Did the Classic Maya have *Pachira aquatica*, Zapotón in their main plazas?

FLAAR Reports

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Introduction:

Normally *Pachira aquatica* grows alongside rivers or lakes. The fruits drop into the water, or along the wet shore area, and germinate. I have seen seeds germinate in standing water (along Rio Dulce). In our own ethnobotanical garden, we have put seeds in a bowl of water and they germinate.

But seeds also germinate in soil (including in our own ethnobotanical garden). And although this tree clearly prefers to grow physically adjacent to a river or lake or swamp, it will also grow inland. In Rio Dulce, near the Tortuguero marina and hotel, there is an entire live-fence line of *Pachira aquatica* that are perhaps several meters above the surface of the river and about 100 meters from the shore.

Thus, although *Pachira aquatia's* natural habitat is near standing or flowing water, it can indeed be grown far from water (if planted and if the seed is watered until it germinates). I have a dozen seedings happily growing at almost 1500 meters elevation in Guatemala City. We have a separate report on planting zapoton seeds.

The purpose of the present FLAAR Report is to document that *Pachira aquatica* can be grown anywhere in Guatemala (at least up to 1500 meters elevation). Most Peten Maya cities were between 150 and 250 meters above sea level (Tikal is an average of 243 meters, if I can remember from when I worked there, at age 19, in 1965!).

It would be helpful if people in Guatemala, Mexico, Belize, Honduras, or El Salvador, could alert me if they know of *Pachira aquatica* flowering above 1500 meters. The tree in the botanical garden in Guatemala city is at least 1200 meters elevation (the FLAAR facilities are a bit higher in the suburbs, but we are only about 8 km from the botanical garden).

I am not suggesting whasoever that the natural habitat of *Pachira aquatica* is at high elevations. Likewise I am not at all suggesting that the natural environment of *Pachira aquatica* is far from rivers or lakes. The point of our studies of this sacred tree flower are to suggest that Maya gardeners of the High Priests and ruling class could have easily transported seeds to anywhere in Mesoamerica and had trees grow, and flower, in almost any environment. For example, I also raise ca-cao in my office; outside on the terrace it blooms, and bears fruit (yes, the cacao is seemingly self-pollinating, as I doubt there are any cacao midges in the middle of Guatemala City and at our elevation).

The purpose of documenting that *Pachira aquatica* can grow far away from a river or lake is to suggest that the Classic Maya had this tree in their plazas and around their temples. We will assume the Classic Maya had sacred Ceiba pentandra and related sacred trees in their religions compounds.

To document the likelihood that *Pachira aquatica* can easily be grown, and can flower profusely, far from a river or lake, I show the *Pachira aquatica* in the main plaza of Chisec, Alta Verapaz. The elevation of Chisec is about 230 meters.

Actually this specific tree (and some others along the Rio de San Pedro Martyr, at the town of Naranjo, northwestern Peten) are the first *Pachira aquatica* that I really paid attention to. During the 1970's through 1990's I studied primarily the sacred water lily. But since the water lily is rather obviously in rivers and lakes, I began to notice the flowers on trees alongside the lakes as well.

Then I began to notice the *Pachira aquatica* tree in the main plaza of Chisec. When I go on field trips to photograph plants, insects, reptiles, etc, I tend to prefer to drive to Peten via Coban and Chisec, since this route is more visually interesting than the normal route via Rio Dulce. I first saw the *Pachira aquatica* in the main plaza of Chisec perhaps five to eight years ago.

On a recent annual Christmas natural science photography week, I again passed through Chisec a few days after Christmas 2011. I prefer to escape the annual ritual of parties with excesses of too much food and alcohol by going to remote areas to study flora and fauna. So this year we went to the Lachua area of Alta Verapaz, to study trees with blood sap and happened also to find many pochote trees. On the way back to Guatemala City we drove through Chisec, and since the tree was in full bloom, I stopped for an hour to photograph it. We also have video (which will take months to process, since during a recession there is not much funding).

Pachira aquatica trees tend to bloom much of the year. This differentiates them from the rest of the Bombacaceae family which tend to lose their leaves for a few months and bloom profusely only a short period.

So on the following pages are some of the photographs from the FLAAR Photo Archive of sacred Maya flowers. We now have almost a thousand photographs of *Pachira aquatica* flowers, buds, and fruits. Actually fruits are often not visible: often no fruit results! We encourage botanists to raise this question and suggest answers (heavy rain, lack of pollination, etc). But all the flowers are surrounded by stingless bees and other insects, so I am not sure it is lack of pollination.

But there was not one single fruit on this entire tree in Chisec, and I have seen trees at Rio Dulce that also have no fruits. But obviously other trees nearby have at least some fruits.

We hope that this photo essay on a *Pachira aquatica* that is far far from any river or lake will document for Maya archaeologists that most Maya cities and villages probably also could have had *Pachira aquatica* trees in their main plazas and around their temples.

I would also add that the main plaza of Chisec, in a Mayan-language area of Alta Verapaz, had a large Ceiba pentandra tree in the center. This we know from the Spanish conquerors, that Maya towns had Ceiba trees. There were other flowering trees in the same plaza of Chisec. It would be interesting if some of the other flowering trees were also sacred to the ancient Maya or at least had medicinal properties. Most of the other trees were not flowering enough to allow me to take good photographs. Ceiba pentandra I can identify easily without needing any flowers.

Notes

If you go to the Internet for Tikal you get many different elevations. That is because Tikal is very hilly, and if you are up in the base of Temple IV, or in the South Acropolis, you could easily be well over 230 meters (would have to check records of the University of Pennsylvania, or the Spanish team or Guatemalan teams working at Tikal).

Also, not all the information on the Internet is accurate; most web sites simply copy what they see elsewhere.

Other figures given for Tikal from miscellaneous Google searches are:
125 meters
128 m
174 m
193 m.

Acknowledgements

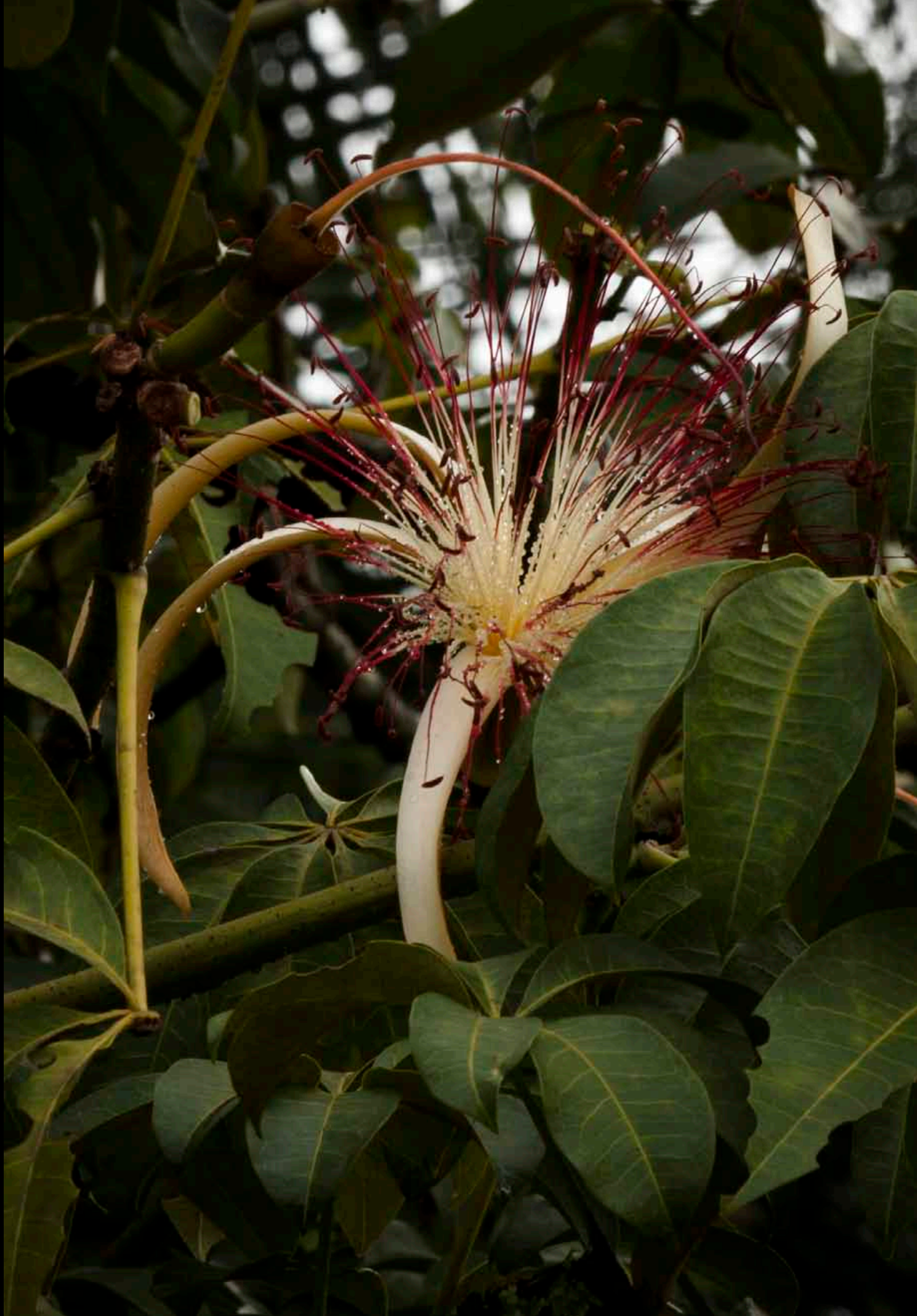
I appreciate that Daniela da'Costa and Cesar took time off from their families to accompany me during the Christmas week of photography in Rio Dulce and that Sofia Monzon and Estuardo Torres make time in their December schedule to join us in Coban for the days of botanical studies around Alta Verapaz.

This field trip of about 9 days harvested lots of photos of Ceiba, pochote, dahlia, ceiba borer insect, and a dozen fruits and spices in villages near Rio Dulce. For guiding us to the villages around Rio Dulce, Izabal, we thank Kevin Lock, a guide at Rio Dulce who raises plants and is interested in local flora and fauna.

During the long drive from Rio Dulce to Lachua park area I was also able to find, and photograph, three "ceiba caves" that is, giant ceiba trees with literal caves in them. These Ceiba pentandra were so large that the rotted spaces at their lower trunks were large enough to walk into. These "ceiba caves" are homes for bats and insects. I believe these caves are the source of paintings on Codex Style vases that show trees with a frontal face at the base (though those trees on the Codex Style vases have leaves and fruits which are totally different than a Ceiba pentandra tree).

There will be a forthcoming FLAAR Report on the "ceiba caves," as soon as we process the high resolution photographs. We are using a 21 megapixel Canon EOS-1Ds Mark III, provided courtesy of John Lorusso, Parrot Digigraphic, a company dedicated to glicee and fine art photography, scanning, color management, and wide-format inkjet printers. The donation of equipment of high resolution and professional quality is significant for this project.

We also appreciate the Gitzo tripods provided by Bogen Imaging several years ago (they are now Manfrotto Distribution). The stability of these tripods, and the fact that they are high enough, really helps our photography.



If you look at the photographs, you can see the results of having good equipment, plus logically it helps to have learned by trial and error over many decades. You can learn about how to do photography of flowers on our www.digital-photography.org and our www.maya-ethnobotany.org.