INSTITUTE OF CURRENT WORLD AFFAIRS

GSH-11 The Morado Expedition

Apartado 8-3870
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Dear Peter:

During my first trip to Bolivia in 1977 I heard of an exceptionally beautiful and prized wood called "morado"--Spanish for purple--that comes from eastern Bolivia. Morado heartwood is a rich chocolate brown with darker brown-black stripes of varied width and spacing. The wood is very similar to Brazilian rosewood or Costa Rican cocobola wood.

Santa Cruz de la Sierra, capital of Santa Cruz province, is the center of the Bolivian timber industry with several plywood and veneer mills. Morado logs are reputedly transported more than 300 km (180 mi) to the Santa Cruz mills where they are peeled or sliced into very thin face veneer for export. Morado wood is so valuable and scarce, the government forestry development center (CDF) has assigned it the highest national stumpage tax of $50 per cubic meter (1 m^3 = 438 board feet). The stumpage tax is paid by the logger for government permission to cut timber.

In the neighboring Brazilian state of Mato Grosso, morado wood brings three times the Bolivian price. Marked price differentials over international boundaries usually stimulate contraband flow to the more attractive market, and morado wood is no exception. The strong flow of morado logs to Brazil diminished the supply to Santa Cruz mills during the past year, prompting the lumberman's association to seek government protection. By government order, the military cracked down on the contraband flow of morado logs to Brazil. Then the loggers complained the government was depriving them of two-thirds of their market because the finicky Santa Cruz mills reject two of every three logs as unsuitable for peeling or slicing. Of course, the loggers and truckers claimed they were selling only the rejects to Brazil while sending the premium logs to Santa Cruz. Apparently, too many of those premium logs were also going to Brazil.

My dendrological curiosity was aroused by repetitive questions from government and international forestry officials about the scientific identity of morado and of a nearly identical wood called "moradillo." Government foresters would show me beautiful wood specimens but could only speculate as to the correct scientific name. A 1976 listing of Bolivian tree species suggests two species of *Machaerium* (Fabaceae), three species of *Peltogyne* (Caesalpiniaceae) and two species of *Platymiscium* (Fabaceae) for the scientific names of morado and moradillo. I also heard verbal suggestions of *Piptadenia* (Mimosaceae) and *Dalbergia* (Fabaceae). All of the postulated genera belong to the major group of plants known as legumes, whose temperate members include clover, beans, and the locust tree.

Government forestry officials in La Paz believed morado to be a species of *Peltogyne*, but they could give me no basis for their choice.

I arrived in Bolivia May 15 for a one-month dendrology consultancy for the Food and Agriculture Organization (FAO) of the United Nations. My good friend and Bolivian counterpart, Elias Meneces, and I soon journeyed to northern Bolivia for 2½ weeks of collecting and identifying trees. Our stay in northern Bolivia was very productive (but not too newsletter-worthy), so I thought we could make a brief expedition to eastern Bolivia in search of the prized morado tree.

From northern Bolivia we returned to our base in Cochabamba with over 20 kg of dry plant specimens consisting of 10 replicates each of over 50 tree species. (For taxonomic purposes only trees with flowers and/or fruits were selected for collections.) While in Cochabamba preparing our plant specimens and attending to new developments with a long-awaited herbarium, I sent a message to the FAO office in Santa Cruz detailing the preparations for our morado expedition.

Field processing of plant specimens collected near San Javier, Bolivia. Clockwise from lower left are my counterpart, Elias Meneces; field assistant Benigno Rodriguez; driver Mario getting a well-deserved rest; field assistant Waldo Terceros; and standing on the right is an unidentified local resident curious about the plant specimens being placed in newspaper.

Elias and I flew to Santa Cruz on a Friday with hopes to depart for eastern Bolivia the next day. Normally I wouldn't expect much to have been accomplished before our arrival, but from previous experience I was confident Mario, a driver and office-helper, would have everything ready. Mario did need my help to obtain 200 liters (55 gals) of gasoline from the government stock. The local administrator refused us 200 liters because he feared the FAO project would use up its monthly allotment by the 15th. All this on June 8th! I learned a long time ago in Latin America that if your request is turned down, just keep the dialogue going and you often come out with what you originally requested; and so it was again.

Our conversations with forestry officials, timber company personnel and others did not provide us with a specific and accessible locale where we could find live morado trees. General consensus pointed us towards Concepción, an "important" town northeast of Santa Cruz, in a vast, sparsely populated region known as Chiquitania. But the general consensus also suggested the road to Concepción would be impassable, even for our four-wheel drive pickup. Because of unusually heavy rains in the Santa Cruz region we were not optimistic of reaching areas with morado trees.

We drove north from Santa Cruz to the town of Montero, then easterly to the Rio Grande, also known as the Guaporé River. I had been told we would cross the river on a ferry boat, but was surprised to find the ferry maneuvered completely by manpower. Mario squeezed the pickup on the ferry behind an empty log truck. The ferry was then pulled upstream about 100 meters to a promontory by six husky young men. The usual procedure is to release the ferry into the river current that is forced away from the near bank by the promontory, then drift about 50 m downstream where the ferry is roped to a halt against a sand bar. Our maneuver was complicated, however, by a second ferry in the normal mooring spot on the sand bar. A truck carrying three huge mahogany logs had slipped off the ramp of loose planks, damaging the driveshaft on the edge of the ferry.

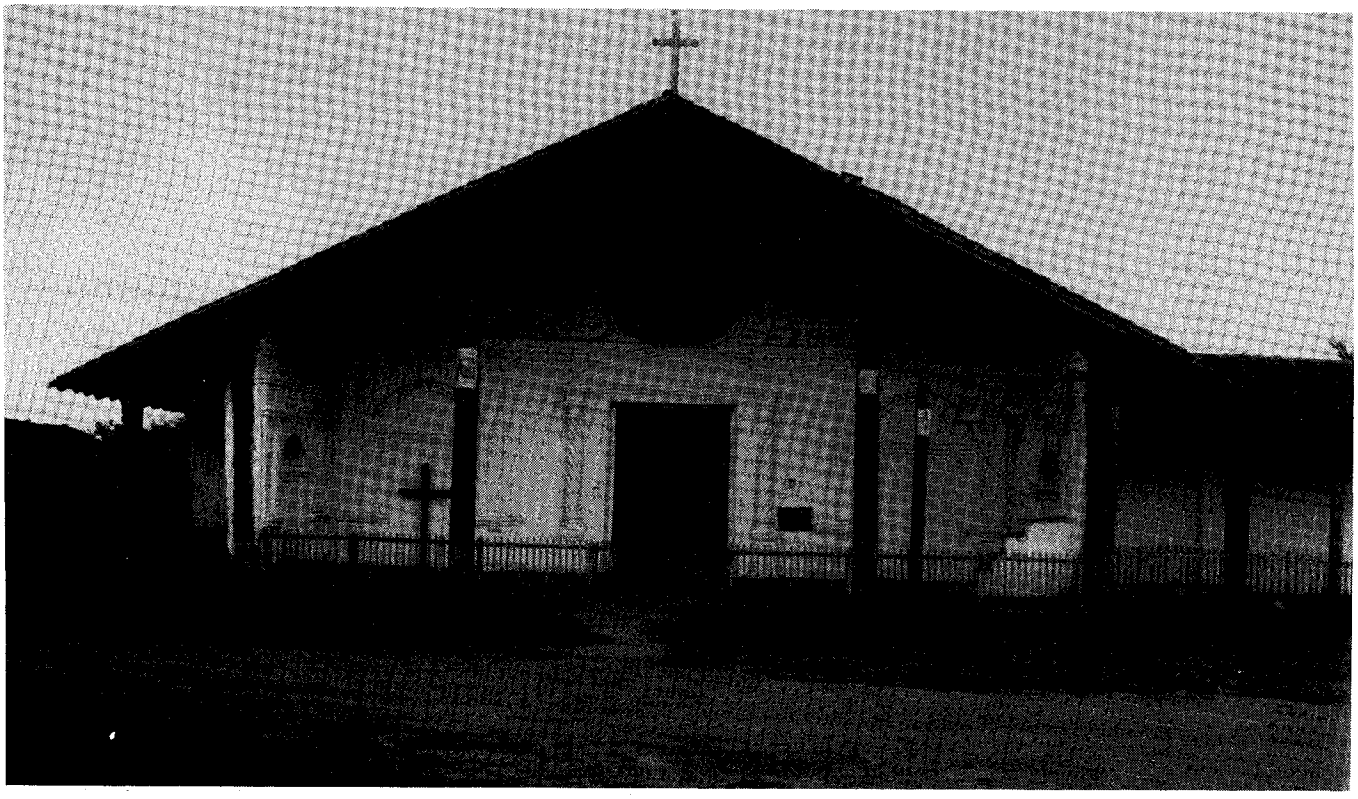
We were told it is easier to cross the Rio Grande some 100 km farther south on the railway bridge at Puerto Pailas. This mahogany trucker tried the risky ferry crossing to avoid the government control station in Puerto Pailas where logging permits are checked and the log tax is imposed. Some small sawmill operators do not have cutting permits or assigned concession areas and therefore must rely on "pirates"--as they are called locally--to supply the logs.

The ferrymen finally decided to release our ferry and try to berth it just downstream from the inoperative ferry. Our ferry boat operators managed to fasten a rope to the second ferry as we floated by, but we grounded in an area of soft sand. For the next hour we were spun around three times in order to move us closer to firm sand. After a successful exit from the ferry, I thought our three-hour crossing of a 50 m wide river was over. Then I became suspicious of what lay ahead when the empty log truck on the ferry with us stopped to put chains on the rear wheels. Mario agreed with me that we should wait to let the empty log truck continue in front of us. WHat we couldn't see when we boarded the ferry was a small arm of the river on the far side of the 500 m wide sand bar. The truck traffic

had incised two deep ruts through the mud. When our turn came to complete our crossing, Mario managed to stay on the slippery ridge between the two ruts until reaching the channel that had been churned into 50 cm deep mud, but Mario plowed through to dry land on the far bank.

Following our long, but successful crossing of the Rio Grande, we were pleasantly surprised to find an excellent gravel road leading to San Julián. No morado in the San Julián area, so we continued to San Ramón. We considered spending the night in San Ramón but were told we could reach San Javier in 1½ hours--and morado occurs near San Javier.

San Javier is a quaint old town founded by Jesuit missionaries more than 250 years ago. The central square is dominated by a church completed in 1750. The hand-hewn beams and posts of cuchi wood (*Astronium lecontei*, Anacardiaceae) are still solid as rock. The weight of a tile roof usually causes sagging beams and rafters but the church's roofline looked like it hadn't sagged a single centimeter. The cavernous interior, 20 x 80 m (66 x 264 feet), suggests a large Indian population in the region, not to mention a priest who could literally boom his sermons. I was told very few Indians now live in the region.



Jesuit Church in San Javier, Bolivia, completed in 1750. The original posts in front were carved from extremely hard and durable cuchi wood.

San Javier is located on a high point (700 m; 2310 ft) of rolling hills that are an outlier of the Brazilian Shield, giving the town a commanding view of the surrounding countryside. I think it is the most picturesque area I have seen in Bolivia, but then I'm partial to landscapes with trees.

Elias found a local entrepreneur currently logging morado who agreed to have his foreman show us morado trees. From the color pattern of morado wood I thought it might belong to the genus *Platymiscium*, so when I caught a glimpse of stump sprouts with the appropriate leaf form, I called Mario to a quick stop. The foreman called it "tarara colorado," adding that in his opinion it is a better quality wood than morado. The scientific identity of tarara colorado was not known by government forestry officials, so one down and morado yet to go. The foreman guided us about 8 km into the forest to a freshly felled morado tree 110 cm (43 inches) in diameter and 26 m tall. Inspection of the leaves indicated it belongs to the genus *Machaerium* of the pea family (Fabaceae or Papilionoideae).

How pleased we were to have found a morado tree so easily and quickly! We continued to search for moradillo but apparently it does not occur in the San Javier region, for the local woodsmen did not know a tree called moradillo nor did they distinguish any subclasses of morado.

Whether hiking or riding I prefer to not return by the same route, so I was strongly in favor of our return to Santa Cruz via the railroad bridge at Puerto Pailas. Unfortunately, none of us knew how dusty and long the trip would be. Shortly after embarking upon our new return route we passed through an extensive agricultural settlement of Mennonites. The site of iron-wheeled tractors, belt driven machinery and the overflowing cribs of corn brought back vivid memories of my own youth on a farm. It was obvious that these Mennonite farmers had colonized good agricultural land, and I couldn't help but contrast the beautiful and productive Mennonite farms with a government agricultural colonization project in San Julián, less than 100 km distant.

My ICWA "uncle", Pat Holt, told me San Julián was a US-AID agricultural colonization project started more than a decade ago. I had hoped to check on the progress and success of the project, but I was largely unsuccessful in tracking down concrete information in Santa Cruz or San Julián. Farms along the road consisted of small patches of yuca (also known as cassava, manioc or mandioca) and corn among large patches of abandoned land. My impression was of typical slash-and-burn cultivation only marginally above subsistence agriculture. It was certainly a striking contrast to the manicured Mennonite farms; I would have liked to document the characteristics between the different agricultural settlements.

After passing through the Mennonite colony, we entered an interminably long stretch of road choked with dust. It was late afternoon with perfectly still air; the powdered silt raised by an unknown vehicle in front of us literally hung in the air. The narrow road and thick dust prevented us from even attempting to pass whatever was in front of us, so we stopped to let the dust settle. It started to thin out after half an hour but gave

every indication of hanging on into the night, so we pushed on through the thick fog of dust. We completed the 50 km between the Mennonite colony and Puerto Pailas in four hours.

It was a weary, dust-covered and choked group of tree-finders that straggled into Santa Cruz eight hours after leaving San Javier. Not only did we collect morado and 30 additional tree species, but we also brought back a 110 cm cross-section from a morado log that will be a beautiful conversation piece in the national forestry herbarium in Cochabamba. Despite my considerable satisfaction with our successful morado expedition, I will be hesitant the next time to suggest an alternate return route.

Sincerely,

Gary

Gary S. Hartshorn
Forest & Man Fellow