Foods for the Classic Maya of Petén: from Wild (uncultivated) Plants of Rain Forests, Savannas and Wetlands

"The Classic Maya did not rely only on Milpa Agriculture for their Food."

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The following species are part of a preliminary list of edible species found in rain forests, savannas and wetlands of Petén.

Trees, shrubs, and palms with edible fruits or other edible parts:

Acoelorrhaphe wrightii Pimientillo, Tasiste, Palmetto Palm
Byrsonima bucidaefolia, nance agrio
Byrsonima crassifolia, nance dulce
Coccoloba barbadensis, papaturro
Cochlospermum vitifolium, tecomasuche
Crescentia cujete, calabash tree, jicara, jicaro, morro

Edible herbs, grasses, and other plants (which aren't trees):

Acrostichum danaeifolium and *A. aureum,* mangrove fern (no salt water needed)

Aniseia martinicensis, family Convolvulaceae.

Begonia species, needs ID as to species

Canna glauca, water canna and *Canna indica*, arrowroot

Cassytha filiformis, dodder laurel

Diphysa carthagenensis, ruda silvestre

Guadua longifolia, jimba, spiny bamboo, native to Guatemala

Parathesis sessilifolia

Passiflora either *P. sessilifolia* or *P. foetida*, maracuyá silvestre

Sagittaria latifolia, cola de golondrina, water potato

Thalia geniculate, popal, alligator flag

Cladium jamaicense, sawgrass, forms "cibales" (sibal, sival, cival)

FLAAR Mesoamérica is still looking for these two other species which are probably found in the savannas of the Maya Biosphere Reserve: *Lasiacis divaricata*, carricillo; and *Lasiacis ruscifolia.*

Edible plants of floodable savannas

Many edible plants are found in seasonally flooded grasslands, savannas that become completely dry seasonally, and other types of savannas.

These are savannas 1 to 14 at Paso Caballos (Laguna del Tigre National Park), based on a numeration made by our team while documenting these ecosystems in the Maya Biosphere Reserve (Reserva de la Biósfera Maya, RBM). This was part of our five-year project of coordination and cooperation with CONAP (Consejo Nacional de Áreas Protegidas).

Savannas 12 to 33 near Paso Caballos (Laguna del Tigre National Park).

I estimate that 90% or more of these savannas have not been studied by biologists or ecologists.

Each savanna has different areas, where different plants can be found. For instance, the species that grow in their borders, in forest transition areas, are different to those found in the center. Also, depending on the soil, some savannas get waterlogged at the height of the rainy season, and therefore, different plant species inhabit them.

Many more edible plants exist in savannas, which will be described when someone camps in the border of each savanna to explore and document the plants that grow in their different areas. No edible plant or tree that naturally grows in a savanna needs cultivation. Moreover, most of these are also perennials, which means that they could be harvested periodically without having to invest any time or resources for their cultivation.

If the leaves or roots (including tubers and bulbs) of these plants are edible, they may be available for most part of the year, except in the dry season, when many loose their leaves due to fires, or simply because they are deciduous. In any event, most of the plants that grow in savannas have evolved to survive fires.

Savanna of Three Fern Species, northwest to the west border of Lake Yaxhá.

Many savannas of Petén have tasiste palm (*A. wrightii*) ecosystems, called tasistales. These grow almost exclusively in floodable savannas. The stem of a tasiste palm is edible. This small savanna has thousands of these palms.

This is Tasistal Arroyo Petexbatún, the first tasistal area documented by FLAAR. It holds an estimated more that one million tasiste palms.

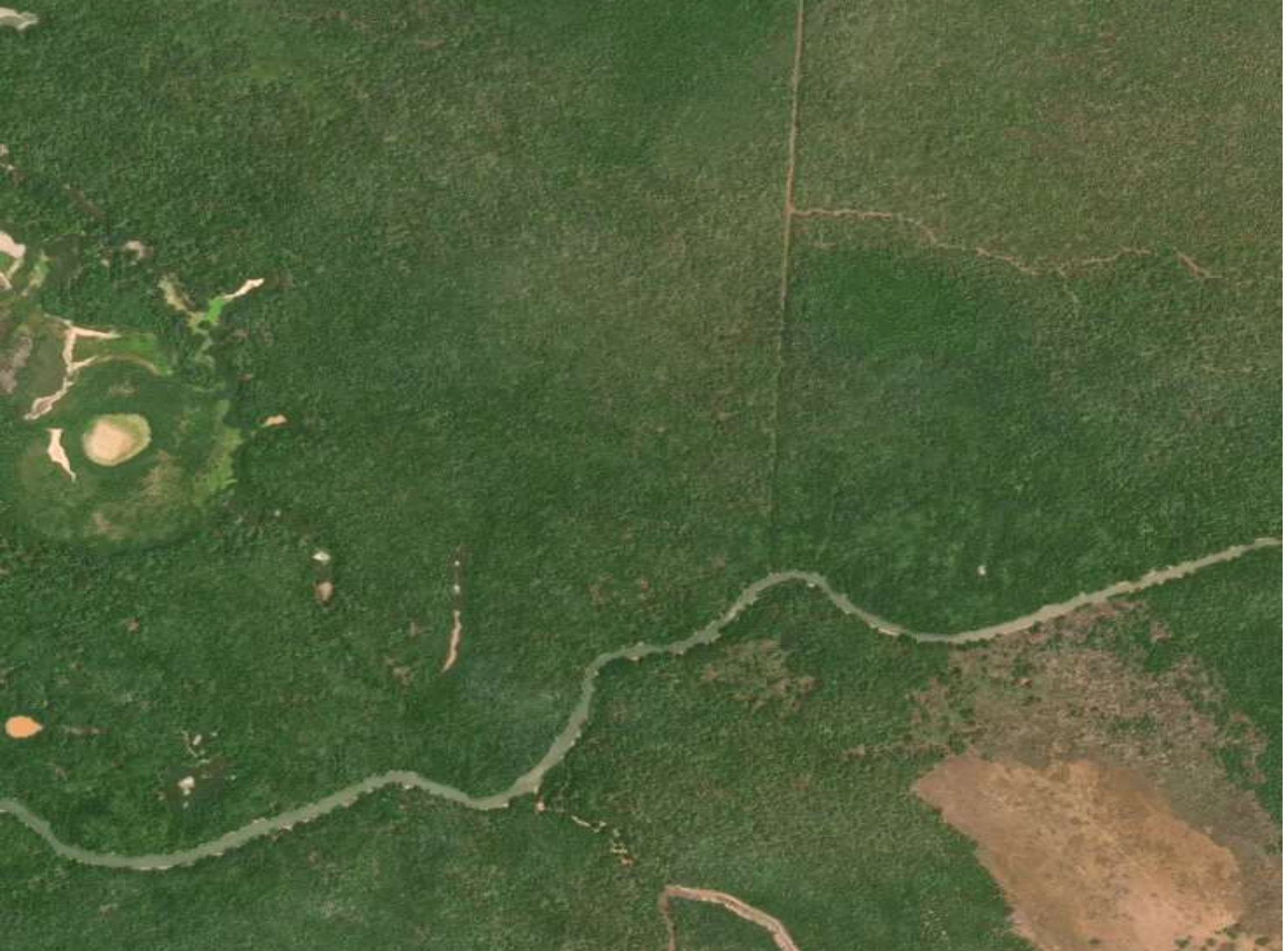
Savanna #24, Paso Caballos, PNLT.

A few years later, FLAAR documented additional large *tasistales* of Guatemala, located in the southeast area of Laguna del Tigre National Park (PNLT). There are also many edible palms of other species that grow in other ecosystems of the RBM.

The area shown in the white rectangle is where the tasiste ecosystem we call as *Tasistal Arroyo Petexbatún* is, about 4 km north of Laguna Petexbatún.

As you can see, cattle ranches are moving in and soon these tasistales will no longer be available to biologists or archaeologists to study.

Image retrieved from Caltopo.com.



The stream that crosses from left to right in this image is Arroyo Faisán, where the second tasiste ecosystem documented by FLAAR in Petexbatún is located.

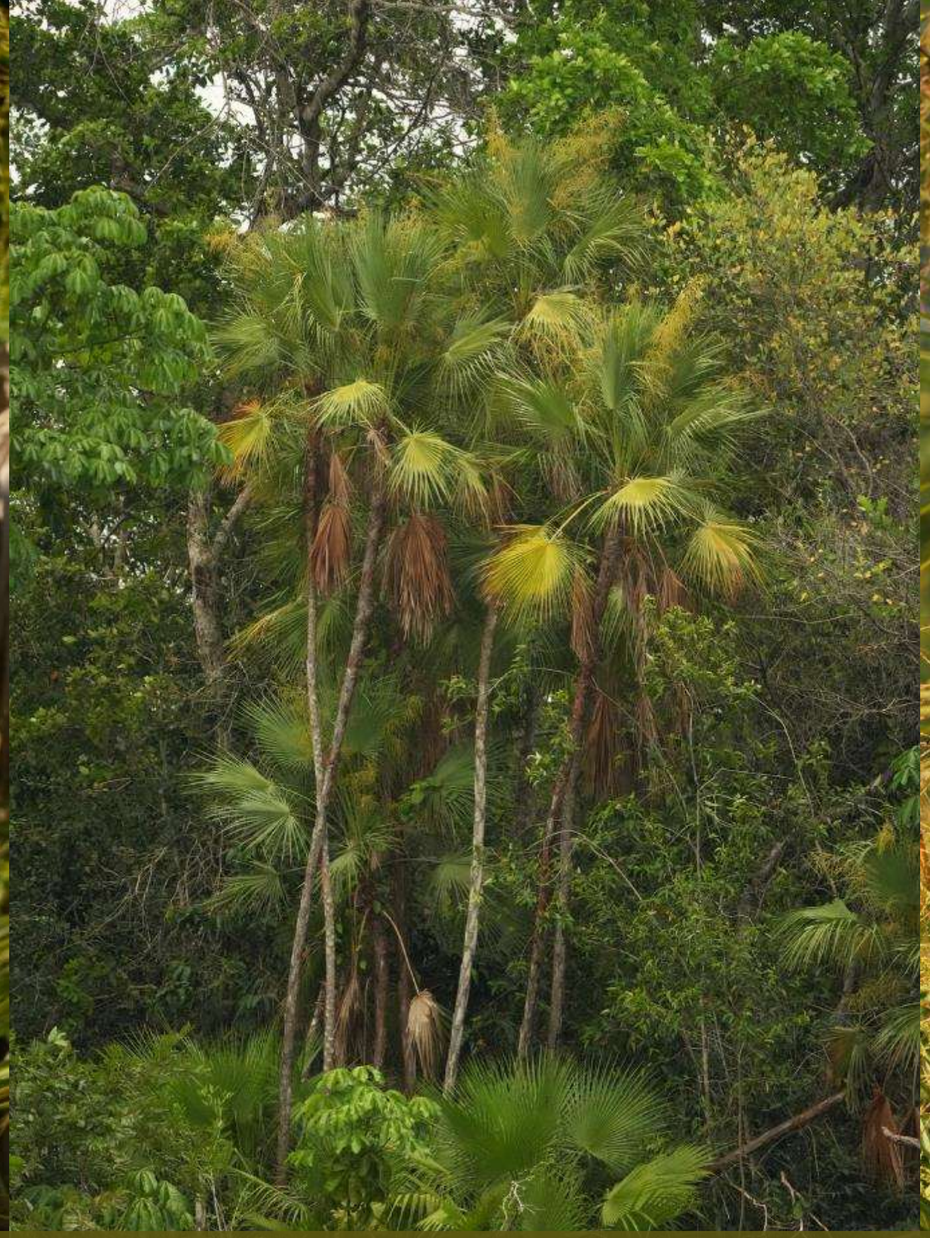
Image retrieved from Caltopo.com.

Acoelorraphe wrightii (Griseb. & H.Wendl.) H.Wendl. ex Becc.

Everglades palm, palmetto palm, tasiste, pimiento or pimientilla is edible.

Edible parts: palm heart (inside stem) and seeds.

Other uses: ornamental, a source of natural fibers, medicinal, and for construction. Extracts of the seeds are used to treat cancer.


The harvest of the palm heart is sustainable due to the regrowth capacity of each clump, which doesn’t happen with other palm species.

This edible plant is so common that it should get more attention.

El Pinal, Bajo de Santa Fe, near the east border of Tikal National Park.

Tasiste palm is rarely found in bajos, but curiously grows in association with the only pine relict of the Maya Biosphere Reserve, located in Bajo de Santa Fe, RBM.

FLAAR did the first ever photo documentation of this pine forest in 2023, where *tasiste* was also photographed and documented.

Byrsonima bucidaefolia Standl.

Nance agrio.

Edible parts: fruits and leaves (for tea, or cooked in soups and salads).
Other uses: medicinal, to dye animal skins, and to make fermented drinks.

Byrsonima crassifolia Lunan ex Griseb.

Nance dulce, nance de monte, chi' (Mayan).

Tasistal savannas and also open grassland savannas have one or more species of nance. The most common in the savannas of Petén and on the pine ridges of British Honduras is *B. crassifolia*. The yellow fruits are gathered in large quantities (Lundell, "Edible plants of Peten").

Edible parts: fruits and leaves (may also be used for tea).

Other uses: medicinal; for construction; a source of dye, and fibers.

The bark can be used to tan animal hides.

Crescentia cujete L.

Calabash tree, jícaro or morro.

I estimate that around 95% of the grasslands and tasiste savannas may have *Crescentia cujete* trees (calabash tree of the Popol Vuh). This tree is often found throughout the savannas deep in Yaxhá, Nakum and Naranjo National Park (PNYNN) and elsewhere in the Maya Biosphere Reserve (RBM). FLAAR found many in the Savanna East of Nakum.

The jícaro (morro) trees fruit for several months each year, and many parts of the fruits are edible. The dry seed pods have many uses as well. For instance, the Maya would cut the seed pod in half and use each half as a drinking cup or small bowl. Many Tepeu 1 ceramics share the same size and shape for these uses.

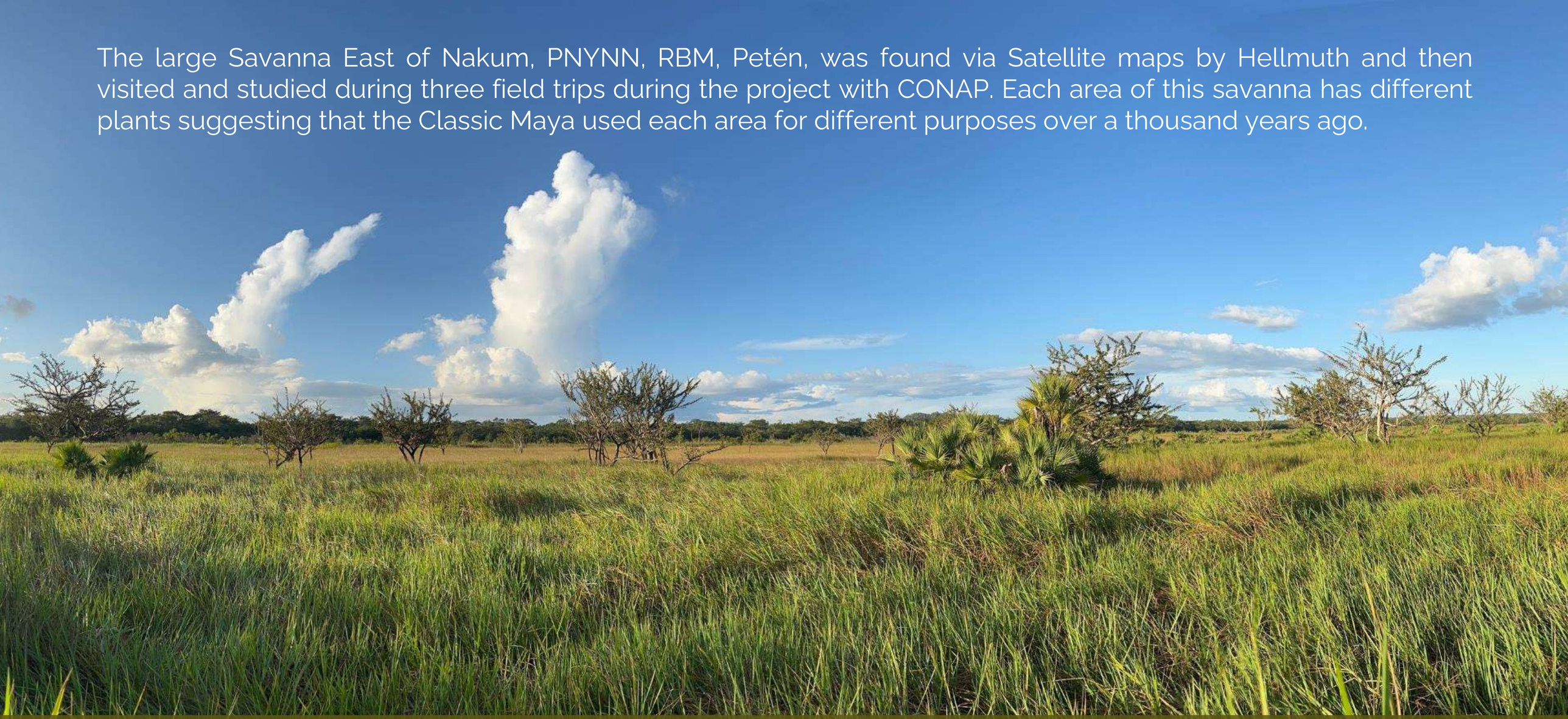
The pulp is medicinal, and in theory, the liquid surrounding the pulp can be consumed. Oil can be extracted from the seeds. Edible uses are excellently covered by Kiersten Rankel.

Savanna East of Nakum, Parque Nacional Yaxha, Nakum and Naranjo, PNYNN, RBM, Peten, Guatemala.

Edible parts: mainly fruits and seeds.
Leaves may be used in soups.

Other uses: medicinal, for construction, and to make utilitarian crafts.

The large Savanna East of Nakum, PNYNN, RBM, Petén, was found via Satellite maps by Hellmuth and then visited and studied during three field trips during the project with CONAP. Each area of this savanna has different plants suggesting that the Classic Maya used each area for different purposes over a thousand years ago.



The morro crafts, made by Mayan communities from the municipality of Rabinal, Baja Verapaz, are widely known in Guatemala, particularly in local markets and fairs. These crafts are made from the fruit of this tree. The process of making these crafts involves a series of ancestral techniques from the Achí-mayan people.

Coccoloba barbadensis Willd.
Papaturro.

There are half a dozen species of the genus *Coccoloba* in the lowland Maya regions. We believe that the species with colored leaves when young is *Coccoloba barbadensis*. These grow in savannas (or at least that's where we most commonly notice them). Several species of *Coccoloba* have edible fruits similar to grapes.



Edible parts: fruits (reminiscent of grapes), and leaves (to prepare tea).

Information for these plants is scarce, but other *Coccoloba* species are used for medicine.

Savanna East of Nakum and several savannas of PNLT have lots of savanna plants.

Cochlospermum vitifolium (Willd.) Spreng.

Buttercup tree or tecomasuchil.

Edible parts: leaves, the stamens, and potentially the seeds. Stamens are used to adulterate saffron.

Other uses: to make strings and paper, for construction, medicinal, ornamental, to produce dye, and for fodder.

Common names can vary depending on the area, such as “tsuyuy” in Q'eqchi' or “pomp” and “pumpo” in Huehuetenango. Other names in Maya languages are "cho" in Petén and "tsuyuy" in Q'eqchi'. These names highlight its cultural importance across different Maya regions.

***Sagittaria lancifolia* L.**

Bulltongue arrowhead or duck potato.

S. lancifolia are the most common edible plants in the savannas and other wetlands. However, you have to cross crocodile-infested wet areas to reach them. I ignore realities because I want to document aspects of the Yaxhá park that I didn't know when I lived and worked several kilometers to the east in the 1970s.

The water here is a permanent segment of the "water ring around the edge of a savanna" from the Savanna of Three Fern Species, northwest of the far western end of Lake Yaxhá, PNYNN.

My team did everything they could to stop me from getting into the dark water, which reached my knees, but I wanted to study these flowers on the other side and to take close-up photographs.

June 4, 2019, was the first time I saw *Sagittaria lancifolia* flowers in a savanna.

Once the rest of the team noticed that no crocodile had attacked me they crossed over and one of them found a water-related orchid—yes, there are terrestrial orchids in Petén: one grows in wet swamp areas such as I am wading through, and the other grows floating on tule plants between 2 and 3 meters from the shore of Lake Yaxhá, especially at the west end. GOOGLE Hellmuth finds water orchids in Lake Yaxhá and you can find our FLAAR Reports on that water orchid.

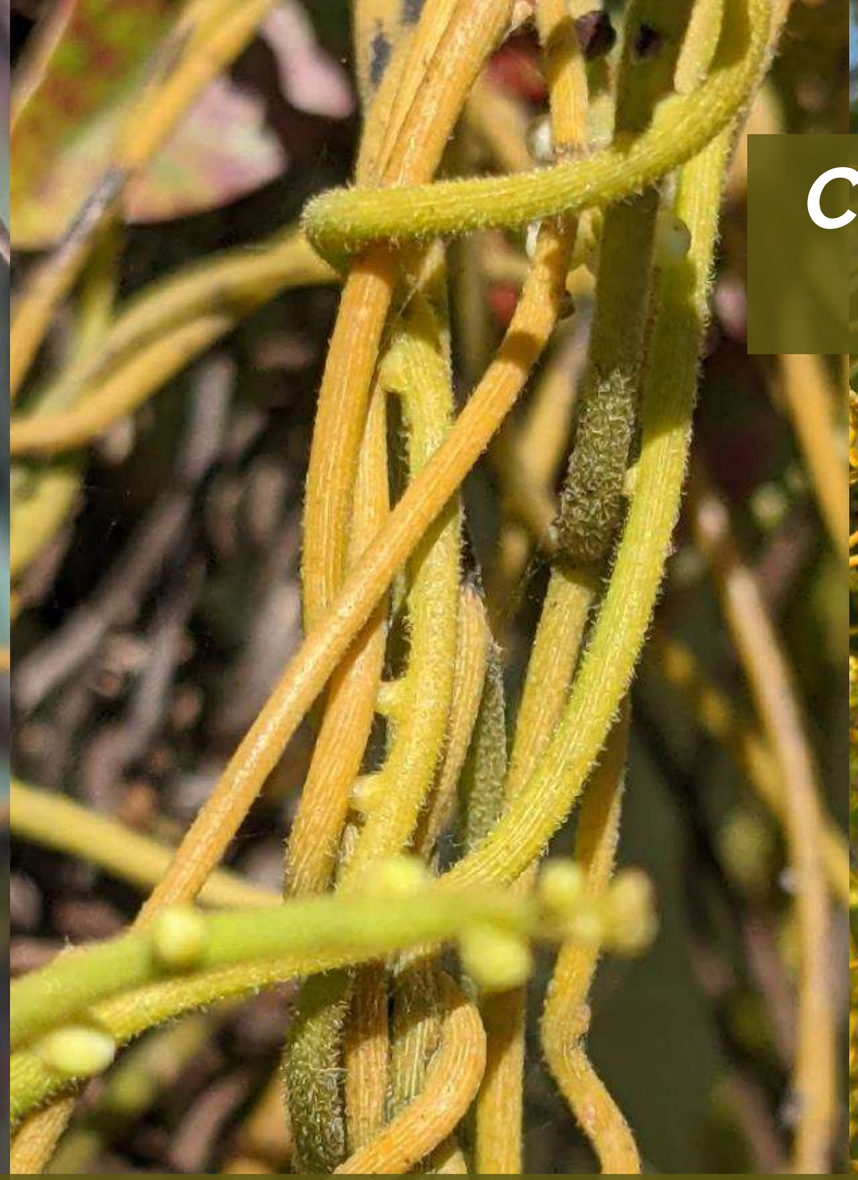
The savannas found and explored by Hellmuth and the FLAAR teams in recent years should be studied in more detail by geologists, botanists, ecologists and archaeologists—the Classic Maya had a lot more biodiverse ecosystems to obtain edible plants from than just hills and bajos. We welcome completely new projects by other scholars.
We can indicate the process of obtaining permission.

Edible parts of *Sagittaria lancifolia*: potato-like tubers, and leaves.

Other uses: ornamental.

This species has been used as a food source by Mayan communities.

A close relative, *S. macrophylla*, is mentioned in the Florentine Codex to have been consumed by the ancient Aztec civilization.



Cassytha filiformis L.

Dodder laurel.

Cassytha filiformis is edible and typically found in wetlands (along the shores of Lake Yaxhá and the Savanna East of Nakum). We estimate that the vine we found in the savannas and at Yaxhá is not *Cassytha filiformis*, a parasitic herb (which we would call a vine).

Edible parts: leaves.
Other uses: medicinal, ornamental, made into a paste for paper making, and to produce a brown dye.
The stems are also used as an eyewash and as a hair tonic when mixed with sesame oil.

This plant is an example of convergent evolution, as it is a near-total copy of the parasitic vine *Cuscuta corymbosa*, also native to Mesoamérica.

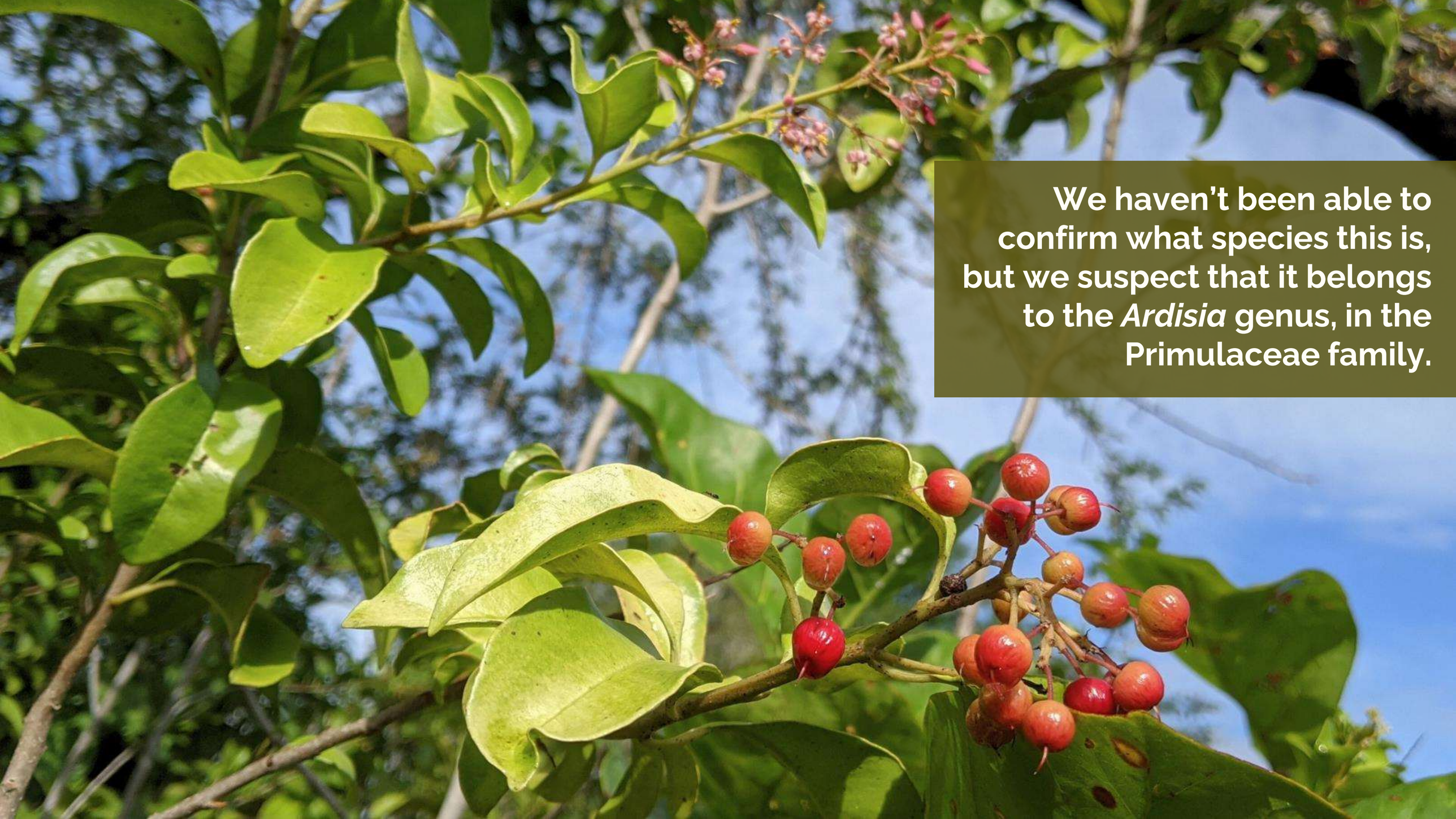
Since both plants are almost identical, except for the keen eye of a botanist with a macro lens, it is difficult to distinguish them. Moreover, the areas we are finding them in are not coastal at all; rather, they are located in the heart of Petén, in savannas and floodplains on the southwest area of Lake Yaxhá, in PNYNN.

This species is also used for several medicinal purposes: it is astringent and diuretic, and used as an infusion for diarrhea and hemorrhoids. Made into a juice, it is used to ease labor pains, and a mixture of the plant is used to treat gonorrhea and snakebites. Extracts of the plant show antimicrobial and uterotonic properties.

The plant can be partially or fully parasitic. When its stems are green, it can photosynthesize, but becomes dependent on its host when the stems turn yellow or orange. Another interesting fact is that its seeds have dormancy and need to be softened by microbial action to germinate.

Ardisia or *Parathesis species*

Coral berry or capulín.



We haven't been able to confirm what species this is, but we suspect that it belongs to the *Ardisia* genus, in the Primulaceae family.

Potentially, it could be edible, since there are edible species of both the *Ardisia* and the *Parathesis* genus. Further research is needed.

Other uses: ornamental and potentially medicinal.

Passiflora foetida L.

Goat-scented passionflower or maracuyá silvestre.

This species is very common in seasonally inundated grassland savannas and along the shore of Río Ixtinto. There is another species, very rare, that is a vine growing on Topoxté Island, PNYNN (noticed by Teco).

Edible parts: fruits (the pulp surrounding the seeds) and leaves (for tea).

The fruit is used to prepare very sweet juices and beverage. However, the fruit most be eaten fully ripe, otherwise it is completely toxic.

Other uses: medicinal.
In agriculture, it is used in hedges and as a ground cover.

Used as an anthelmintic for children, targeting intestinal nematodes and flatworms, and applied in some communities to snake bite wounds. The leaves, when combined with those of *Erythrina variegata*, are mashed, and their juice is extracted and consumed to induce sleep or treat sleep disorders.

Thalia geniculata L.

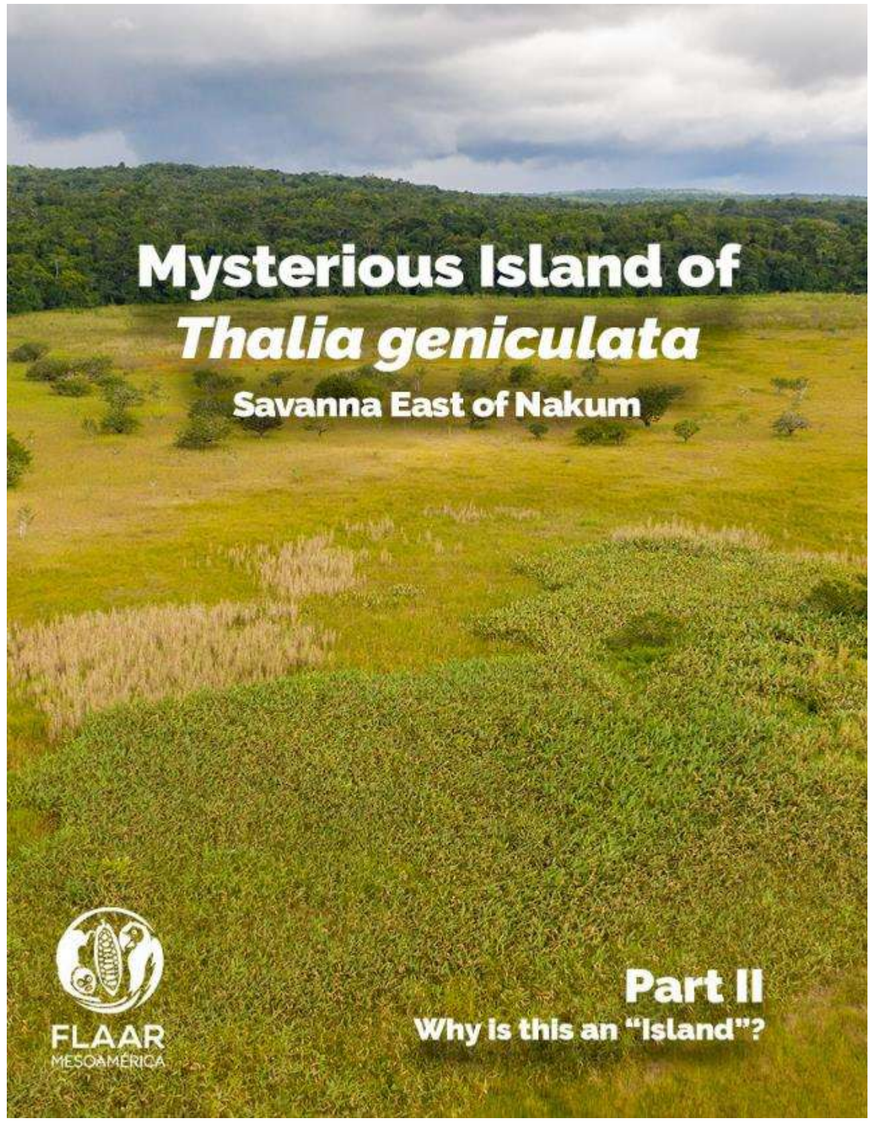
Alligator flag, arrowroot, or popal.

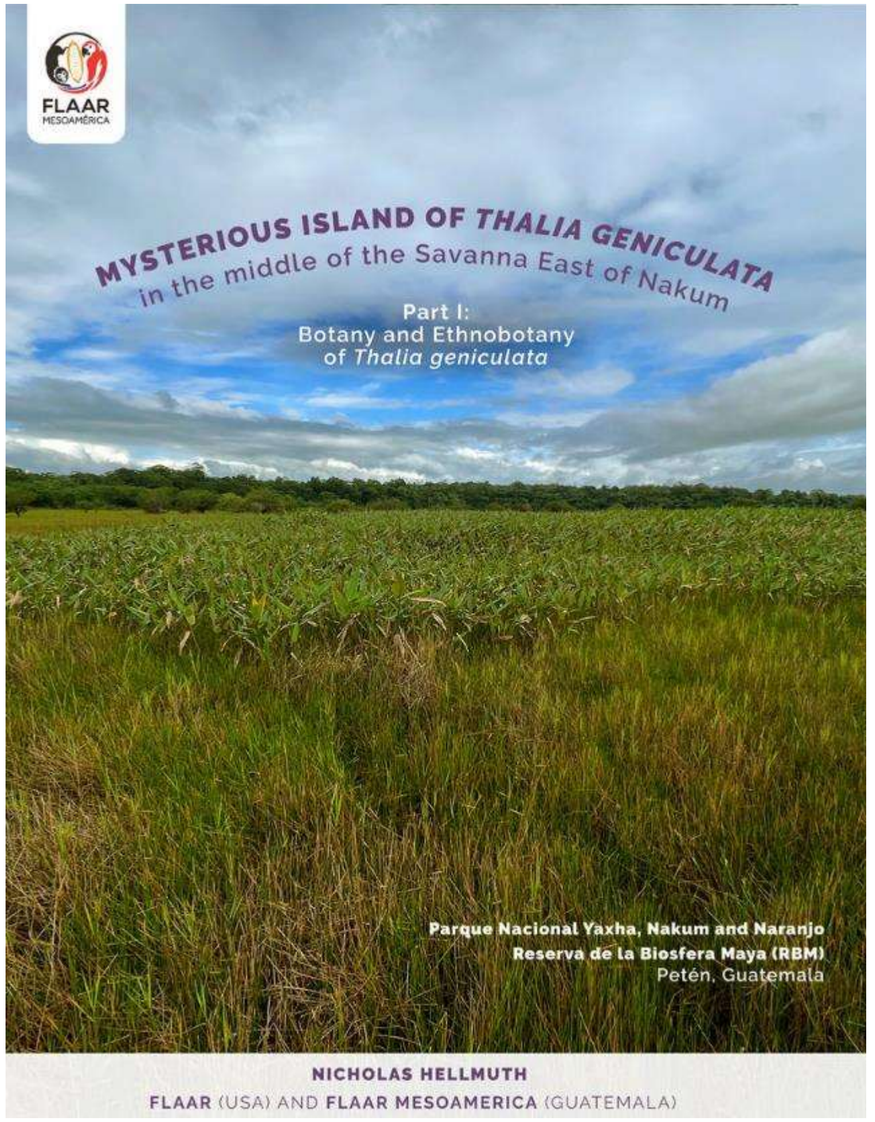
Edible parts: roots. The leaves can be used to wrap tamales.

Other uses: medicinal (to alleviate stomach aches) and for fodder.

The Classic Maya had no access to plastic, so these leaves served as an excellent natural alternative to wrap food. Today, this practice remains an integral part of the cultural heritage of Guatemala, and is widely common not only for wrapping tamales, but also, to transport other kinds of food.

More than 1,000 plants of *T. geniculata* can be found forming a geometric area in the middle of the Savanna East of Nakum. Additionally, a few other small patches with this plant are in its north border. However, it is still not known if these plants grow naturally in savannas, or if they were introduced by the ancient Maya. If we had a Mavic 4pro drone we could take more detailed close-up photos. But clearly you can see that this area was utilized by the Classic Maya for centuries.





All the information compiled by our team regarding this species is covered in both of these photo reports, available on-line at flaar-mesoamerica.org.

Cladium jamaicense C.B.Clarke

Sawgrass or navajuela. Forms *cibales.*

Edible parts: both its leaves and roots may be edible.

This species forms the abundant ecosystems locally known as *cibales*, which are difficult to access due to the sharp leaves of the plant.

In addition, many savannas of the Maya Biosphere Reserve have cibales, as this plant thrives in the wet-dry cycles that this savannas endure.

This is a key species in wetland restoration due to its effect to prevent erosion, and create habitats. It propagates through seeds and plantlets.

Aniseia martinicensis (Jacq.) Choisy

Whitejacket or morning glory.

Although not confirmed, based on other species of Convolvulaceae it is likely that the young leaves, stems, or possibly the roots are edible.

Other uses: medicinal and ornamental.

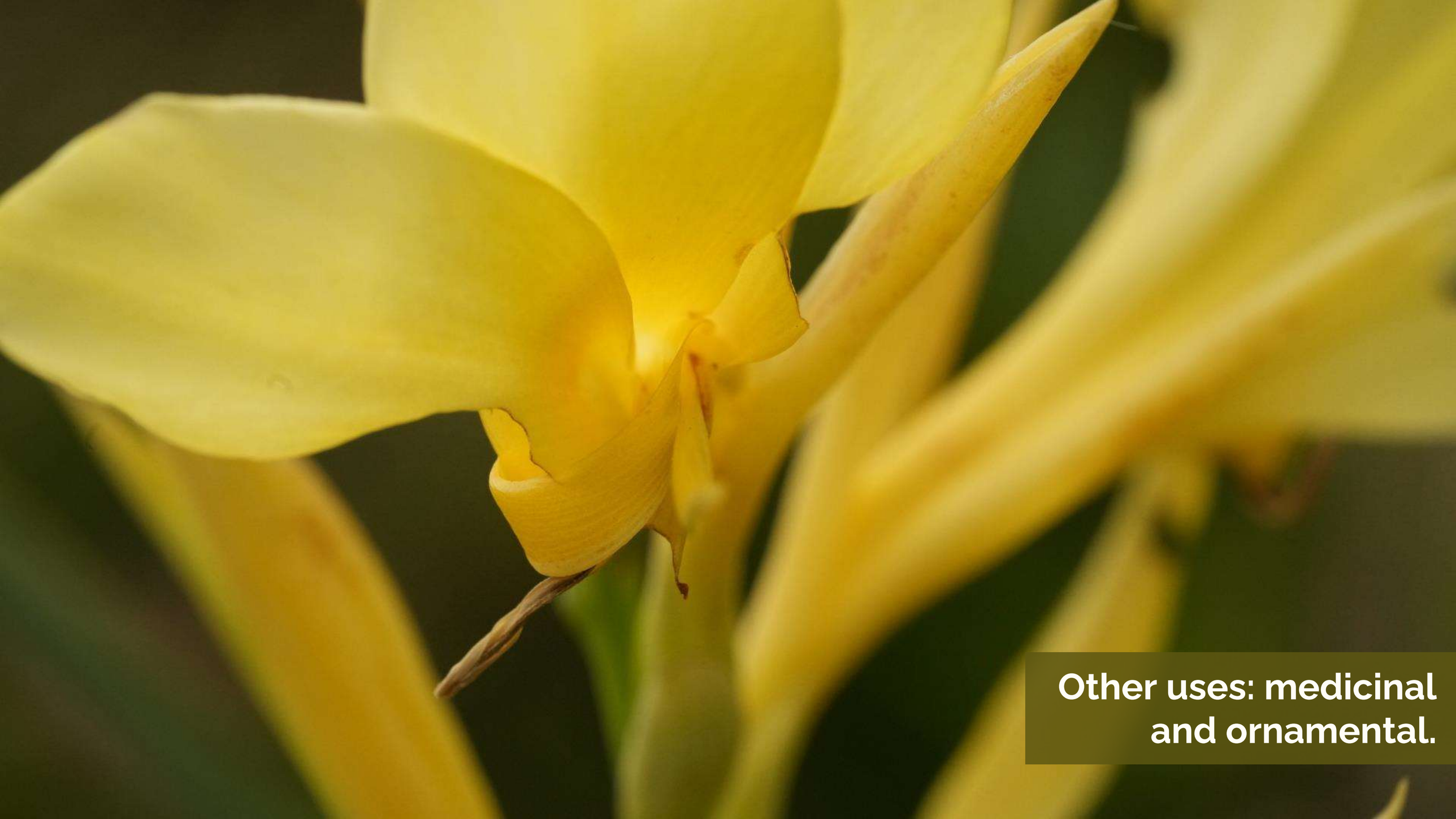


It seems to grow more often in the borders of savannas, where there is more water. FLAAR also found it along the shores of Laguna Yaxhá.

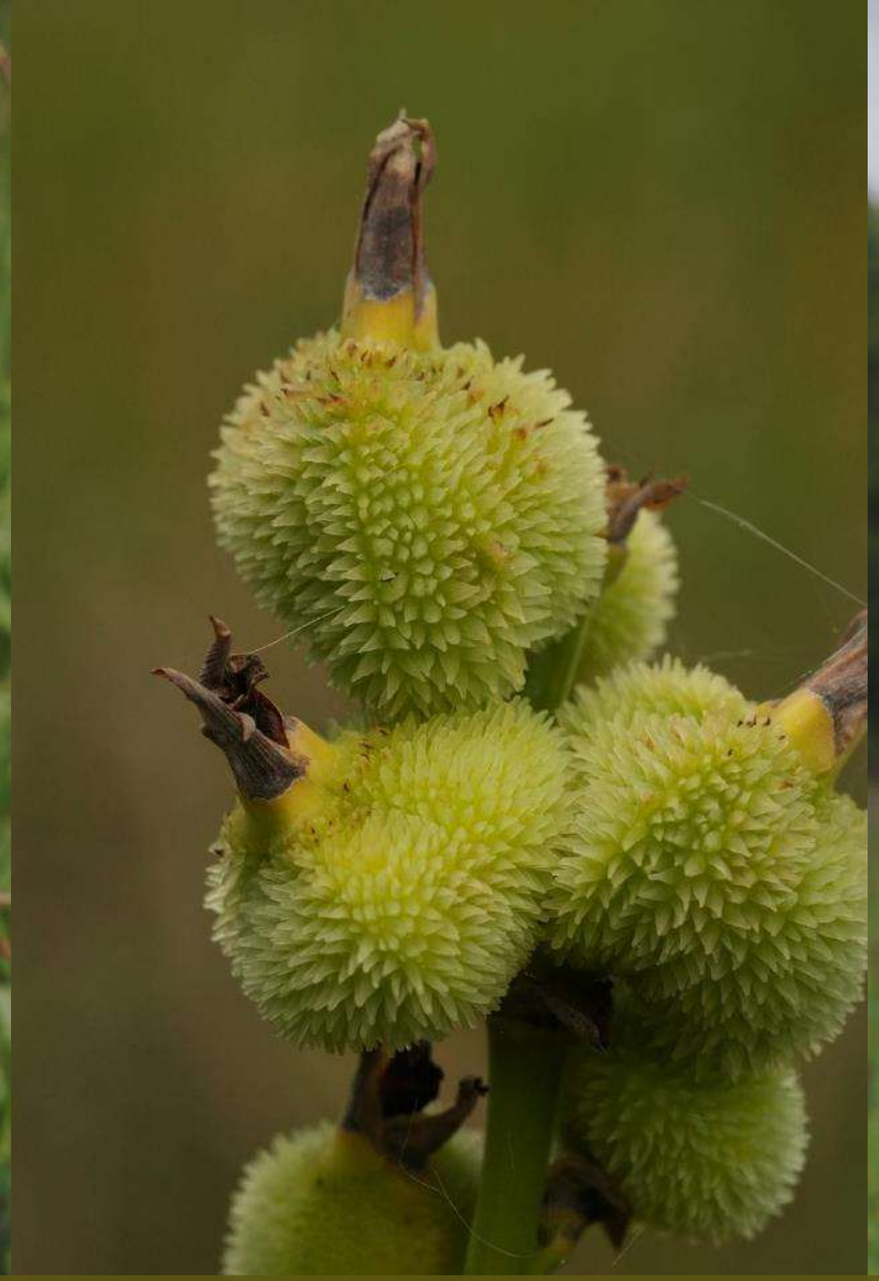
Canna glauca L.

Water canna, arrowroot, bandera española or banderita.

Edible parts: tubers, and potentially the fruits.
In PNLT we found an entire savanna filled with these edible plants.



Other uses: medicinal and ornamental.


Very young tubers can be eaten cooked. They are sweet but a lot of fiber.

Plants grow quickly and can produce flowers in their first year when grown from seed.

The arrowroot is prepared by grating the root into a pulp, then washing and straining it to remove the fibers.

To experience a savanna filled with these bright yellow flowers definitely shows that articles and textbooks should be updated to document all these biological and ecological discoveries of recent years.

Canna indica L. or *Canna tuerckheimii* Kraenzl.

Indian shot, Queensland arrowroot, or edible canna.

A decoction made from the root and fermented rice is used to treat gonorrhea and amenorrhea. *C. indica* is also utilized in the treatment of women's ailments. *C. tuerckheimii* may have the same properties. Some plants of this genus are regarded as demulcent, diaphoretic, and diuretic. while others are known for the purple dye obtained from their seeds.

Canna, whether *C. indica* or *C. tuerckheimii*, has been found in several open areas of the RBM, including the savanna west of Naranjo-Sa'al. In addition, both species are listed by Balick, Nee, and Atha (2000: 178) as native to nearby Belize and edible (and also medicinal). I believe that the specimens we have found in PNYNN are *Canna indica*, but it would help if a botanist specialized in these plants could confirm this for us.

Edible parts: tubers. The leaves may be used for tea.
Other uses: medicinal, ornamental, for construction, and to make paper.

Gonolobus lasiostemma (Hemsl.) Woodson

Cuchampera. The seeds are known as “mishos” or “mishitos”.

Edible parts: fruits, the pulp. These seed pods are same size and shape as a cacao pod, even have the same ridges—so when you see a monkey in Classic Maya art on vases, bowls or plates holding a “cacao pod”-- in half these instances cacao is NOT the correct “identification”. To write about Maya iconography it helps hugely if you have LOTS of personal experience with wild plants, animals, insects, etc. of Peten.


This is the actual flower
of a cuchampera plant.

There is almost no information about this species. Research is needed.



Begonia heracleifolia Schltdl. & Cham., *Begonia manicata* Brongn. ex Cels. and *Begonia cucullata* Ruiz ex Klotzsch

Begonia, or begonia de monte.

The three *Begonia* species stated above have been reported as edible, but they are not native to Guatemala.

FLAAR has possibly documented the species *B. minor* and *B. sericoneura* in the Maya Biosphere Reserve (showed in the photos of these slides).

However, the available information for these species is limited and more research is needed to determine if they can be consumed.

Edible parts: the flowers, leaves and stems of some species, *not all,* are edible. Some species contain oxalic acid, which causes health issues. Teco pointed out that these are edible, as we found them blooming on March 26, 2019, in the savannah of the 3 species of ferns, northwest of the westernmost tip of Lake Yaxhá, PNYNN.

Other uses: ornamental and medicinal.
Leaves and roots of certain species have been employed in infusions or as poultices to alleviate conditions such as infections, inflammations, and digestive disorders.

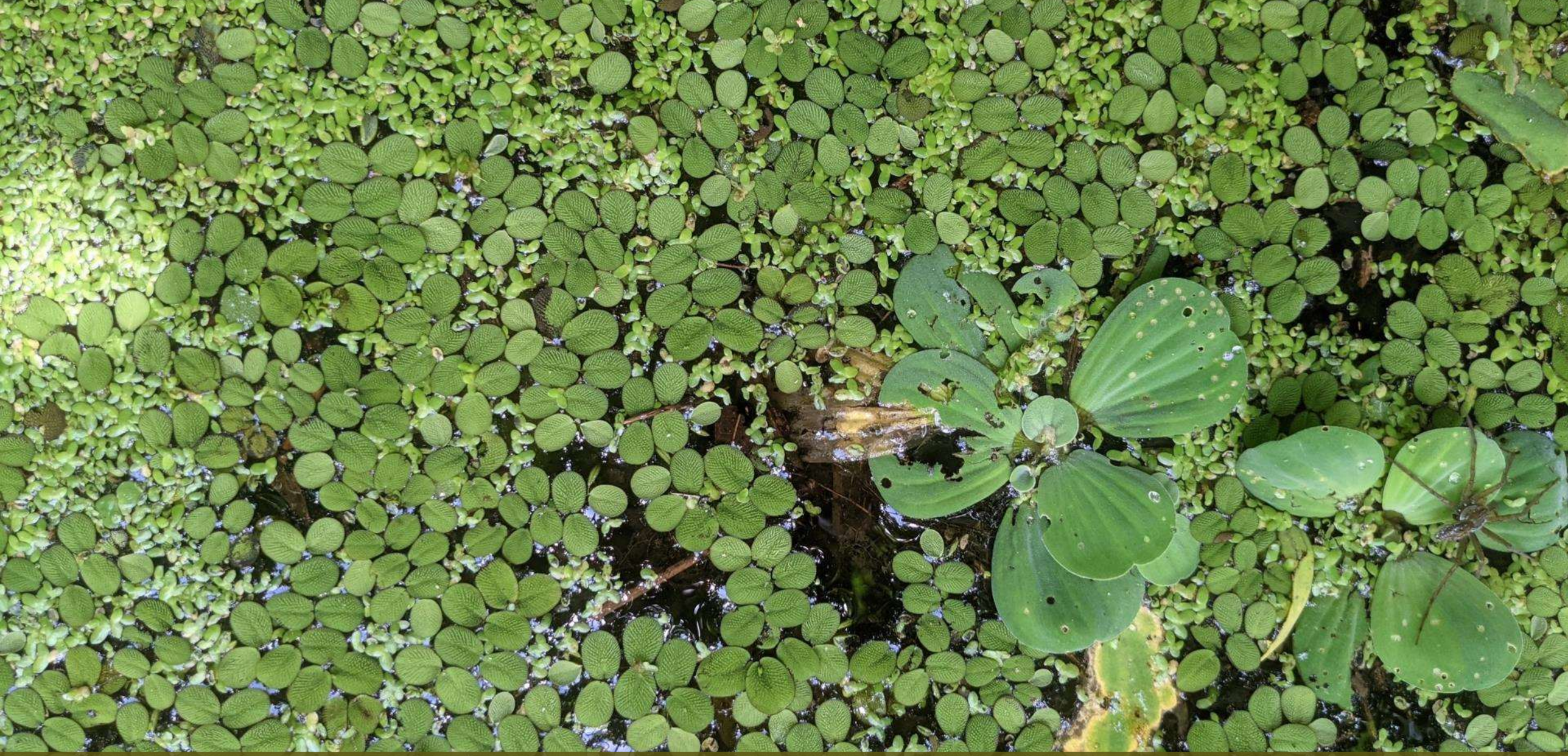
Edible plants of aguadas, marshes and riverbeds

What monographs or journal articles show a Maya eco-system like this?

Leimnoideae Bab.

Duckweeds, or ix'iim ja'.

Edible parts: the whole plant.
When dried, they hold 45% of protein of their composition.



The *Ritual of the Bacabs* mentions that the plant *yxim ha* (probably *Lemna minor* or *Wolffia brasiliensis*) was used in ceremonies to treat high fevers.

Rhizophora mangle L.

Red mangrove, or mangle rojo. Rio San Pedro, border of Peten and Tabasco.

Edible parts: roots, dried leaves, and the interior of the propagules.

Other uses: timber, fire wood, source of dye, and the latex is an adhesive.

The mangrove trees in these pictures are part of an inland relict, 200 kilometers from the nearest salt water.

They grow along the swampy shores of Río San Pedro, approximately 200 km far from the nearest beach. This could make them the most isolated mangrove swamp from the sea in the world. Only about 10 mangrove trees remain

Flowers of red mangrove trees.

Firewood of these trees could have been used by the ancient Maya to produce salt, since it was an abundant resource in coastal ecosystems.

Inga species

Paterna, cuje, or guama.

There are more than 30 species of the genus *Inga* in Guatemala. Many of these can be found in the Maya Biosphere Reserve and are edible.

Edible parts: the pulp of the fruits, and the seeds.

Other uses: for fodder, melliferous, and medicinal. They are also used as shadow trees in agroforestry

Acrostichum danaeifolium Langsd. & Fisch.

Giant leather fern or mangrove fern.

Many giant ferns grow in marshes, swamps, riverbeds, and other waterlogged areas.

FLAAR documented giant leather ferns in the “ring of water” around Poza Maya, north of Yaxha, in PNYNN, and many of the other plants that grow in the borders of this aguada are edible as well.

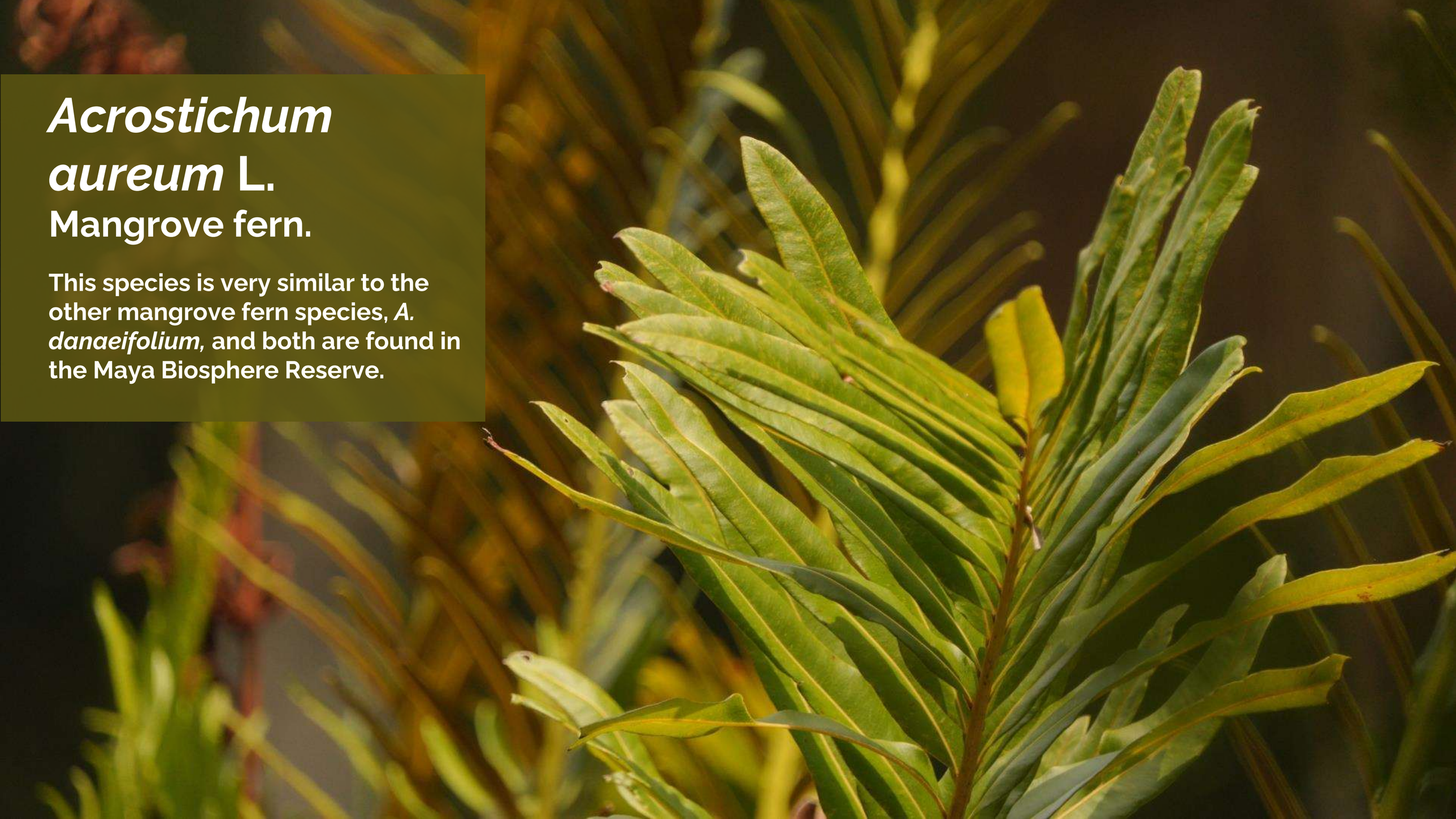
This fern grows both in fresh water and brackish water, since it is highly adaptable to high concentrations of salt.

Poza Maya, also known as Aguada Maya, is documented to be a creation of the Maya. It has a rectangular shape and its borders have standing water, which look as a water ring if seen from above. But in a diagonal view you don't notice the water around the edge (wild peccary love to wallow in this wet muddy area). If we had a Mavic 4 Pro drone we could accomplish aerial photos with good enough resolution so we could show you each plant.

If we had a multi-spectral camera-drone we could map how many of which plant species are in this savanna-like area.


Edible parts: fiddleheads and tender fronds.

Other uses: for thatching and ornamental.



Acrostichum aureum L.

Mangrove fern.

This species is very similar to the other mangrove fern species, *A. danaeifolium*, and both are found in the Maya Biosphere Reserve.

Edible parts: fiddleheads.

Other uses: medicinal and ornamental.

Not every fern species is edible, so best to research before you try to eat any fern. Be sure the species you are studying has no thiaminase.

It is used worldwide for its medicinal properties: as an expectorant, diuretic, for medicinal baths, urinary problems and worm infections.

Pachira aquatica Aubl.

Money tree, zapotón, zapote bobo or zapote de agua.

Most parts of this tree are edible, however, one of its most interesting uses is to create a substitute of cacao out of its seeds.

Edible parts: fruit, seeds, bark, flowers, and young leaves. This is the largest fruit of any plant native to Guatemala.

Other uses: timber, ornamental, source of a red dye, and medicinal. This flower, along with *Pseudobombax ellipticum*, are models for the fleur de lis flowers in Maya art (Charles Zidar) .

It is also used to produce paper pulp and as a biofilter. This species has been studied as a source of food for the Mayas in dry seasons.

Typha domingensis Pers.

Cattail, tul or tule.

Edible parts: pollen, unopened inflorescences, and the lower stems.
Its pollen is considered a superfood.

Other uses: medicinal, ornamental, and as a source of strong fibers.

It is used as a weaving material and for hand crafts.

Pontederia cordata Lour.

Camalote or espiga de agua.

Edible parts: the whole plant. Seeds can be cooked and prepared as rice.

Other uses: ornamental, medicinal, for wastewater treatment, and to attract wildlife.

Its bee pollinator, *Dufourea novaeangliae,* only visits this plant species.

Guadua longifolia (E.Fourn.) R.W.Pohl

Spiny bamboo or jimba.
Forms *jimbales*.

90% of the bamboo that grows in Mesoamérica is native to Asia or South America, but this *Guadua longifolia* is a native bamboo of Guatemala, and neighboring countries.

It tends to grow in seasonally flooded areas, mainly along river beds. FLAAR has documented thousands of plants of this species along Río Holmul (primarily, at Yaxhá, Nakum and Naranjo National Park, PNYNN), as well as many more in the borders and the north limit of the savanna west of Naranjo Sa'al.

Now archaeologists can rewrite the foods available to the Classic Maya for thousands of years--that do not require slash-and-burn milpa agriculture.

Edible parts: shoots.

Other uses: medicinal, for construction, and to make spears for fishing.

The jimba bamboo was used in Maya burial ceremonies, and for scaffolding.

Large jimbal at north end of Bajo la Pita, west of west side of Naranjo-Sa'al.

This bamboo can form big masses, which are locally known as a type of plant association called *jimbal.* Moreover, several savannas have jimbales around their edges since most PNYNN savannas have a ring of water around them (probably made by the Maya over a thousand years ago.

Eleocharis species

Spike-rush or pajuela.

Edible parts: some species have edible roots.
Other uses: ornamental, as a weaving material, and to treat waste water.

Many of the *Eleocharis* species are very hard to tell apart, and information about the uses of species native to Guatemala is scarce.

Nymphaea ampla DC.

Water lily or lirio de agua.

Several parts of this plant may be edible, but more research is needed.

The plant may also have been used as a narcotic by the Maya civilization.

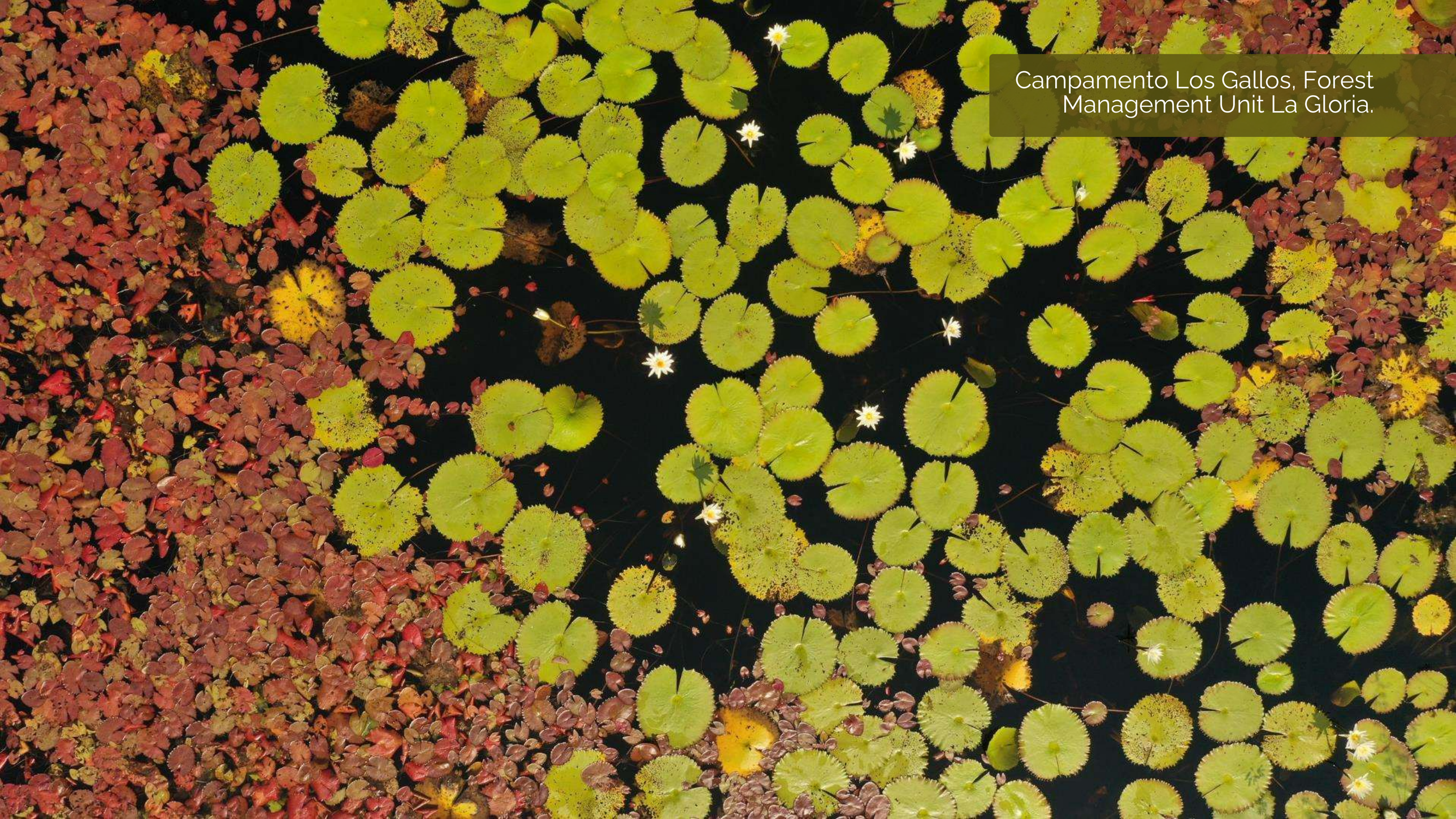
Other uses: medicinal and ornamental.

Since 2008, I've documented water lilies in different rivers of Guatemala. In that year, I got to photograph water lilies blooming underwater.

Photographed with an underwater camera by Nicholas Hellmuth, Arroyo Pucté, in the Sayaxché area of Guatemala.

PNLT, in a wet area of a savanna.

In the Maya world view, water lilies were had many mythical associations especially to the Surface of the Underwater world.



Campamento Los Gallos, Forest Management Unit La Gloria.

Edible plants of broad leaf forests and *bajos*

There are LOTS of wild vanilla orchid vines visible as you drive or hike through the bajo vegetation from Yaxhá to Nakum.

Vanilla insignis Ames

Vanilla, or vainilla.

Edible parts: seed pods. Vanilla is known and used world wide.

Other uses: to make fragrances.

It was used by the Maya to flavor not only cacao, but also cigarettes. Several species of vanilla are native to Guatemala—we have found a lot in Izabal area, inland from the Caribbean Sea.

Bactris major Jacq.

Huiscoyol, coyolillo or güiscoyol.

Edible parts: fruits.
Fruits are also made into a syrup for respiratory issues.

Other uses: medicinal.
Fruits of this species are very reminiscent of oak acorns.

Acrocomia aculeata (Jacq.) Lodd. ex R.Keith.
Coyol palm.

Edible parts: fruits, palm heart, and tender leaves. Other uses: for construction, medicinal, and to make alcoholic beverages.

Desmoncus chinantlensis Liebm. ex Mart.

Bayal. A vine, but nonetheless a true palm.

Edible parts: fruits. You can see dozens on the entrance road to hotel El Sombrero Ecolodge, at entrance to the Yaxhá part of PNYNN.

Other uses: as a weaving material for basketry, and hand crafts.

Maya communities make hand crafts out of this palm vine of Peten.

The modified apices of the leaves are also used locally as fish hooks.

Chamaedorea tepejilote Liebm.

Pacaya palm.

Edible parts: unopened flower buds.

Other uses: ornamental, and leaves are used in floral arrangements.

Blooming inflorescences, I ate pacaya palm for dinner yesterday.

Sabal mauritiiformis (H.Karst.) Griseb. & H.Wendl.

Guano.

Edible parts: fruits, the apex of young leaves, and apical buds.

Other uses: ornamental, and for thatching.

More research is needed in order to identify the several different species of *Sabal* that can be found in the Maya Biosphere Reserve. FLAAR is initiating a new research project in April, Palm Paradise Petén, to show all the palms, most of which have edible or usable parts.

Brosimum alicastrum Sw.

Breadnut, Maya nut, or ramón.

Edible parts: fruits, seeds, and leaves.

Other uses: for fodder.

Remains of possible ancient plantations or kitchen gardens of this tree suggest that the Maya relied on this species as an important food source, an idea of Dennis Puleston, 1960's.

Pimenta dioica (L.) Merr.

All spice, pimienta gorda, or pimienta.

Edible parts: seeds (used as a spice), and leaves (to make an infusion).

Other uses: medicinal, ornamental, for aromatherapy, perfumes, oil, and people also smoke it.

Manilkara zapota (L.) P. Royen

Sapodilla, chico, chico zapote, or chicle.

Edible parts: fruits, ground seeds, flowers, young leaves and shoots, and the latex can be turned into chewing gum.

Other uses: timber, medicinal, and a source of latex for different uses.

Timber of this species is remarkably durable. Lintels made out of it, with various designs, have been retrieved of Tikal’s pyramids, 1,200 years later.

Malpighia lundellii C.V.Morton

Manzana de pantano.

Edible parts: fruits.


A few species of the *Malpighia* genus have edible fruits.

Other uses: ornamental, and potentially, medicinal.

Cordia dodecandra DC.

Cericote, or ciricote.

Edible parts: fruits. A sweet preserve is made with the fruits.

Other uses: medicinal, ornamental, and for construction.

Flowers of cericote, or ciricote, visible at Uaxactun village area.

Carica papaya L.

Papaya, or wild papaya.

Edible parts: fruits, seeds, flowers, and leaves.

Other uses: medicinal.

It has anticancer, antimicrobial, anti-inflammatory, and hypoglycemic properties.

Pseudolmedia spuria (Sw.) Griseb.

Manax.

Edible parts: fruits.
Other uses: medicinal.

Parmentiera aculeata
(Kunth) Seem.
Cucumber tree, or cuajilote.

Edible parts: fruits, and roots.

Both flowers and fruits emerge from the trunk, like cacao.

Other uses: medicinal.

Ridged like cacao pods but not as thick in diameter

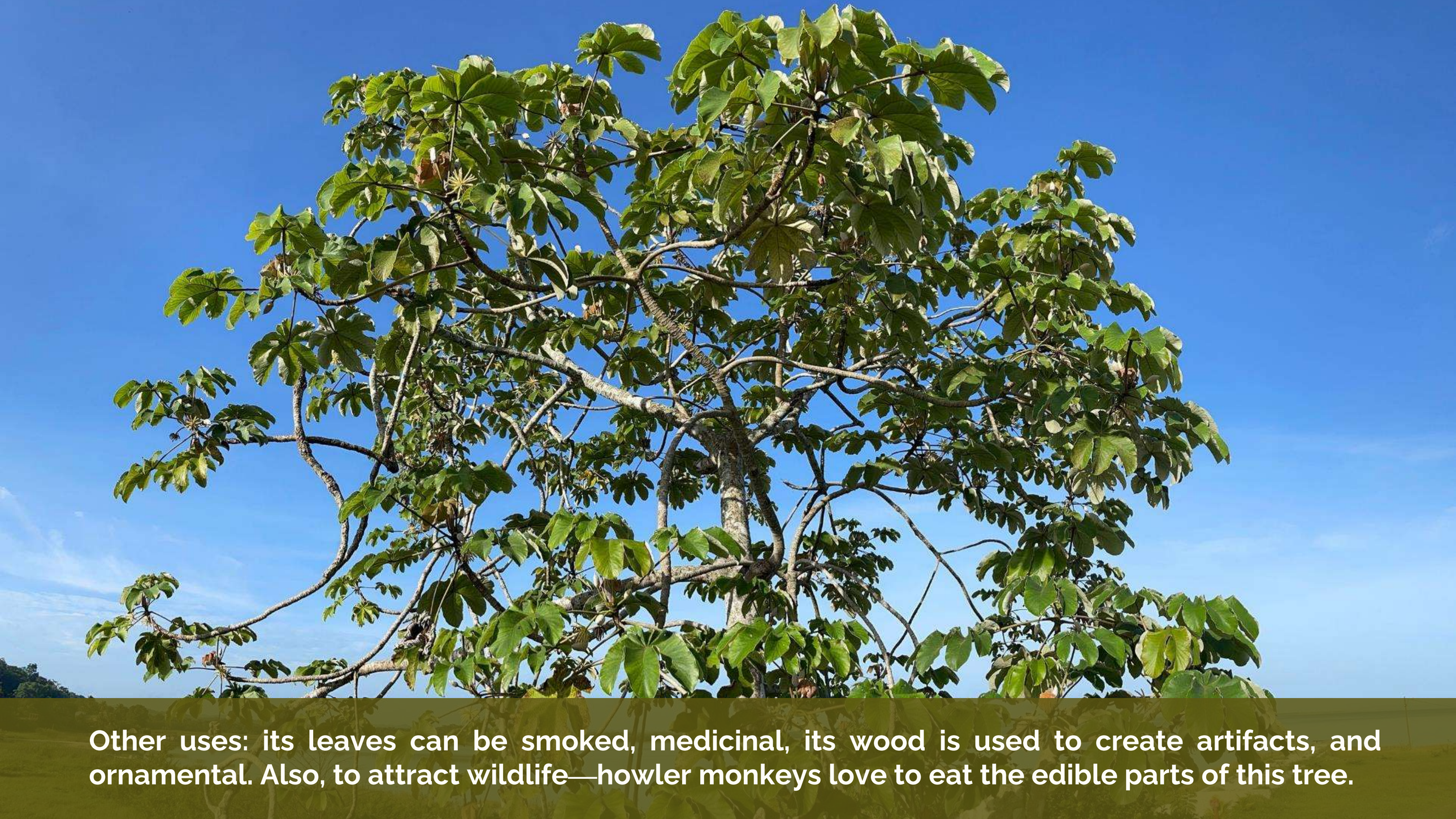
All parts of this tree have medicinal properties.

Bats pollinate its flowers.

Cecropia peltata L.

Trumpet tree, guarumo, or pok'jor (Maya Q'eqchi').

Edible parts: infructescence and leaves. If I remember correctly, the leaves are used for tobacco when no actual tobacco is available. And the chemicals for a cigar may be more “enlightening” (we do not undertake “taste tests”).



Other uses: its leaves can be smoked, medicinal, its wood is used to create artifacts, and ornamental. Also, to attract wildlife—howler monkeys love to eat the edible parts of this tree.

Most probably, *C. obtusifolia,* which is also edible, can be found in the Maya Biosphere Reserve as well.

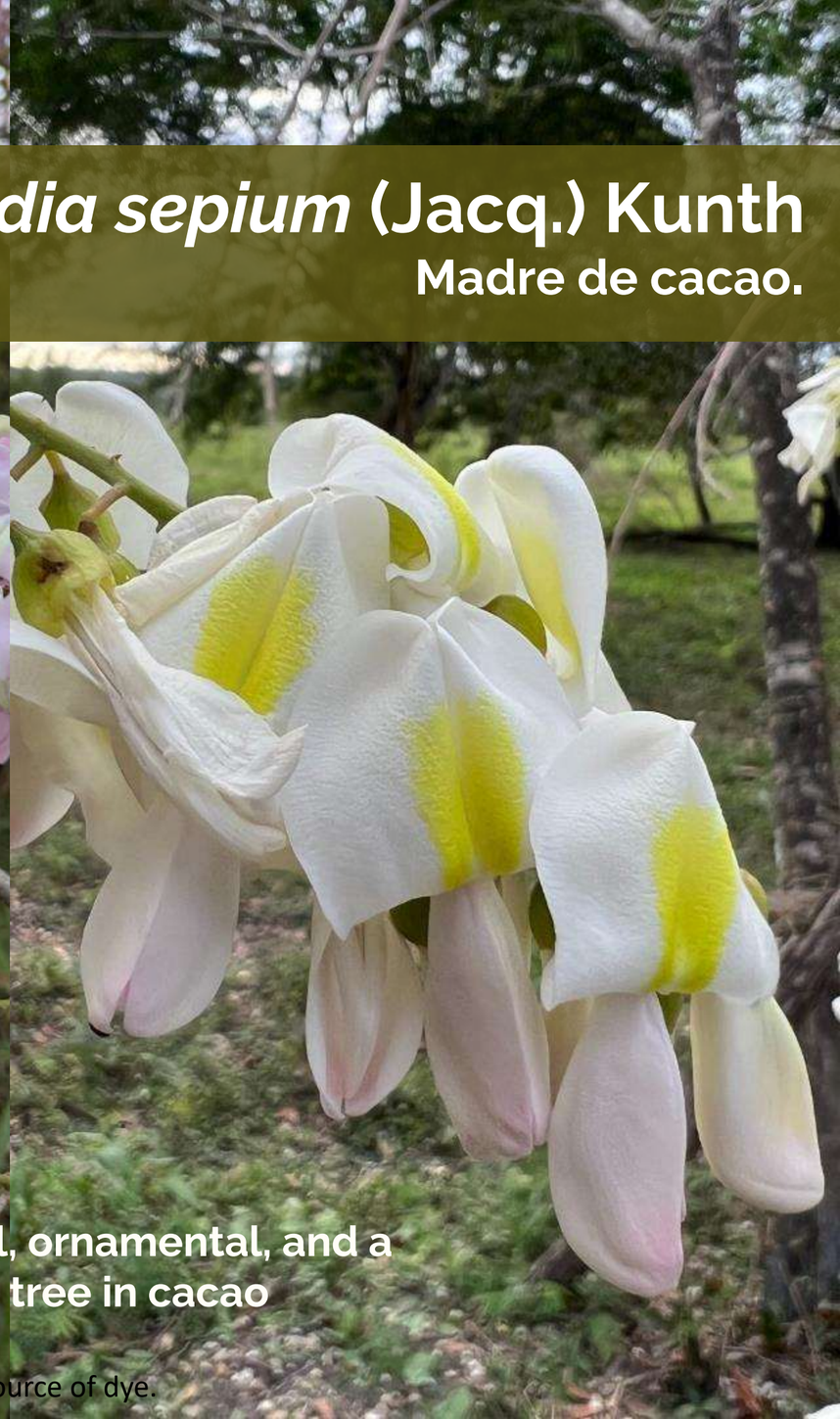
Gliricidia sepium (Jacq.) Kunth

Madre de cacao.

Edible parts: flowers and potentiall leaves also.

Other uses: fire wood, timber, medicinal, ornamental, and a source of dye. It is the most used shade tree in cacao agroforestry in Guatemala.

Other uses: fire wood, timber, medicinal, ornamental, and a source of dye.




Edible parts: flowers and leav

Cassia grandis L.f.

Apple-blossom cassia, pink shower tree, and bucutz.

Edible parts: the pulp surrounding the seeds.

Other uses: medicinal and ornamental.

Edible plants that grow in particular plant associations

So far, we've covered how different (edible) plant species often grow in masses and form certain types of ecosystems:

- Tasiste (*A. wrightii*), forms tasistales.
- Tul (*T. dominguensis*), forms tulares.
- Jimba (*G. longifolia*), forms jimbales.
- Escoba palms form escobales.
- Corozo palms form corozeras (visible in the photo at the left).

Now we will introduce a pital.

- Pita bromeliads form pitales (around aguadas, often in bajos).

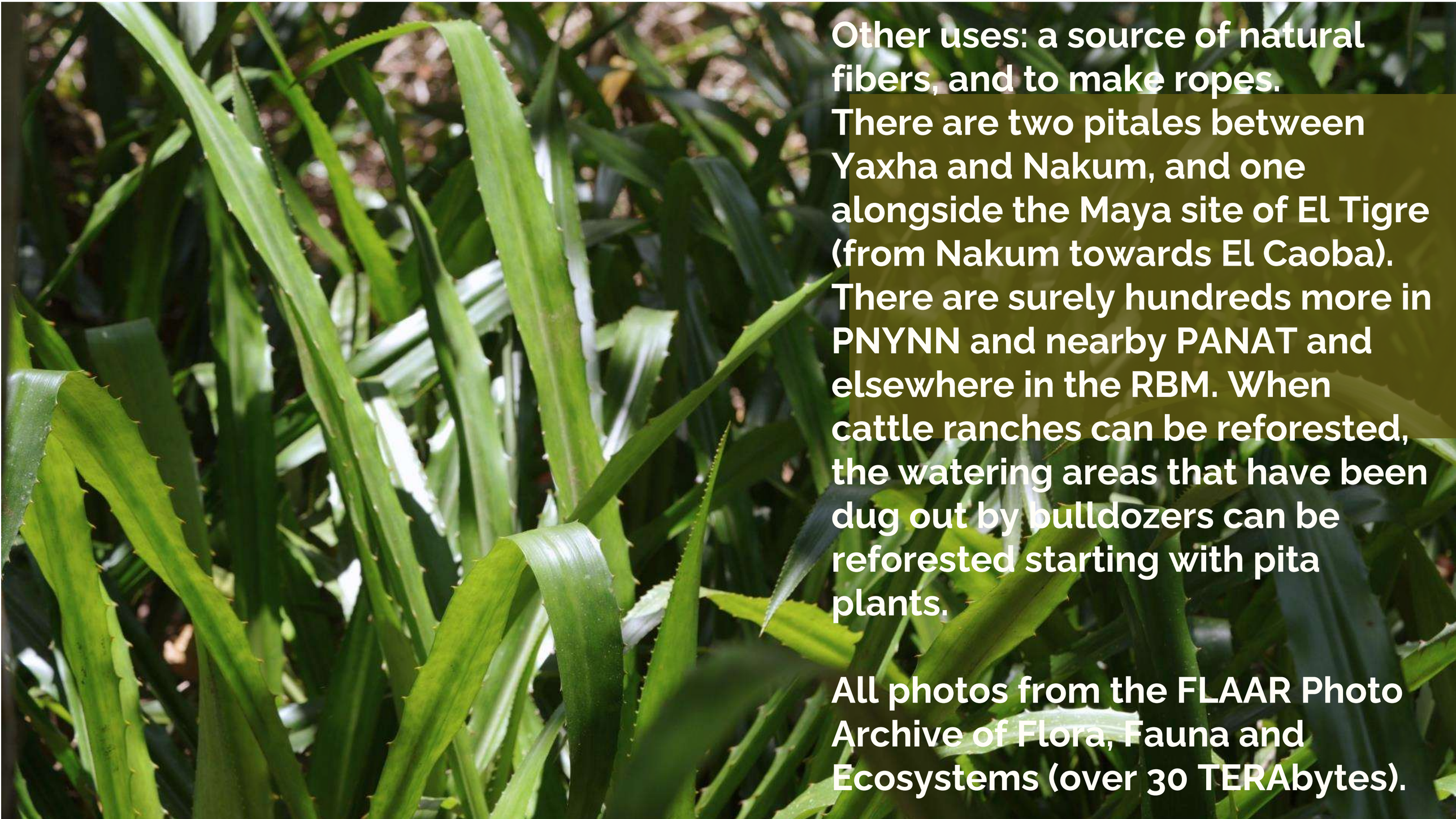
There are other plant associations that we'll cover in the next slides. And surely more that botanists can uncover if they hike through remote areas of the Reserva de la Biósfera Maya.

In the Municipio de Livingston, Izabal, Guatemala, tasiste palms grow in clumps of up to a dozen trees along the shores of a river or lagoon. In PNYNN and PNLT tasiste palms grow with hundreds to thousands in thick clumps in savannas. We were thus very surprised to find lots of tasiste palms while hiking from the eastern edge of PANAT to the El Pinal island of pine in the middle of a bajo.

At the left, FLAAR drone photo of corozera which also usually have botán palms. If we had a multi-spectral drone and special software we could map all other tree species in this "islands of palms."

Aechmea magdalenae
(André) André ex Baker
Pita, forms pital aound an aquadas.

Edible parts: fruits.



Other uses: a source of natural fibers, and to make ropes.

There are two pitales between Yaxha and Nakum, and one alongside the Maya site of El Tigre (from Nakum towards El Caoba). There are surely hundreds more in PNYNN and nearby PANAT and elsewhere in the RBM. When cattle ranches can be reforested, the watering areas that have been dug out by bulldozers can be reforested starting with pita plants.

All photos from the FLAAR Photo Archive of Flora, Fauna and Ecosystems (over 30 TERAbytes).



Aechmea bracteata
(Sw.) Griseb.
Izchu, ixchu, chuek,
or tinajero (Petén).


Edible parts: fruits.

Other uses: a source of natural fibers. Very common around Yaxha, Topoxte Island, Nakum, Naranjo, Tikal, Uaxactun, etc.

***Attalea cohune* Mart.**
Corozo.

Other uses: to make beverages, a source of dye, ornamental, and for construction. The seeds can be used as fire wood or charcoal.

Join us for Palm Paradise Peten Project field trip in April 2025.

Edible parts: palm heart, sap, the pulp of the fruits, and the center of the seeds.

We can take you on the trail through this corozo palm “island” so you can experience it yourself, with your family, and friends.

The previous full-color photos from FLAAR field trips over many years deep into the rain forests, swamps and savannas of Parque Nacional Laguna de Tigre (PNLT) and Parque Nacional Yaxhá, Nakum and Naranjo (PNYNN) have made it possible for us to show you these plants. We have also done field work at Tikal (PANAT).

Our goal is to provide archaeologists fresh new documentation on edible wild plants—more than hard-working ethnobotanist Cyrus Lundell provided in 1937 and 1938. Plus we prefer to document MANY different trees—not just one single tree species, plus the many edible plants that are not trees.

Equally important is to document that the savannas of Petén deserve to be studied by archaeologists and geologists—why do most savannas have a narrow ring of water around them?

And savannas of Petén deserve to be studied by botanists and ecologists from major universities. The savannas of PNYNN are totally different than the savannas between La Libertad and Sayaxché and elsewhere in southern Petén.

Most of the hard-working archaeologists of past decades focused on vegetation of hills and bajos, but rarely mentioned the savannas (the amazing Savanna of 3 Fern Species of Yaxhá area and the incredible Savanna East of Nakum). Even the park rangers had never been to the Savanna of 3 Fern Species before we discovered this on satellite maps and then hiked there.

And scholars in past generations did not have drones; today the Mavic 3 and Mavic 3pro are excellent. The Mavic multi-spectral drone would be even more useful for botanical research. And in a few months the Mavic 4 and Mavic 4pro will be out. The Mavic 3 that we have provides outstanding resolution and is noticeably better than the helpful Mavic 2pro that we had in earlier years (the Mavic 3 can also be flown between trees, so inside the rain forest, not merely from above). The Mavic 4 will be even better.

It would HELP IMMENSELY if you could donate (tax deductible) to FLAAR so we can buy a multi-spectral drone and the necessary software. Plus if you can fund a one week field trip you can enjoy--and remember for the rest of your life—the experience of joining our team on an actual field trip. A helpful family in Chicago funded our research programs and came with us to explore the amazing palm jungles between Yaxhá and Nakum and then to hike to the Savanna East of Nakum.

Credits

All the photos of this presentation belong to the FLAAR Mesoamérica Photo Archive and were made in the various biodiverse ecosystems of Petén. With a few exceptions, these photos portrait plants and ecosystems of the Maya Biosphere Reserve (RBM).

The presentation was put together by the Research Team of FLAAR Mesoamérica, and published in February 2025. Agronomist Sergio D'angelo Jerez, and biologists Mariana Rivas Gálvez, María Alejandra Valenzuela and Pamela Jerez, compilated the ethnobotanical information for each species, in addition to the field notes and personal observations made by Dr. Nicholas Hellmuth, based on his decades of research on Maya culture and flora and fauna of the rain forests that surround the ancient Maya cities.

Now that we have over 30 TERAbytes of digital photos on flora, fauna and biodiverse ecosystems of Guatemala, we are looking for a university or research foundation that can assist in our cataloging of this huge resource and receive a complete copy so they can have their own database.

Acknowledgements

We thank the Administrators and Biologist of PNYNN for inviting the team of FLAAR researchers to study flora, fauna and previously undocumented ecosystems of Parque Nacional Yaxhá, Nakum, and Naranjo for an entire year.

We thank Archaeologist Vilma Fialko and Architect Raúl Noriega for hospitality at Naranjo-Sa-al when we were doing research on plants and ecosystems in that area of the park.

We thank the directors and managers of Cerro Cahuí, PNLT, PANAT, and PNYNN for providing hospitality and local access.

We also thank Gabriela Moretti and sons Sebastián de la Hoz and Juan Carlo de la Hoz for hospitality and food at their hotel El Sombrero Ecolodge at the entrance to Yaxhá.

We thank Roxana Ortiz of Hotel Tikal Inn for providing rooms for our research team while doing field work in Parque Nacional Tikal (PANAT).

The Municipio de Livingston, Izabal, Guatemala noticed the success of our field work in Petén and elsewhere, and invited us to have a comparable project in their Caribbean part of Guatemala. We focused on areas that had not previously been visited by scholars or even students doing their thesis or dissertation. We have abundant publications on our FLAAR website network showing the results of these 18 months of library research and field work. Since Izabal is outside the RBM, the present PowerPoint on edible wild plants of Petén does not include our abundant discoveries in remote biodiverse ecosystems of the south/eastern part of the Municipio de Livingston. We appreciate the assistance of multiple people in the local government plus people that provided hospitality and help.

After lots of conservation agencies and officials saw all the FLAAR Reports produced from the 12 months at Yaxhá-Nakum-Naranjo and then 18 months in Livingston area, then CONAP (Consejo Nacional de Áreas Protegidas) invited the FLAAR Mesoamerica team to have a 5-year project (2021-2025) in the entire Reserva de la Biósfera Maya.

Credits to FLAAR Mesoamérica and FLAAR (USA)'s team

Photographers of FLAAR Mesoamerica: Nicholas Hellmuth, David Arrivillaga, Edwin Solares, in past helpful years María Alejandra Gutierrez, Melanny Celeste Quiñonez, Erick Flores and many other helpful student photographers and photography assistants.

Experienced drone pilots have been very helpful: Haniel Lopez, Emannuel Chocooj, Brandon Hidalgo, and now Edwin Solares.

Video photographers during the field trips: have included many helpful individuals, currently Edwin Solares.

Video Editing: Edwin Solares, Milstrid Arriola; in helpful past years, P. Pablo Marroquín.

Organizer and planning: Vivian Diaz in past years, Vivian Hurtado in recent and current years.

Planning, preparing and packing for field trips: Norma Estefany Cho Cu.

General assistance, co-pilot and driver: Byron Pacay.

Experienced assistants with many years knowledge from field trips: Senaida Ba.

General Assistance: Karla Esperanza Cho Cu.

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Preparing PDFs: Andrea de la Paz, Jaqueline Gonzalez, Carlos Marroquín, and Wilson Arriola.

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We thank Anne Basham for initiating a Maya stingless bee research project during 2022-2023. Literally in the previous century she had earlier worked for FLAAR while Dr. Hellmuth was Guest Visiting Professor at Rollins College in Florida.

We thank Joseph and Nancy Dwyer for providing a substantial donation about 2 years ago that allowed us to obtain better computer equipment especially larger size 4K monitors which are essential for studying details of flora, fauna, and savanna ecosystems. This donation also covered research expenses for many months in that year. In addition, they also donated the funds to cover the entire costs of a one-week field trip to remote areas of PNYNN, including a research trip to the Savanna East of Nakum. We again thank them for their recent donation in 2025 that helps keep our research continuing.

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