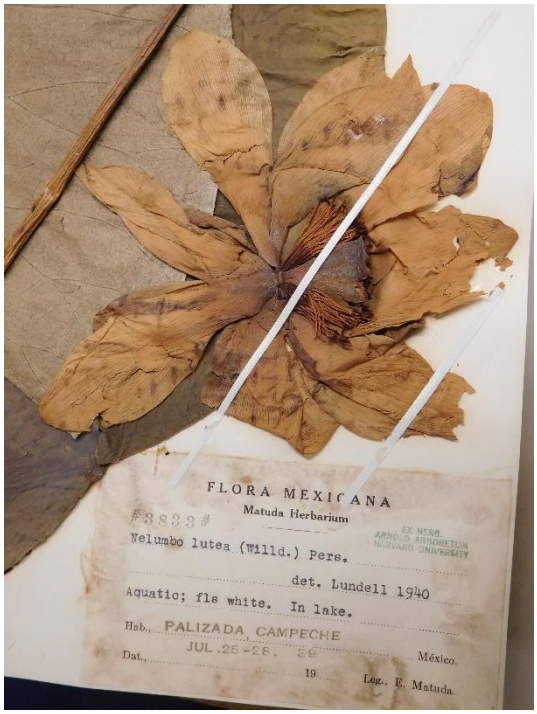
International Waterlily and Water Gardening Symposium 2016
Mérida Yucatán
Post Symposium Expedition – The Quest for *Nelumbo lutea*



The Post Symposium Expedition into the wilds of Campeche State in the southeastern lowlands of the Yucatán Peninsula sounded like a Gordon Lightfoot ballad or an Indiana Jones adventure, and for good reason. It had all the makings of a great story. A famous Scientist from across the globe had unearthed three mysterious botanical specimens collected years before the Second World War. He needed help in his Quest to confirm whether the near-mythical plants described still existed in the wild, far to the south in Mexico. The Scientist called upon a Society of Adventurers to which he belonged, little known to the rest of the world. From all walks of life, these Adventurers share a common fascination – the cultivation of two of the oldest and most venerated of all plants known to man – Nymphaea, the Waterlily and Nelumbo, the Lotus.

The particular species in question, *Nelumbo lutea*, the American Yellow Lotus, could not be more Quest-worthy. An aquatic giant of great beauty and mystical properties, its huge circular leaves can reach two feet in diameter as they stand proud as much as three feet above the water's surface. Nothing sticks to the flat green platters; they can't get wet, and they don't stay dirty, reason enough for Native Americans to revere the Lotus as a sacred plant. Modern reverence of the 'Lotus Leaf Effect', the extreme water repellence we name 'hyperhydrophobicity', has led to magic impermeable coatings for cars and electronics (and water fountains - https://hackaday.com/2016/06/24/a-fountain-of-superhydrophobic-art/#more-210855). Amongst the leaves, huge blossoms of clear yellow open for two days, then drop their banana-sized petals to leave behind the emblematic showerhead seed pod that defines them. Dried and dormant, the seeds remain viable for decades, even centuries, but can sprout in 6 days when planted.

One of a small number of plants to fruit and flower simultaneously, the Yellow Lotus were an important food source for Native Americans, as the Asiatic Lotus is today in China. Well known across the North American continent, its many common names speak to its bounty: Pondnut, Duck Acorns, Rattle Nut, Yockernut, Alligator Buttons, Monacanut, Water Nut. A staple food of the Comanche, Dakota, Huron, Meskwaki, Ojibwa, Omaha, Potawatomi and many other peoples, the whole plant was eaten (and is delicious!) The hard seeds, up to 19% protein, were eaten raw like nuts, added to thicken soups, roasted like chestnuts, or dried and ground into flour to make bread. (Their high oil content means they can be popped like corn as well). The sweet, starchy tubers were harvested in the fall and would keep all winter long, to be boiled, roasted, dried and ground into flour or just eaten raw. In the spring, young and newly unfurling leaves were eaten uncooked or boiled like spinach.

The Yellow Lotus is thought to have originated in the Mississippi Valley, but its great value as a nutritious, transportable, storable food source meant it would be carried and cultivated across the Americas, from Canada to the Caribbean and beyond. Some sources claim that the plant's native range extends to the south from Mexico and Central America all the way to South America, while others believe those colonies were imported ornamentals that escaped into the wild and naturalized. Only one method known could prove their provenance - DNA analysis of an isolated population and comparison to other known populations. And there was only one man in the world who had all the data needed for that comparison.

Daike Tian, long standing IWGS member and scientist, has dedicated his career to documenting the distribution of Nelumbo in the wild across the globe. He had located evidence from the late 1930's reporting the existence of the Yellow Lotus in Mexico, far to the south of its nominal range. An honored guest and lecturer at past Symposia, Daike couldn't make it to Mexico for this one, but was excited nonetheless that we would be going to the Yucatán Peninsula. We would be close to two of the three sites named in his research! He sent photocopies of pages from the Arnold Herbarium Collection of Harvard University indicating the general areas of two distinct populations along the lowlands of the Gulf Coast and challenged us to confirm the almost 80-year old reports. We had our Quest – but first, the reason we were in the Yucatán.

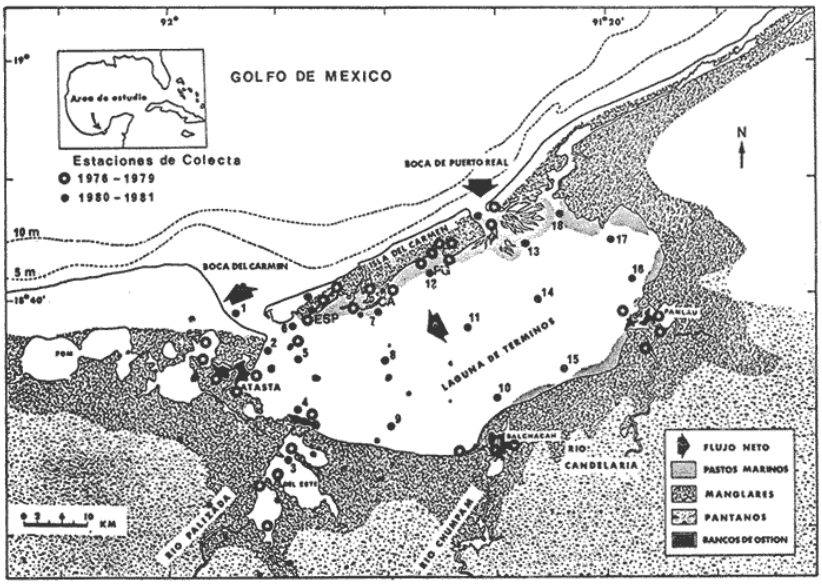
The 31st International Waterlily and Water Garden Society Symposium, the first held in Mexico, was hosted this year in an extraordinary colonial city, Mérida, capital of the Sovereign State of Yucatán and twice Cultural Capital of the Americas. The White City, so named for the limestone of which it is largely constructed, was chosen for its accessibility, its hospitality and its long and storied history. We would be able to travel through time, swimming in ancient ruins, touring Colonial palaces, enjoying the vibrant present in a modern, cosmopolitan capital with beautiful weather – and waterlilies.

Founded on the site of a Mayan temple whose stones were used for the first Cathedral built in the Americas, Mérida became the seat of power in the southeast of Mexico for four centuries. Its cultural ties have always been stronger to Europe than to the rest of Mexico, which is separated from the Yucatán Peninsula by more than just cultural boundaries. Vast, almost impenetrable swamps cut the Peninsula off from the mainland so completely they were only breached by modern highways and railroads in the 1960's. Near total autonomy before the Mexican Revolution led the Peninsula to fight for its own independent status as the Republic of Yucatán, alongside the Republic of Texas, in the 1830s and 1840. Yucatán was only forced into Mexican statehood when Texas was accepted into the Union, removing the fledgling but effective Texan Navy from the fray and effectively ending the war for Yucatecan independence.

Yet even in statehood the Free and Sovereign State of Yucatán, as it is properly known, stands proudly apart. The indigenous Maya, who still make up 60% of the modern population of Mérida, survived the *Conquista* stronger than many other indigenous groups. The resurgence of their cultural heritage in the 21st Century provides a better glimpse into a past that stretches back thousands of years than ever before. New and better funded museums and archeological sites offered a rare opportunity for Symposium attendees to experience waterlilies and archeology simultaneously, in the ancient *cenote* of Dzibilchaltún where they swam with the same lilies as the Maya for 60 centuries.

In the 19th century, the Green Gold of the Yucatán, *henequen*, the agave from which sisal rope is made, brought unbelievable wealth to the area, and Mérida was the place to show it off. The wealthiest *henequeros* moved from the Haciendas where the rope was produced to magnificent pastel mansions designed by the costliest European architects, all along the *nouveau boulevard* of the *nouveau riche*, the Paseo Montejo. We drove past those beautifully preserved mansions on our way to tour a working Hacienda and henequen plantation. The hotel where we stayed lay steps away from the 16th century plazas and churches in the *Centro*, the heart of Colonial Mérida. We would experience thousands of years of history in four days, guided by native Meridians under the aegis of the local botanical research center, The Center for Scientific Investigation of the Yucatán, (CICY).

Dr. German Carnevali is not only Director of the Herbarium at CICY, he is a foremost authority on the botany and distribution of the plants of the Yucatán. He knew one of the sites that Daike had located, near the resort area of Laguna Silvituc but doubted the Lotus were native. Carnevali was much more intrigued by the second site deep in the central swamps of neighboring Campeche State. Few ventured that far into the wetlands. The area was almost completely isolated, accessible only by water, possibly only by canoe. If a population were to be found *there*,



near the headwaters of the Rio Palizada, it would almost certainly be native. He gave us all the information he had -- and a mandate.

And so began the Quest for the wild Nelumbo.

There were eight of us, from all over North America. Tish Folsom of Springdale Water Gardens hails from Virginia, Mike Swize of Nelson Water Gardens from Texas, Jim Purcell of Oregon Aquatics, David Curtright from Escondido, California. Robert Ramik and Laura Grant traveled from Toronto, I'm a Long Islander and we were blessed by the presence of my dear friend and now guide, native *Yucateco*, Jose Ignacio 'Nacho' Barroso. He and his wife Lidia had provided invaluable assistance and done all the groundwork for the Symposium; now Nacho volunteered his van and his time to help us find a single stand of Lotus in a wetland the size of Rhode Island.

First, the easy part. Of the two Lotus populations that hadn't been seen since 1939, one was relatively accessible, in the resort area around Lake Silvituc. We planned our route to pass areas where we might also find waterlilies and visited three *ojos de aqua*. Literally "eyes of water" these springs are so named for the clearings in the jungle where the cool blue waters stare up at the sky. We found what we expected to find in the obvious spots, *Nymphaea ampla*, the beautiful white Mexican native, common in the springs, rivers and pools we saw and stopped at along the way. We had one exciting surprise, in a roadside ditch a local passerby warned us was full of *culebras*, snakes. He stayed to watch someone get bit as Mike, Jim and David somehow identified the much less common waterlily *Nymphaea jamesoniana*! Unfortunately for the onlookers, no one died, which we celebrated almost as enthusiastically as we did the discovery of this beautiful white flower.

Back in the van considerably pleased and badly in need of refreshment (and showers), we headed on the road to Silvituc. We knew we were close and pulled into the parking lot of a pretty little hotel and restaurant and had

immediate cause to celebrate again – we had mistakenly stumbled into a lakeside resort next to a cove filled with Lotus! The lovely hostess, Felicidad invited us in to see whatever we liked, and was only slightly scandalized as Jim stripped down to his shorts and jumped right in, followed by Mike and David.

I have to admit we were slightly disappointed by how easily we found the first population of our "elusive" quarry. We expected to fight our way through crocodile infested swamps filled with bat-sized mosquitos and giant leeches that could drain one dry in a matter of minutes. The closest we had come to killer crocs was on the menu at the crocodile farm in Isla Arenas. (Yummy! tastes like a cross between chicken and pork). We did not expect to stop for a beer and find Lotus practically at the table. We headed back onto the well-maintained two lane highway to Escárcegas, the crossroads of Campeche State, where we would start the REAL expedition, the scary, daring one that so excited us all. We were not disappointed.

First, the drive. To get to the area of the second, much more elusive stand of Lotus, we had to drive six hours northwest on bad roads into the Campeche lowlands. Sugar cane replaced corn and was in turn replaced by rice as we headed into the wetlands on the only road through the swamps. But though the topography was uninspiring, the quantity and variety of birds in the fields increased from sporadic to spectacular! Raptors and vultures, spoonbills and rails, herons and egrets and cranes, oh my! By the time we reached the end of the rice fields, our necks were sore from craning left and right as we passed multicolored flock of multiple species in flight. (Tish wants to lead a birding expedition to the area. It would be stupendous.) But we had other prey in mind.

The road which had followed the Rio Usumacinta along the Tabasco-Campeche border split off to follow the Rio Palizada, a tributary that led to the town of the same name, our only clue to the last potential population of Nelumbo. As the road narrowed to a single bumpy lane past the ranchos and through the jungle along the river, it was beginning to look like a real expedition. Silvituc Lagoon had been too easy, not only for us to find, but also because there were so many thousands of

people around the large and lovely lake. The chances that the Lotus we found were introduced, rather than native, were quite high. The same could not be said of Palizada. After literally hours on increasingly smaller roads, we found our way to the outskirts of the beautiful little frontier town, where the cemetery and the cannons overlooking the river had just been freshly painted for the upcoming Day of the Dead celebrations. Now we had to figure out where the Nelumbo might be. They certainly weren't near the town; the river was in flood, boiling brown and angry up onto the steps that the launches and canoes would use when the waters were lower and calmer. Lotus require still and shallower water than the swift Palizada. We needed to find even more remote backwaters.

Nacho started asking around, trudging through the six degrees of separation that we knew must lie between us and our goal. First we found a policeman who didn't know about the yellow flower but knew the white ones. He sent us to a gas station attendant who knew of a cowboy who knew of the big leaves that can't be wet. The cowboy happened to be filling up and agreed to help. He, Claudio Ezquibel, would take us to the road his uncle Cruz Ezquibel lived on. We followed the cowboy through the unexpectedly lovely frontier town over a tiny bridge to a track that disappeared into the forest. He pointed down the tiny dirt road and told us to go as far as we could and then ask for his uncle. We thanked him and watched him drive back towards Palizada, which had somehow become 'civilization' in contrast to the heart of darkness before us. Improbably, after another 35 minutes down the trail, dead-ending at the river and a trek back on foot to the only house in sight, we found Don Cruz Ezquibel. Yes, he knew of the flower. It grew in the Lagoon of the Wind, many miles into the swamps, accessible only by boat. But it was late, almost dusk. We would want to start early the next morning – we surely wouldn't risk the '*aguadas*', the wetlands, at night?

We weighed the risks against a tight time schedule. We were 12 hours from Mérida assuming all went perfectly well, but it was late Sunday, and there were planes to catch Tuesday morning. We took a quick vote and assured him we were game. Don Cruz sent his daughter back down the trail on a bicycle to find his son who would take us all in the open launch that they used to move their horse to pasture on the other side of the river. We agreed and waited for Cruz *hijo* to arrive. A

handsome young man in his twenties soon pulled up on his sister's bicycle. Cruz Francisco Ezquibel Diaz was far more dubious about our Quest than his father but obeyed his *jefe* (literally, chief) without question. He took us around back to the launch, a 21-foot open boat with a broad beam pulled up on the river bank. We quickly helped Cruz Jr. mount the outboard, quietly moved a tick-infested saddle to the shore, gingerly clambered aboard and away the nine of us went.

For the first half hour of the trip we ran full tilt downstream on the Rio Palizada until the turbid river disappeared under a seemingly impenetrable green wall of huge pickerel rush, cattails and reeds. Cruz spun the boat into an eddy in front of a tiny concrete cottage half hidden in the reeds and called out to the owner inside. She granted him permission to use the only access through the wetlands to the first hidden lake, the Laguna del Pajaro. With a wave and a gracious thank you he steered the boat along the towering reeds to a tiny break in the greenery. The way through to the Lagoon of the Bird was almost invisible until we were upon it, a narrow slot four feet across laboriously cut through the reeds, barely wide enough for the launch to pass. The water was clear and about 8' deep in the cramped channel, set with nets the fishermen use to catch *mojarra*, the native cichlid that makes up the greater part of the local catch.

http://biblioweb.tic.unam.mx/cienciasdelmar/instituto/1986-1/articulo211.html

After another half hour of motoring through the floating vegetation that surrounded the launch, stopping every five minutes to clear the prop of the floating water ferns and roots that fouled it frequently, the passage opened up into a walled-in lagoon a thousand feet across, with millions of waterlily seedlings easily visible on the bottom through crystalline water. Cruz announced we had arrived at the place of the white lilies and announced with some relief that we would be able to get back before dark and before running out of gas.

Wait – waterlilies? No, no, not waterlilies. We needed to see the yellow flowers, with the leaves that do not get wet. His face fell, almost as deep as the waters around us, but he had promised his father. He would try, he said, as he lifted the near empty gas can, but it was near dark now, we would have to hurry. We held on as he threw the boat around and headed to the opposite wall of the lagoon, this time using all the launch's momentum to drive us deep into another, narrower canyon between walls of floating vegetation. After a run of 20 minutes interrupted only by his lifting the propeller occasionally to clear the fouling weeds, the passage ended abruptly.

Three huge rafts of vegetation had broken off from the rest and sailed deep into the passage we were in, propelled by the wind catching their towering stalks. We could see around them to the end of the passage, only another 30 feet away. Cruz told us to brace ourselves and rammed the rafts full throttle. The first mass moved! all of two feet into the second, and we stopped dead. He tried again – nothing. We were trapped, the boat surrounded on three sides, stuck fast. There was no hope of turning around, the passage was far too narrow. We had almost no gas left. Night was falling. The only way back without the boat would be to swim miles through the crocodile infested swamps of Palizada with God-only-knew-what-else lurking under the rafts in eight feet of water. It was a real expedition at last.

There was only one thing to do. We quickly moved to the front of the boat before despair set in, and, bracing our legs against the gunnels, grabbed huge handfuls of vegetation and hauled back on the floating rafts of reeds with all our might. At first nothing moved. Then, ever so slowly, the prow of the boat started to slide between the first raft and the walls of the passage. There wasn't enough room to go between, but with that tiny spark of progress and sheer desperation powering our efforts, we all grabbed the reeds around us and hauled away, pulling the heavy boat up on top the reeds, slowly inching forward towards the open water. Cruz abandoned the outboard, handed David an oar and the two bent their backs against the bottom, poling us farther forward. With a final concerted effort, we literally skated the massive boat with its near-ton of human cargo over the last of the reeds.

We had made it to the vast open water of *Laguna El Viento*, the Lagoon of the Wind– miles of it, covered with water fern, waterlilies – and Lotus!

There was literally no time to waste. The sun was setting and we had to find what we were looking for before it grew too dark to see. Dr. Carnevali had asked for specimens for the testing labs at CICY, but if we couldn't see them, we couldn't collect them. We spotted leaves across an adjacent cove and headed there, part poling, part motoring through the thick weeds. Leaves, yes, there they were, but no seed pods. When we explained what we were searching for, Cruz explained that the pods were eagerly sought after by many birds, and they were long gone by now. We were crushed. We had only enough light to hit one more spot before dark, and we would be going home blind. Just then, Mike pointed a stand out from the bow, and the halting engine made a last effort.

Nothing. We had failed. The light was almost gone, we were miles from the van across the trackless wetlands, and even if we made it back, we were still a full day from our base in Mérida. We headed back through the lagoon along the same path we had come, easily discernable even in the fading light because the boat had pushed the lotus leaves down and out of the way, leaving the way clear.

And then we saw them. First a single pod where there was none before, then another, along the path we had made through the lotus stalks. We had disturbed the sunken pods, and as we made our way through in the opposite direction, a few popped to the surface alongside the boat – and they held seeds! At literally the last gleam of the day, we had found what we needed for genetic analysis. Now the race for home!

We could just make out the break in the reeds at the end of the path we had made in the lagoon. Cruz warned us to get down and hold on, gunned the outboard and flew over the reeds just to the left of the floating masses that blocked the way. We planed over the reeds halfway to the open passage beyond, then pulled and poled our way with all our remaining strength into the channel. Cruz fired up the outboard and we were off, leaning in as far as possible to avoid the sharp sawgrass and occasional thorns. We burst out of the reeds and across the Laguna del Pajaro, finding the second opening on the other side by sheer luck – and Tish's flashlight, with which Nacho, leaning far over the prow like a carven figurehead, lit the way back.

We were on our way home. We figured it was just a matter of following the narrow passage through to the river – until the engine started sputtering. The gas! We had finally reached the bottom of the tank. Cruz backed the engine down to a few hundred rpm, tilted the portable tank and kept the engine going enough to keep moving. He asked us quietly to look for the nets of the fishermen that marked the end of the passage. Do you see them? Are we there yet?

Above us shone the brightest Milky Way I had ever seen, so distinct I told myself I could see faint tinges of blue and brown along its length, traversing the sky from horizon to apogee.

Do you see them? Yes! The nets! We were at the river! We weren't going to have to swim for it after all. We had made it.

The entire Ezquibel family awaited us on the shore, including relatives who had come to see the *gringos locos* the whole town was abuzz about. They greeted the return of the launch with a cheer for its intrepid captain, who had taken eight very strange strangers to the Laguna El Viento and back in the dark, and lived! The Quest was triumphant, the stuff of legend, of song. We could hear the *mariachis* already.

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