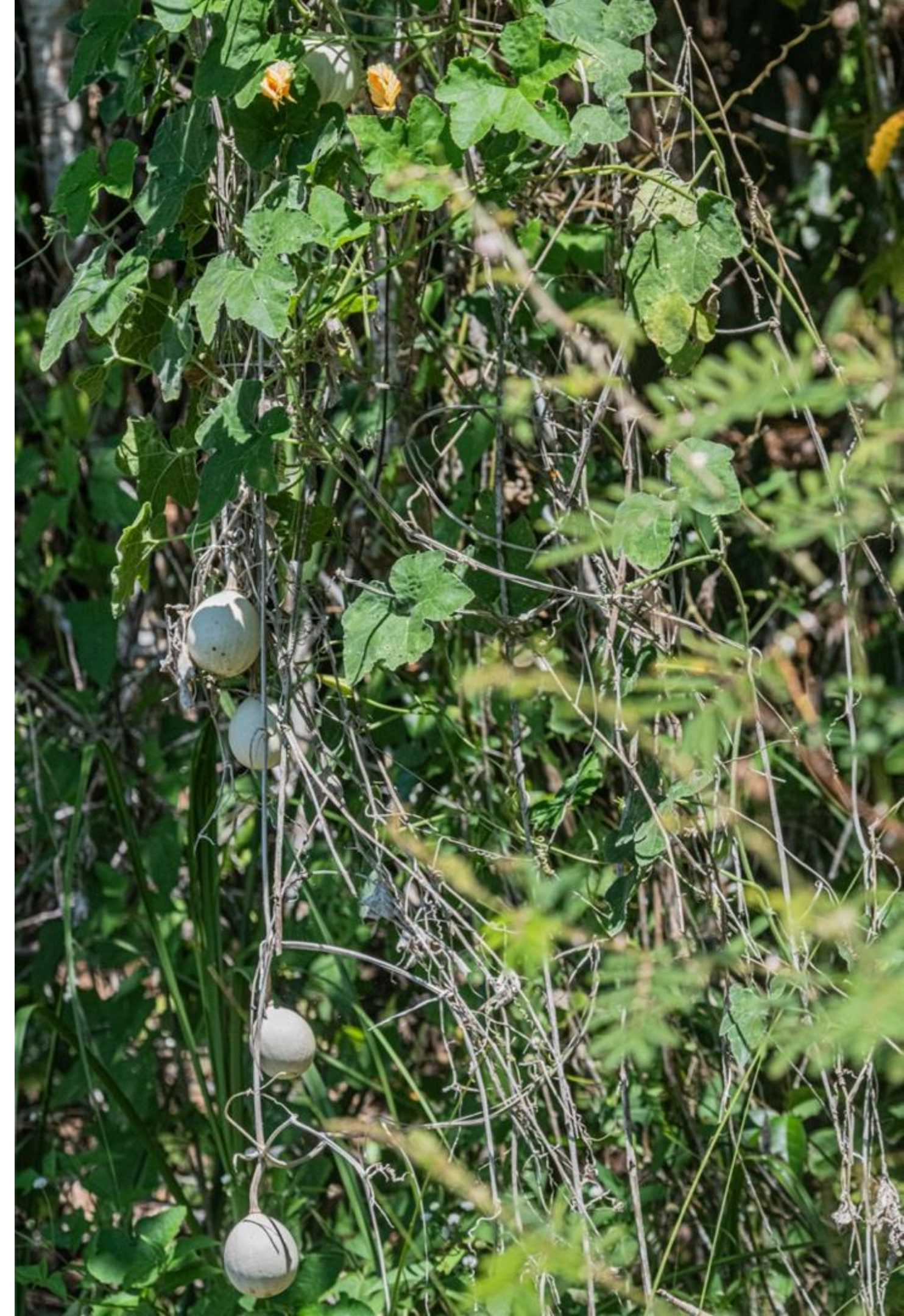
We like to show the flowers from different angles and show the leaf as documentation for botanists and ecologists for which plants grow along the edge of water.



Even though these squash pods are small, you can cut them in half, clean out the seeds, dry them, and use them as a tiny cup.

Feb. 16, 2019.

Cucurbita lundelliana does not need slash-and-burn milpa agriculture to grow.



Chapter 3

Cucurbita lundelliana, along shore of Laguna La Guitarra, PNYNN, Mar. 26, 2019

There is a long east-west row of lakes in this and other parts of Peten. Laguna La Guitarra is less than a football field length to the west of Lake Yaxha, but to get there you have to climb up a very steep hill and then climb down the other side of the steep hill to reach the shore of Laguna La Guitarra. It was good exercise for my 73-year old body.

From Laguna Guitarra we would hike several kilometers more to reach the Savanna of 3 Fern Species.





These wild squash vines can grow along the ground or climb up hills or trees.



Here you can see how the *Cucurbita lundelliana* prefers to grow literally along the shores of a lake or river, here Laguna La Guitarra.



The shore of the lagoon is very close.

Another genus of smaller yellow flowers are also growing here.



Cropped from the previous photo so you can see the details.



Would be super helpful to have a video of a *Cucurbita lundelliana* flower opening and then closing.



Chapter 4

Cucurbita lundelliana, along banks of Rio Ixtinto, PNYNN, June 5, 2019



This part of the low bank of Rio Ixtinto has grasses and sedges growing along it. You can see where the water has risen in the recent years, so grasses don't grow down here—but the *Cucurbita lundelliana* thrives.

The white branches are trees that have been flooded and died. The water level rises and falls per decade as the rainy seasons change.



All flowers open as they bloom then the petals curl back down and the flower wilts so that the seed pod can begin to grow.

The three photos in this chapter are all by Maria Alejandra Gutierrez.



Chapter 5

Cucurbita lundelliana flowering in December,
22, 2018

These photos are by Nicholas Hellmuth along the north shore of
Lake Yaxha, east of the IDAEH camp area.

This happy bee is busy at work.





Chapter 6

Botanical and Ethnobotanical Information on *Cucurbita lundelliana*

Curiously no edible or medicinal aspects are listed for *Cucurbita lundelliana* for Belize, only as PRD (Product) (Balick, Nee and Atha 2000: 75).

Cucurbita lundelliana is not listed in (Atran, Lois, and Ucan Ek' 2004: 102) but *Cucurbita lundelliana* is listed for medicinal use (page 103) and page 161:

IX B 'ULUT' [b'ul-ut' = hartar/henchir/sumergir en liquido adj.(BM)]. Calabaza cimarrona, ayote de monte. *Cucurbita lundelliana*. (ak'); k'aax.

En medicina, el fruto amargo diluido y las hojas machacadas, se aplica en infecciones cutaneas, para los piojos de los animals (uk') y para la sarna animal o sagre (we'ech) combinado con UK'AB' 'AYIM (ASTER.). Esta fue probablemente la especie primitiva de la cual se domesticaron.

Is *Cucurbita lundelliana* a vine? Or a bush? Or a Tree?

A vine; climbs up but also wanders around the ground.

Cucurbita lundelliana Bailey, Gentes Herb. 6: 297. 1943. Ayote de caballo (Retalhuleu); ixbulut (Peten); bitter pumpkin, wild pumpkin (British Honduras).

Dry thickets, plains or low hills, sea level to 300 m.; Escuintla; Peten; Retalhuleu. British Honduras.

Herbaceous annual to perennial vines, prostrate or scandent over low shrubs, the stems slender and elongated, sometimes rooting at the nodes, older parts sulcate, thinly hirsute or glabrate; tendrils mostly simple; leaves on slender, softly pilose petioles usually longer than the blades, mostly 2-12 cm. long, blades broadly ovate to subreniform in outline, usually as broad as long or broader, mostly 4-12 cm. wide, broadly and openly cordate at the base, sometimes white-spotted, usually rather deeply 5-lobate, the lobes obtuse but mucronulate, at least the central one constricted at the base, margins finely denticulate,

upper surface thinly short-pilose with appressed hairs or hispidulous and scabrous, lower surface more densely pilose, appearing grayish; staminate flowers: peduncles slender, sometimes twice as long as the subtending petiole, receptacle tube 5-9 mm. long, sepals narrowly linear, 5-15 mm. long, the apex acute or obtuse, sometimes spatulate, corolla yellow to orange-yellow, green-veined, mostly 5-7 cm. long, petals obtuse or acute, filaments short, anther head about 15 mm. long; pistillate flowers: peduncles short, 0.5-2 (-3) cm. long, perianth similar to that of the staminate flowers but larger; fruit peduncles

stout, sulcate, fruits globose or ovoid-globose, glabrous, to about 7 cm. long and 6 cm. broad, deep green or yellowish, longitudinally striped with lighter color, the shell thin but hard, the flesh white, stringy, bitter; seeds cuneate-obovate, 7-10 mm. long, pale olive-white, with a thickened, wrinkled margin.

According to Standley, the plant treated here is a wild one, of which no use is made locally. The fruits are too bitter to be eaten. During the dry season the ripe fruits may be seen in large numbers, hanging on low shrubs, particularly on the Pacific plains.

Dieterle 1976: 331

Do *Cucurbita lundelliana* vines also grow in home gardens?

Probably in the Yucatan Peninsula, estimated from Zizumbo 1986 and also Sosa 2016 each mentioning many places where *Cucurbita lundelliana* is raised or at least systematically harvested in the Yucatan Peninsula.

Are any parts of *Cucurbita lundelliana* edible?

Even though this is a wild plant that grows in remote areas of Peten, in the Yucatan Peninsula it is utilized (citations below).

Cucurbita lundelliana L.H. Bailey

This species ranges from southern Mexico through Nicaragua (Bailey 1943; Lira 1988; Lira, Andres, and Nee 1995). In the Yucatan Peninsula it is named in Spanish calabacita or calabacita de monte, and in Maya xbondzek or xburut. In the State of Yucatan, the fruit pulp is used as a soap substitute, and the shells are employed as containers (Andres & Nee 165, BH, NY, TEX, US, 169, BH, NY, TEX, US, 170, BH, NY, Flores s.n., F; Lira 1988; Lira, Andres, and Nee 1995; Zizumbo-Villarreal 1986).

(Lira and Caballero 2002: 390)

An entire MS thesis has been written on making flour of *Cucurbita lundelliana* to be available to under-nourished people in rural areas (Sosa 2016). To me this observation kind of obliterates dozens, scores of monographs on edible plants that do not include this plant.

Se concluye que la harina integral de la calabaza es un producto nutritivo que contiene un alto porcentaje de fibra, proteínas y minerales que incluso en su mayoría presentan valores superiores al de otras harinas comerciales, por lo que representa una buena alternativa para el consumo en humanos, dándole un valor agregado a este cultivo de la región.

(Sosa 2016: vi)

It is concluded that the whole meal of the pumpkin is a nutritive product that contains a high percentage of fiber, proteins and minerals that even in the majority present values superior to the one of other commercial flours, reason why it represents a good alternative for the consumption in humans, giving added value to this crop of the region.

(Sosa 2016: vii)

The publications of Zizumbo 1986 and Sosa 2016 each help rescue *Cucurbita lundelliana* to remind us Mayanists that even though a relatively ignored plant, it is edible despite botanists claiming it's inedible due to bad taste. If you grow up in USA eating gringo food it is no surprise you would not accept the taste of *Cucurbita lundelliana*. But the point is, 2000 years ago this food was available to the Maya in many areas. In the Yucatan Peninsula today the local Maya still eat it (if they live near humid ecosystems where this *Cucurbita lundelliana* vine flourishes).

So now we can show photographs to back up earlier scholars (Reyes 2009) who list *Cucurbita lundelliana* for Lake Yaxha. It also occurs at the south side of Laguneta La Guitarra; and we will be finding it in lots of other locations. Our current Project of coordination and cooperation with CONAP is five years (2021-2015) so a lot more to come on other plants and other ecosystems such as savannas, but at least we start by showing photos of what we are documenting.

My Personal Experience with *Cucurbita lundelliana*

I have not noticed or studied wild native squash of Guatemala before seeing it frequently during our field work project around Lake Yaxha of August 2018 through July 2019. Then we found more on our August 10, 2021 field trip.

This plant is well known to Dr Cesar Arzurdia from his Atlas of Guatemalan Crop wild Relatives (Arzurdia et al. 2011) and his other research.

When we hiked through this area in September 2021 the lake had risen several meters and all the south shore that was open in 2019 was now under water. So this plant seems to survive since it was still growing further inland (where the rising water had not yet reached).

The lake level has been rising several more meters, so a lot more is now underwater since 2024.

For Mexico *Cucurbita lundelliana* is listed by Villaseñor (2016: 711) for CAM, CHIS, QROO, TAB, YUC. So would help if Lacandon ethnobotanists can document uses for this specific species.

Folders		Date
Yaxha north lake shore east of camp		Dec 22 2018
Laguneta la Guitarra		26 mar 2019
Yaxha Rio Ixtinto		5 jun 2019
Yaxha lake south shore		16 feb 2019
Yaxha lake west end SW cenote area or Rio Ixtinto		Jan 22 2018
Laguna la Guitarra, south shore		26 mar 2019
Laguna la Guitarra, south shore		26 mar 2019
Yaxha lake west end, north shore		2021

Are *Cucurbita lundelliana* vines registered for Parque Nacional Tikal?

Figure 28 is an excellent photograph of the fruit, full flower, and leaf. One of the best photos in a botanical monograph that I have seen (especially helpful for a monograph of 1982).

Fig. 28. *Cucurbita Lundelliana* L.H. Bailey, a progenitor of the cultivated *Cucurbita*, growing at Tikal. This wild gourd was discovered in Peten in 1933. Whitaker in 1956, *Am. Nat.* 90: 171-176; and in 1959, *Madrono* 15: 4-13, reported on the genetics of the species and its relationships. (Lundell 1982: 77)

Same for Yaxha Nakum Naranjo, is *Cucurbita lundelliana* present or missing from earlier lists?

Reyes and her team note *Cucurbita lundelliana* for five lagoons (2009: 64)

Lake Peten Itza

Laguna Macanche

Laguna Petenchel

Laguna Sacnab

Laguna Sacpuy

Laguna Yaxha

What species of *Cucurbita lundelliana* vines did Cyrus Lundell find in Peten in the 1930's?

Lundell did not name *Cucurbita lundelliana* in his 1937 monograph nor in his 1938 list of utilitarian plants; he only mentioned *Cucurbita radicans* Naud., Bulot

Where has *Cucurbita lundelliana* been found in the Peten?

Each botanist will have their own preferred databases to check. Here is one:

<https://serv.biokic.asu.edu/neotrop/plantae/collections/harvestparams.php>

I prefer to use Portal de la Bioversidad de Guatemala: Escuintla, Zacapa, Petén: Tikal, San José, Biotopo El Zotz, cibal El Palmar; Uaxactun; San Luis; Lake Peten Itza, Santa Elena, La Libertad, along lakeshore; Laguna Yaxha (this is probably when I met botanist John D. Dwyer, since the FLAAR Team was at Yaxha 1970-1974).

What other Trees or Plants are often found in the same Habitat?

Wild papaya and Passiflora vines are the most notable associated plants with *Cucurbita lundelliana*. We have separate FLAAR Reports on the gorgeous flowers of passionflower vines along the banks of Rio Ixtinto, Rio San Pedro, and Arroyo Petexbatun—all in Peten.

Local names and Mayan names for *Cucurbita lundelliana*

Ayote de caballo (Retalhuleu); ixbulut (Peten); bitter pumpkin, wild pumpkin (British Honduras). (Dieterle 1976: 331).

In the Yucatan Peninsula it is named in Spanish calabacita or calabacita de monte, and in Maya xbon dzek or xburut. (Lira and Caballero 2002: 390).

Cucurbita lundelliana is wild in PNYNN, but occasionally raised in gardens elsewhere--in Yucatan *Cucurbita lundelliana* is raised; yes, raised as an edible plant (Zizumbo 1986: 16 and also Sosa 2016)

Concluding Discussion and Summary on *Cucurbita lundelliana*

Plants of biodiverse ecosystems deserve to have botanical publications show and mention where these species grow. Merely having a plant in a list is better-than-nothing but is not very educational. I just looked at a substantially funded report on a nature area of Mexico where the plants were just dumped into a list. Then I found a 377 page monograph on biodiversity of Tabasco; again, *Cucurbita lundelliana* was in a list, period. The photos were helpful but over 50% were not of acceptable quality (mostly too dark).

This is why herbaria collections are a good first step but in the long run are obsolete. A panorama photo or wide-angle photo, in full color, can show where a plant grows.

And drone photos are significantly better (when you also have photos from the ground)!

So our goal at FLAAR (USA) and FLAAR Mesoamerica (Guatemala) is to provide additional documentation that has ecological and botanical information beyond what's in 200 year old herbaria. We are in the year 2025, entering 2026: let's move into the digital era and provide a wider range of documentation on *Cucurbita lundelliana*.

The helpful monograph by Reyes lists *Cucurbita lundelliana* for several Peten lakesides, but zero photos and no research on any lake that is not reachable by comfortable car or other easy access: we are willing to hike for up to 8 to 10 hours a day 12 to 18 kilometers a day—plus then do fieldwork after hiking to the remote location (then we hike back to the base camp).

I estimate that the present FLAAR report has more photographs of *Cucurbita lundelliana* than any other publication (and for sure more than 90% of botanical monographs and peer-reviewed journal articles). The traditional botanical literature is essential, but it definitely helps to have in-person, on-location studies out in remote areas (a polite way to say, more than just catalogs of herbaria specimens).

References Cited and Additional Suggested Reading on *Cucurbita lundelliana* L.H. Bai

Most helpful report on this plant:

The year 2016 MS thesis by Sosa is the best documentation of the edible use of this plant. This thesis is especially helpful since 90% of lists of edible plants do not list FOOD as an aspect of *Cucurbita lundelliana*. A much longer bibliography is in Hellmuth 2021.

ATRAN, Scott; LOIS, Ximena and Ediberto UCAN Ek'

2004 Plants of the Peten Itza Maya. Memoirs of the Museum of Anthropology, University of Michigan Number 38. 258 pages in downloadable PDF.

AZURDIA, C.; WILLIAMS, K. A.; WILLIAMS, D. E.; VAN DAMME, V.; JARVIS, A. and S. E. CASTAÑO

2011 Atlas of Guatemalan Crop Wild Relatives. United States Department of Agriculture/Agricultural Research Service (USDA/ARS); Bioversity International; International Center for Tropical Agriculture (CIAT); and the University of San Carlos in Guatemala (FAUSAC).

BALICK, M.J., NEE, M.H. and D. E. ATHA

2000 Checklist of the Vascular Plants of Belize with Common Names and Uses: i-x, 1-246. New York Botanic Garden Press.

COOK, Suzanne

2016 The Dorest of the Lacandon Maya: an ethnobotanical guide. Springer. 334 pages.

DIETERLE, JENNIE V. A.

1976 Cucurbitaceae. Flora of Guatemala, FIELDIANA: BOTANY, Volume 24, Part XI, Number 4. Field Museum of Natural History.

HELLMUTH, Nicholas

2021 Wild, Undomesticated Squash In Seasonally Inundated Ecosystems, *Cucurbita lundelliana*. FLAAR Mesoamerica. 51 pages in the downloadable PDF

LIRA Saade, Rafael and S. MONTES Hernández

- 1994 Cucurbits, (*Cucurbita* spp.). in *Neglected Crops: 1492 from a Different Perspective*. J. E. Hernándo Bermejo and J. León (eds.). Plant Production and Protection Series No. 26. FAO, Rome, Italy. p. 63-77. Available at: www.hort.purdue.edu/newcrop/1492/cucurbits.html
Has nice drawings of fruits and leaves of four species but not of the wild species *Cucurbita lundelliana*.

LIRA, Rafael and Javier CABALLERO

- 2002 Ethnobotany of the Wild Mexican Cucurbitaceae. *Economic Botany* 56(4) pp. 380–398. 2002.

LUNDELL, Cyrus Longworth

- 1937 The Vegetation of Peten. *Carnegie Institution Washington Publication* No. 478. 244 pages.

LUNDELL, Cyrus Longworth

- 1938 Plants probably utilized by the Old Empire Maya of Peten and adjacent Lowlands. *Papers of the Michigan Academy of Sciences, Arts, and Letters*; Vol. 24, p p: 37-56. University of Michigan, Ann Arbor.

LUNDELL, Cyrus Longworth

- 1982 Notes on Agriculture of the Ancient Maya, Exploration, and Sundry Investigations in Peten, Guatemala. *WRIGHTIA*, Volume 7, No 1, 1981, pp. 55-82.

REYES Morales, Elsa María de Fátima; MORALES Can, Julio Enrique; OLIVA Hernández, Bessie Evelyn and Celia Vanessa DÁVILA Pérez

- 2009 Los Cuerpos de Agua de la Región Maya Tikal –Yaxhá: Importancia de la Vegetación Acuática Asociada, Calidad de Agua y Conservación. CECON, LIQA, and IQB.

SOSA Medina, Alicia

- 2016 Diseño y Elaboración de Harina Integral de Calabaza “*Cucurbita lundelliana*” Para Consumo Humano. MS degree thesis. Villahermosa, Tabasco.

Download:

http://villahermosa.tecnm.mx/docs/departamentos/tesis/repositorio_de_tesis_2014-2020/Tesis%20Alicia%20Sosa%20Medina.pdf

VILLASEÑOR, José Luis

2016 Checklist of the native vascular plants of Mexico. *Revista mexicana de biodiversidad*, Vol. 87, pages 559-902.

ZIZUMBO V., Daniel

1986 Aspectos Etnobotánicos de las Calabazas Silvestres y Cultivadas (*Cucurbita* spp.) de la Península de Yucatán. Boletín E.C.A.U.D.Y. Vol. 13, No. 77.

Download: https://cicy.repositorioinstitucional.mx/jspui/bitstream/1003/1486/1/1986_Zizumbo_Aspectos.pdf

Acknowledgements and Appreciation for Cooperation and Coordination for Field Work Research at PNYNN, RBM, Peten

FOR COOPERATION, HOSPITALITY, AND ASSISTANCE AT PARQUE NACIONAL YAXHA, NAKUM AND NARANJO PROJECT (August 2018 through July 2019)

Ing. Jorge Mario Vásquez Kilkán (CONAP, Santa Elena, Peten)

Arq. Jose Leonel Ziesse Altán (IDAEH, Santa Elena, Peten)

Biolg. Ana Lorena Lobos Morales (CONAP)

INITIATION AND COORDINATION OF THE PROJECT OF COOPERATION
FOR 2021-2026

Licda. Merle Fernandez, CONAP

Marla Mercedes Bolvito Jerónimo, Unidad de Cooperación Nacional e Internacional de la Secretaría Ejecutiva de CONAP

Licda. Ana Luisa De León N., Directora de Educación para el Desarrollo Sostenible, CONAP

Ing. Sergio Alejandro Rolando Balan, Director Regional, CONAP, Peten

Ing. Jorge Mario Vásquez Kilkán (CONAP, Santa Elena, Peten)

Lic. Lester Ely García González, Coordinador Administrativo de Yaxhá para el Ministerio de Cultura y Deportes

Lic. Apolinario Córdova, CONAP Petén (in initial years)

FOR COOPERATION, HOSPITALITY, & ASSISTANCE AT PNYNN WE THANK all the helpful and knowledgeable guides of IDAEH CONAP at PNYNN who accompanied us each day. It is essential to have either an IDAEH and/or CONAP guardabosque or comparable when doing flora and fauna research in a national park. Plus we appreciate the assistance of the military at the Yaxha park entrance to help us on field trips to find and document the far-away Savanna of 3 Fern Species at the west end of PNYNN.

ASSISTANCE FOR KNOWLEDGE OF PLANTS AND ANIMALS OF PNYNN

Teco, Moises Daniel Perez Diaz, park ranger, PNYNN

TARPS TO COVER AND PROTECT EQUIPMENT IN THE BACK OF OUR PICKUP TRUCK—AND TARPS TO COVER OUR TENT CAMPING AREA WHILE CAMPING IN REMOTE AREAS

We sincerely thank Mr. Segovia of Lonas Segovia for donating several giant tarps that are essential for our field trips to remote areas.

TENTS AND COOKING EQUIPMENT AT NAKUM CAMP, PNYNN

Manola Margot Lima Diaz owner of Restaurante El Portal de Yaxha, La Maquina

FLAAR was formed in 1969 to map Yaxha (and nearby Topoxte Island and Nakum) during 1970-1974 and we worked with the president of Guatemala and the head of FYDEP to initiate protection of this area as a national park. Other conservationists added the Naranjo segment. Recently we were asked to return for flora, fauna, and biosphere field work from August 2018 to July 2019. This project was successful and as a result we were asked by CONAP to return for five years, 2021-2025 of coordination and cooperation with them, both in the Yaxha, Nakum and Naranjo national park plus all the rest of the Reserva de la Biosfera Maya.

Base Camp Assistance at Naranjo-Sa'al

We thank Arqueologa Vilma Fialko and Arquitecto. Raul Noriega for hospitality and place to stay and kitchen while doing field work in flora, fauna and wetlands ecosystems in the Naranjo-Sa'al area of PNYNN. We thank Horacio Palacios who assisted as a guide for how to reach the amazing Savanna West of Naranjo-Sa'al.

Base Camp Assistance at Yaxha

We thank Biologist Ana Lorena Lobos Morales and both co-administrators of PNYNN (Arq. Jose Leonel Ziesse (IDAEH) and Lic. Jorge Mario Vazquez (CONAP) for providing a place to stay for the photographers, biologists, and assistants of the FLAAR Mesoamerica team of flora and fauna during the 1-week-a-month field trips August 2018 through July 2019.

In turn FLAAR purchased and donated a cooking stove when the original one no longer functioned, plus we have photographed and documented many tree and insect species that we found around this camp.

The design of this FLAAR Reports is horizontal for several reasons: so horizontal photos can be shown at larger size so you can see the detail; and so we can put two vertical photos on the same page. A horizontal format is easier to look at on a computer monitor. Plus this PDF can be presented in a classroom at this helpful horizontal format. This original design is by Nicholas Hellmuth, additional design concepts are by Valeria Aviles Diaz (FLAAR Mesoamerica) and Fernanda Ramos .

Ecolodge El Sombrero

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 and 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.

In order to post photographs on botanical and zoological websites, you can't do this if there is either no Internet or weak Internet. Thus it is very helpful that when we are provided rooms and meals, that Internet is also provided by the Ecolodge El Sombrero.

Contact Info: +502 5460 2934, VentasElSombrero@gmail.com or WhatsApp.

www.elsombreroecolodge.com/en-us

Donations make our Field Trips and Research and Publications Possible

We appreciate a donation during November 2021 to help cover the costs of FLAAR research projects specifically to assist and support the current FLAAR project of flora and fauna in the Reserva de la Biosfera Maya (RBM). This donation also assisted the FLAAR (USA) and FLAAR Mesoamerica (Guatemala) research project in the Municipio de Livingston area of the departamento of Izabal, Guatemala.

In a subsequent year we received an additional helpful donation from this family to help fund the field work and research and publications on flora, fauna and biodiverse ecosystems of PNYNN and surrounding RBM of Peten, Guatemala.

These donations are from a family in Chicago in honor and memory of botanist Dr John D. Dwyer, who worked in many areas of Mesoamerica, including in the Yaxha area in the 1970's while the site was being mapped by FLAAR.

These donations are also in recognition of the urgency and need for conservation of both wildlife and rare plants in the bio-diverse ecosystems of the Reserva de la Biosfera Maya (RBM) of Guatemala. Parque Nacional Yaxha, Nakum and Naranjo (PNYNN) is one part of the over 5 million acres of the RBM.

FLAAR is a non-profit research institute, tax exempt in USA.



HOW TO GET TO YAXHA?

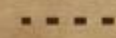
MAP SYMBOLS



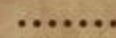
Archaeological sites



Airports



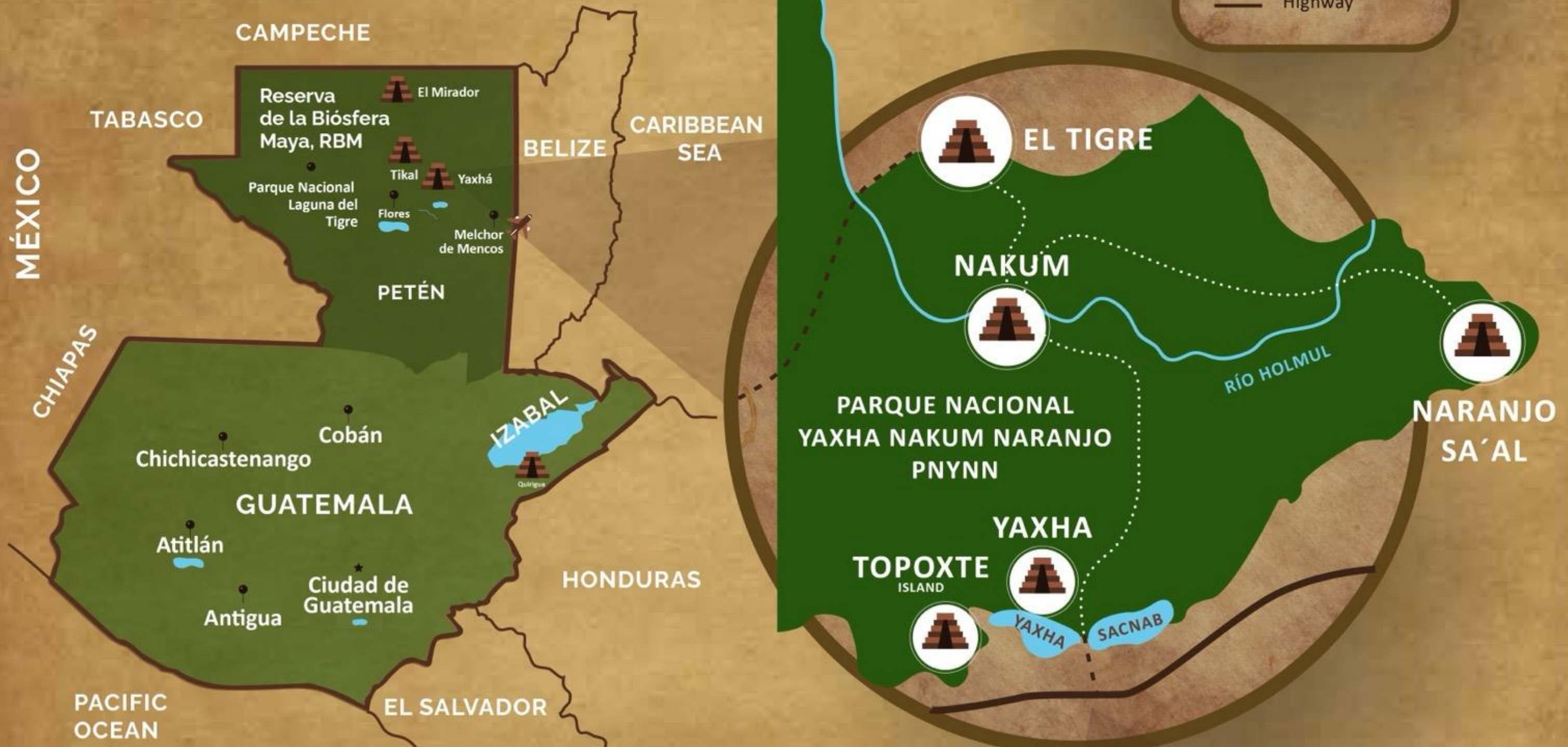
Dirt or gravel road



Road with deep ruts & mud



Highway





Go to the Mundo Maya airport in Santa Elena and then you will find a services 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 Maquina, turn left to the site. Ecolodge El Sombrero is 50 meters before the entrance to National Park Yaxha - Nakum - Naranjo.

Acknowledgements and Appreciation

The design of this FLAAR Reports is horizontal for several reasons: so horizontal photos can be shown at larger size so you can see the detail; and so we can put two vertical photos on the same page. A horizontal format is easier to look at on a computer monitor. Plus this PDF can be presented in a classroom at this helpful horizontal format. This original design is by Nicholas Hellmuth, additional design concepts are by Valeria Aviles Diaz (FLAAR Mesoamerica). The pages were numbered by student intern Mariana Ramirez and the front covers of the thirteen publications of the series were organized by her and fellow student interns.

The following four pages Show the Front Covers of the first fifteen FLAAR Reports on Flowers of PNYNN worth Seeing and Learning About

The front covers are not yet hot links because we are still finishing these reports. But by end of October 2025, all fifteen will be on-line on www.Maya-ethnobotany.org and on other of our web sites.

We are also preparing FLAAR Reports on orchids and bromeliads of PNYNN.

FLAAR Reports on "How to Recognize which Tree Genus and Species by the Pattern, Color, or other Features of the Bark on their Trunk"

FLAAR Reports on edible insects of PNYNN. There are over 500 edible insects across Mexico, so we are looking for samples at PNYNN.

FLAAR Reports on waterbirds of PNYNN, published as part of a project of coordination and cooperation with FUNDAECO.

Bright Orange Flowers of *Cordia dodecandra*, Nakum Area of PNYNN, Peten, Guatemala



Volume 1 for Series:
Flowers worth experiencing at Parque Nacional Yaxha, Nakum and Naranjo, PNYNN
Reserva de la Biosfera Maya, RBM, Peten, Guatemala

Nicholas Hellmuth, FLAAR Reports, FLAAR (USA) and FLAAR Mesoamerica (Guatemala)
October 2025

**4-Petalled Flowers of River Banks, Lake Shores, and Seasonally inundated Savannas
*Ludwigia octovalvis***



Volume 2 for Series:
Flowers worth experiencing at Parque Nacional Yaxha, Nakum and Naranjo, PNYNN
Reserva de la Biosfera Maya, RBM, Peten, Guatemala

Masses of Yellow Flowers, Genus *Combretum*, along road between Yaxha and Nakum, PNYNN



Volume 3 for Series:
Flowers worth experiencing at Parque Nacional Yaxha, Nakum and Naranjo, PNYNN
Reserva de la Biosfera Maya, RBM, Peten, Guatemala

Text and Photographs: Nicholas Hellmuth, FLAAR Reports, FLAAR (USA) and FLAAR Mesoamerica (Guatemala)
October 2025

**Flowers and bizarre Bracts of *Calathea lutea*,
relative of *Heliconia* and of Banana
Naranjo-Sa'al and Savanna of 3 Fern Species
areas of Parque Nacional Yaxha, Nakum and
Naranjo (PNYNN)**

Fresh Green Leaves of *Calathea lutea*
are a great Alternative to Plastic

Volume 4 for Series:
Flowers worth experiencing at Parque
Nacional Yaxha, Nakum and Naranjo,
PNYNN
Reserva de la Biosfera Maya, RBM, Peten,
Guatemala

Nicholas Hellmuth, FLAAR Reports, FLAAR (USA)
and FLAAR Mesoamerica (Guatemala),
October 2025



Costus pictus, Medicinal Flowers,
Yaxha and Naranjo-Sa'al Areas of PNYNN

Volume 5 for Series:
Flowers worth experiencing at Parque
Nacional Yaxha, Nakum and Naranjo,
PNYNN
Reserva de la Biosfera Maya, RBM,
Peten, Guatemala



Nicholas Hellmuth, FLAAR Reports,
FLAAR (USA) and FLAAR Mesoamerica
(Guatemala), October 2025

Piscidia piscipula, Jabin, Dogwood, with Hummingbird Pollinator
Yaxha and Nakum areas of Parque Nacional Yaxha, Nakum and Naranjo



Volume 6 for Series:
Flowers worth experiencing at Parque Nacional Yaxha, Nakum and Naranjo, PNYNN
Reserva de la Biosfera Maya, RBM, Peten, Guatemala
Nicholas Hellmuth, FLAAR Reports, FLAAR (USA) and FLAAR Mesoamerica (Guatemala), October 2025

A beautiful Red Flower, a Hibiscus Relative, but the Petals and Sepals never open
Malvaviscus arboreus, Sleeping Hibiscus



Volume 7 for Series:
Flowers worth experiencing at Parque Nacional Yaxha, Nakum and Naranjo, PNYNN
Reserva de la Biosfera Maya, RBM, Peten, Guatemala

Nicholas Hellmuth, FLAAR Reports, FLAAR (USA) and FLAAR Mesoamerica (Guatemala), October 2025

Photogenic wild Morning Glory Flowers of Nakum and Yaxha areas of PNYNN



Volume 8 for Series:
Flowers worth experiencing at Parque Nacional Yaxha, Nakum and Naranjo, PNYNN
Reserva de la Biosfera Maya, RBM, Peten, Guatemala

Nicholas Hellmuth, FLAAR Reports, FLAAR (USA) and FLAAR Mesoamerica (Guatemala), October 2025

Photogenic Bright Yellow Morning Glory Flowers of Genus *Merremia*

Nakum and Yaxha areas of PNYNN



Volume 9 for Series:

Flowers worth experiencing at Parque Nacional Yaxha, Nakum and Naranjo, PNYNN
Reserva de la Biosfera Maya, RBM, Peten, Guatemala

Nicholas Hellmuth, FLAAR Reports, FLAAR (USA) and FLAAR Mesoamerica (Guatemala), October 2025

Yellow Flower Paradise, Yellow Flowers Covering the Tree Canopy
Nakum, East of Savanna Bajo, PNYNN



Volume 10 for Series:

Flowers worth experiencing at Parque Nacional Yaxha, Nakum and Naranjo, PNYNN
Reserva de la Biosfera Maya, RBM, Peten, Guatemala

Nicholas Hellmuth, FLAAR Reports, FLAAR (USA) and FLAAR Mesoamerica (Guatemala), October 2025

Yellow Flowers & Fruits of Wild Undomesticated Squash Vines,
Cucurbita lundelliana

Along the Shores of Lakes and Rivers in Parque Nacional Yaxha, Nakum and Naranjo



Volume 11 for Series:

Flowers worth experiencing at
Parque Nacional Yaxha,
Nakum and Naranjo, PNYNN
Reserva de la Biosfera Maya,
RBM, Peten, Guatemala



Nicholas Hellmuth, FLAAR Reports, FLAAR (USA) and FLAAR Mesoamerica (Guatemala)
October 2025

Orange Masses of Flowers of Parasitic Vine (but does not kill the host)
Genus *Psittacanthus*, Yaxha, Blom Sacbe and adjacent Grupo Maler



Volume 12 for Series:

Flowers worth experiencing at Parque Nacional Yaxha, Nakum and Naranjo, PNYNN
Reserva de la Biosfera Maya, RBM, Peten, Guatemala

Text and Photographs: Nicholas Hellmuth
FLAAR Reports, FLAAR (USA) and FLAAR Mesoamerica (Guatemala)
October 2025

**Yellow-Orange Flowers of Trees of the *Caesalpinia* species,
Fabaceae family
Bajo La Justa, between Yaxha and Nakum, PNYNN**



Volume 13 for Series:
Flowers worth experiencing at Parque Nacional Yaxha, Nakum and Naranjo, PNYNN
Reserva de la Biosfera Maya, RBM, Peten, Guatemala

Nicholas Hellmuth, FLAAR Reports, FLAAR (USA) and FLAAR Mesoamerica (Guatemala), October 2025

**Gorgeous Yellow Masses of Flowers of
Haematoxylum campechianum
at Parque Nacional Yaxha, Nakum and Naranjo**

Volume 14 for Series:
Flowers worth experiencing at Parque Nacional Yaxha,
Nakum and Naranjo, PNYNN
Reserva de la Biosfera Maya, RBM, Peten, Guatemala

Nicholas Hellmuth

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

October 2025



**Flowers of
Orchids on Trees**
surrounding the Maya Ruins
of Yaxha, PNYNN

Vol 15 for Series:
Flowers worth experiencing
at Parque Nacional
Yaxha, Nakum and Naranjo
(PNYNN)

Reserva de la Biosfera Maya
RBM
Peten, Guatemala

Nicholas Hellmuth

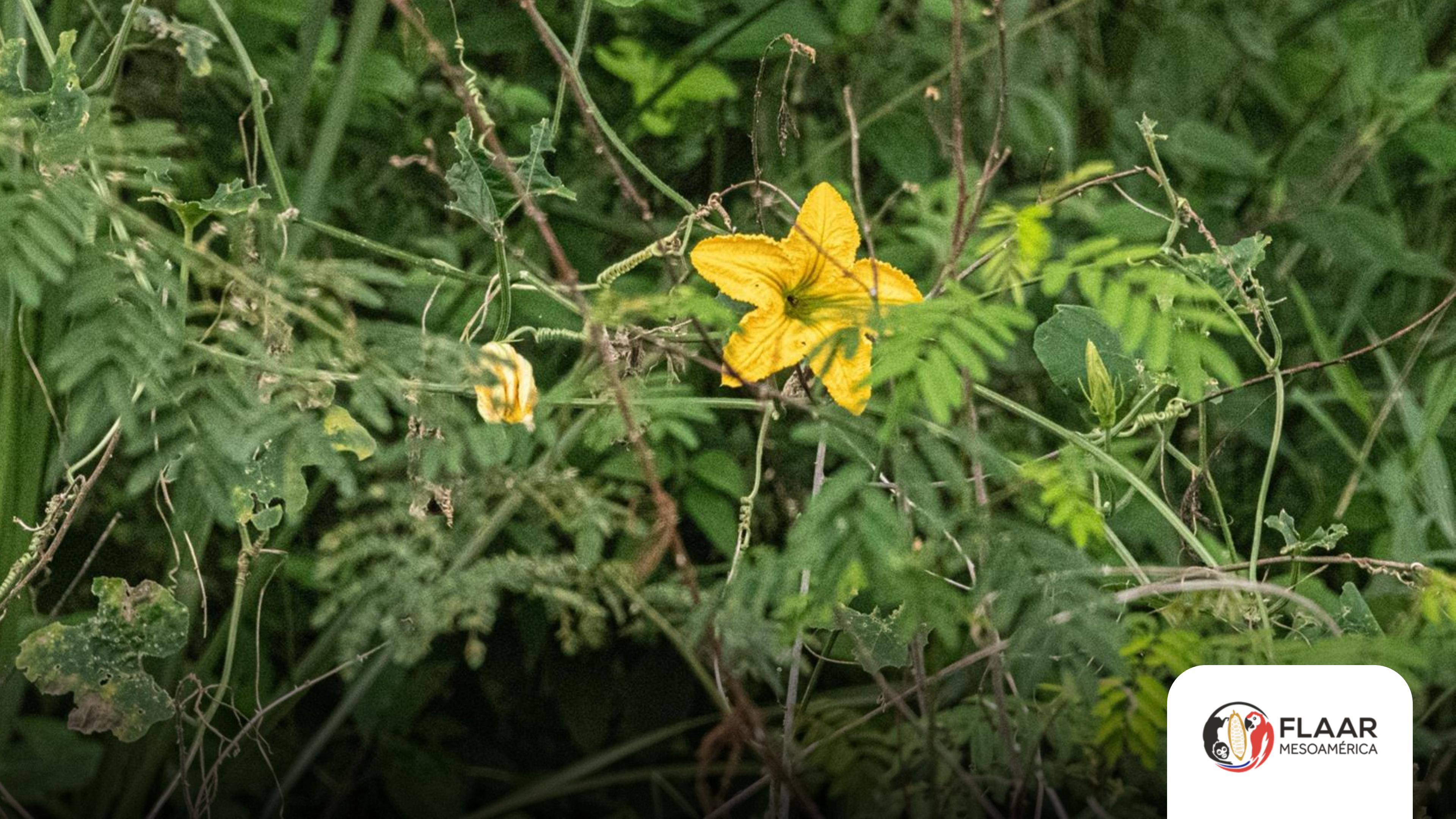
October 2025



FLAAR
MESOAMERICA

FLAAR





FLAAR
MESOAMÉRICA