

## The Renewed Quest for High Elevation Palms

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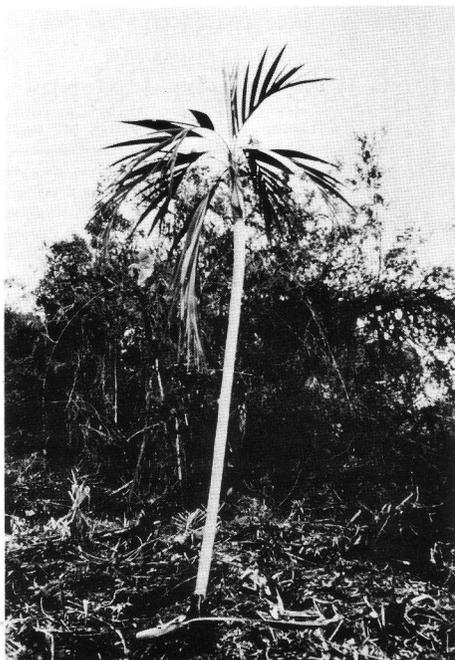
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Throughout the world palm collectors who live in climates marginal for growing palms are always eager to add new genera and species to their collections and to experiment with novel plants in their gardens. In addition many areas of the tropical world habitats are threatened by clearing and grazing, and there exists a pressing need to establish many species in new areas to save them from extinction. From these considerations arose our interest in traveling to the Andes of Ecuador and Colombia, where the days are bright and mild and the nights cool and moist like our home in the San Francisco Bay Area.

The three of us met at San Francisco International Airport to begin our exciting adventure. Upon departure our minds and conversation were filled with anticipation of finding and collecting seed of all the palms of which we had read and dreamed of there in the misty highlands. We hoped to locate as many species of *Ceroxylon* as possible, as well as of *Euterpe*, *Geonoma*, *Dictyocaryum*, *Parajubaea*, *Wettinia*, *Aiphanes*, and *Catoblastus*. Our first destination was Quito, Ecuador, where *Parajubaea cocoides* abounds. And so it did! Everywhere were avenues of them, parks full of them, and garden plantings, loaded with clusters of mature seed to our delight. But nowhere was a seed to be seen on the ground! We soon found out that the children and the poor people find the endosperm rather tasty and a plentiful source of food. So our collecting had to take place in churchyards, a military base, hotel gardens, and private properties where the

friendly Ecuadoreans happily welcomed us and provided whatever assistance they could. We were even given food at one home where we asked to collect some seeds. In two days we collected several hundred seeds. Even with a sharp knife the leathery fruit is difficult to clean from the seed unless it is well rotted, as our sleepy eyes and sore fingers attested.

Our accommodation at the Inca Imperial Hotel was comfortable and inexpensive. Rain showers came each afternoon, but the temperature was a comfortable 9-18°C at the 9,500 foot elevation. After *Parajubaea*, the most common palm we found in Quito was *Trachycarpus fortunei*, which in that moist climate had almost completely shed the fibrous cover to produce a clean trunk. We occasionally also saw *Phoenix canariensis* (rather common), *Ceroxylon quindiuense*, *C. alpinum*, *C. utile*, a few *Jubaea chilensis*, and *Washingtonia robusta* in the city. After two days of collecting, shopping, and sightseeing in Quito we arranged for a taxi to take us to the Colombian border. Although the distance is not far and the highway is excellent, the trip took a whole day because of delays. The first major delay was at Quito airport in the Air Freight office. Not every day does someone come in with 40 kg of *Parajubaea cocoides* seeds to send to the U.S. The oval fruits are rather large and heavy, each weighing about 36 g, and measuring about 4.5 × 3.5 cm. The enclosed seed weighs about 18 g, and is about 4 × 2.5 cm in size. There were great amounts of paper work to be completed first, as well



1. *Geonoma* sp. at 3,500 m on the road from Pasto to Sibundoy.

as an Ecuadorean agricultural inspection. Cindy charmed the young man at the desk into helping us cut through the red tape, and in only two hours the packages were out of our hands.

Along the Pan American highway going north from Quito there are no wild palms to be seen. Plantings of *Parajubaea* and *Phoenix canariensis* are common in the towns and farms. The next delay came in crossing into Colombia. Although we were told by numerous authorities in California that no visa would be required to enter Colombia, the border officials had another opinion. A trip back to Tulcan, a town near the border, brought us to a Colombian consulate which was closed for siesta. But after a couple of hours we were again headed to the border and allowed to cross. Our Ecuadorean taxi driver accompanied us in a Colombian taxi the few miles into the town of Ipiales.

The next morning at 7:00 we were in the town square arranging for a four-wheel-drive jeep to make the trip to Chiles, supposedly the home of *Ceroxylon utile*. Along the rugged and rutted road we spotted thousands of utility poles made from the trunks of *C. utile*, but by the time we reached Chiles we had not seen a single live tree. No one in the town even knew of such a palm. Finally from an old man we learned that 40 years ago they were all cut down to provide the power line poles we were seeing. A two day hike to the other side of the mountain, we were told, would take us to a few remaining trees. We found one remaining tree in the town of Chiles behind a farm house. The occupants had moved it as a small plant a few feet from their home site to the garden in 1923. Now in 1983 it is only 30 feet tall, but very healthy and beautiful—a perfect size palm for our small gardens. We paid our thanks and bounced back along the road to Ipiales and later on in the day to Pasto.

For \$40 in Pasto we arranged for a taxi to take us the next morning into the mountains east of Pasto as far as the Sibundoy Valley. After crossing the first ridge where the pavement ended, we began seeing an occasional palm back in the thick vegetation. An exciting feature was to see *Eucalyptus globulus* and *Cupressus macrocarpa*, common trees in northern California, planted by the farmers on the cleared land. We decided we would gladly take back their *Ceroxylon utile* to complete the trade. We soon came into an abundance of a striking species of *Geonoma* growing out above the low vegetation in very wet soil at an altitude above 3,500 m (Fig. 1). Here we found the soil temperature to be only 9° C (48° F)! The air temperature near mid-day was chilly. The species of *Geonoma* here is a very attractive small palm of no more than 3 m in height, with a creamy white trunk having a diameter of about 8 cm. Garrin found one mature seed but the other many seeds



2. *Euterpe* sp. Sibundoy, Colombia.

on the trees were very immature at this time in late April. We continued on in the taxi until we saw the object of our hopes—*Ceroxylon utile* growing in abundance in a cow pasture. There were plants of all ages except small seedlings, with a few large male trees dominating the scene. But not one female plant was to be seen. We travelled along the narrow gravel road through the thick growth of stunted cloud forest around us. Tree ferns abounded, with gunnera, bamboo, mosses, aroids, and bromeliads in such profusion that travel through the brush was next to impossible even at these high elevations. The local people slash and burn trails to make elbow room and passage possible. We saw an occasional *Ceroxylon hexandrum* poking out above the forest as we began our descent into the Sibundoy Valley. More cleared farm land appeared giving us great views of the vast valley below us.

The elevation of the Sibundoy area is about 2,500 m. As we passed through a small town we noticed more tropical types of vegetation (taro, ensete bananas, mountain papayas, etc., and some exciting new palms). Ahead came into view an abandoned farm house overgrown with highland tropical fruits and several beautiful clumping *Euterpe* palms (Figs. 2, 3), laden with thousands of ripe seeds waiting for our collection. We ate mountain papayas, passion fruits, sweet tree tomatoes, citrus fruits, naranjillas, and some fruits for which we know no name, we made soil pH and temperature measurements, and continued on into the town of Sibundoy for lunch. It began pouring a cold rain, a marked change from the 82° F sunshine a short time before. The hillsides around the town were scattered with *Ceroxylon* palms. We found out that the clumping *Euterpe* sp. has been brought down from the moun-



3. *Euterpe* sp. at 2,500 m, Sibundoy, Colombia.

tains as well as trees of *Ceroxylon hexandrum* adorning the local gardens. We purchased a few plants of *C. hexandrum* from a friendly farmer and his family and returned to Pasto while bartering with our driver for a return trip the next day with a machete to attempt to hack our way to a possibly fruiting *Ceroxylon utile* which had caught our eyes. This later turned out to be a muddy, exhausting, impossible task.

The next morning we returned to the pasture where the *C. utile* trees abounded. The local inhabitants told us that the seed ripen in December. The family who owned the pasture thought the palm to be very beautiful, and realized that the palm was becoming more scarce. So they had selected and cleared the land specifically to grow the young palms up without competition from other trees. They were even giving them fertilizer. And these were people who had probably never heard the word

conservation! They called this palm "palmo ramo," presumably referring to Domingo de Ramo (Palm Sunday), and the *Geonoma* sp. growing in the area they referred to as "palmicha." Soon all the neighbors were following us with great curiosity and helping us look for seeds. They gave us a few plants of *Ceroxylon utile* and we gave them a few gifts and some payment in return. One of the men came running after us as we were leaving to tell us he knew of a palm full of red, ripe fruits. We followed him 10 km down the road to a farm house. The family came out full of curiosity, and the son and our guide took us down hills, over streams, across cow pastures into a steep valley lush with subtropical vegetation where at about 3,000 m elevation by a rushing stream stood a magnificent *Ceroxylon hexandrum* full of ripe orange-red fruit. It was an instant "Easter-egg hunt" searching out the colorful fallen fruits in the grass. Already out of breath the boy made his way up the slippery trunk to shake down more fruits. Winded like ourselves from the hike and elevation he soon came down and Dale went up the 15 m trunk. Having knocked down another bunch of seeds and extremely winded from exertion he came back down also (fireman-style for the last third of the way). Meanwhile our guide had chopped up two-foot sections of tree branches and did a thorough job of removing the remaining fruits with this throwing arm. We gathered several bags of seed and took a break feasting on wild blueberries, courtesy of our skillful guide. We gave them payment for their services and hiked back up the hills with pounding heads and happy faces. We thanked the family, took pictures, and said our good-byes.

Back to Pasto for the night, then we were off by jet the next morning for what we thought was going to be Medellin. The airline agent in Pasto had informed us that we would make two stops before reaching Medellin. As we approached the third

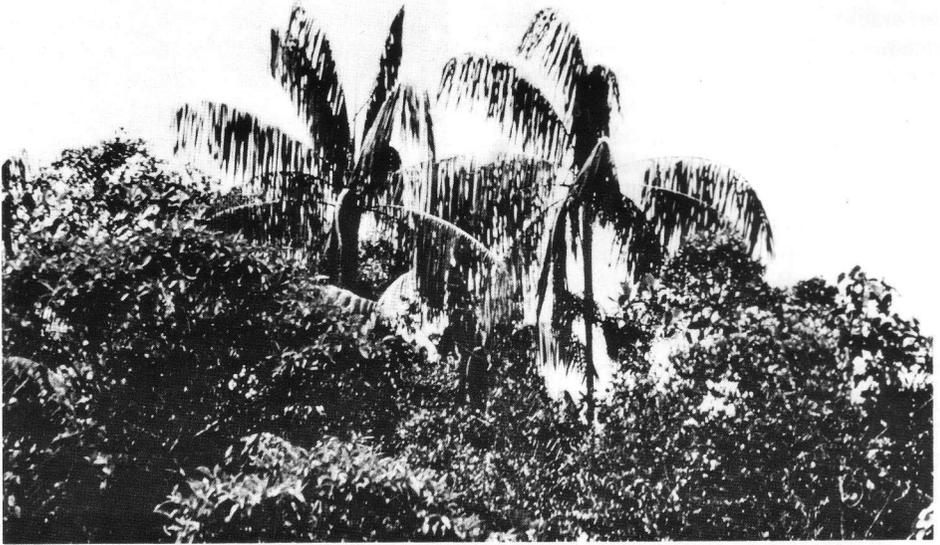
landing we marvelled at the green countryside below, lush with coffee plantations and villas with swimming pools. We were too enthralled with the beauty of what we thought was the Medellin area to notice the crackling Spanish on the intercom announcing the landing at Pereira. Upon disembarking the jet we thought it peculiar that no one was there for baggage unloading. When nothing had been unloaded after 15 minutes, we ran out and had our bags pulled out of the airplane just as it was closing up to leave. The jet took off down the runway as we remarked how good it was to have reached Medellin. Moments later we were to find out in a flurry of Spanish astonishments that: 1. We were not in Medellin. 2. The plane taking off was the last one of the day. 3. We were an 8 hour drive by taxi from our destination. We were by then in need of a break from our fast pace, and so decided to go with the flow, South Amer-

ican style. We lodged at an elegant old hotel, toured the city and its beautiful small zoo. We saw many interesting palms growing in Pereira, at 1,000 m elevation. The streets were lined with 10 m tall clumps of *Chrysalidocarpus lutescens* and an occasional grove of *Cocos nucifera*. There were large *Roystonea* and *Syagrus sancona*, *Aiphanes caryotifolia*, and *Bactris gasaipes*. In the charming zoo were *Elaeis guineensis*, *Archontophoenix* sp., and more of the palms listed above. Surprisingly also were small plants of a species of *Ceroxylon*, all well protected by the locally common framework of braced poles tied with barbed wire. We collected photos of the palms in Pereira but no seeds and were off to Medellin the next afternoon.

Our arrival there was exciting, as we were met at the gate by Colombian Palm Society member Gloria Galeano-Garces, co-author of the recent *Principes* article



4. *Wettinia fascicularis* at 2,000 m. Note seed clumps at base of crownshaft. Antioquia, Guatapé, Santa Rita, Columbia.



5. *Euterpe* aff. *microcarpa* at 2,000 m near Medellin.

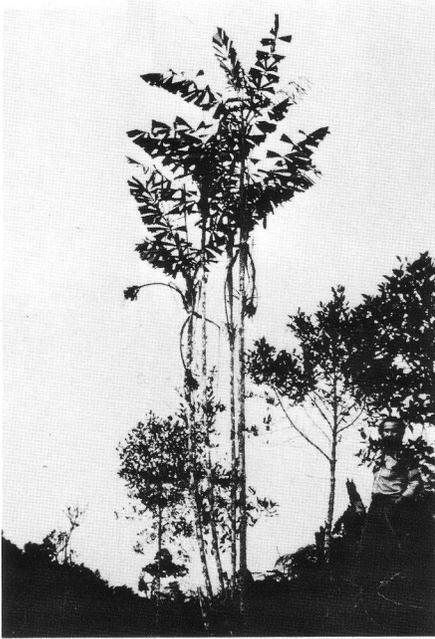
defining *Ceroxylon mooreanum* and *C. flexuosum*, and Gabriel Bolivar, who has collected *Ceroxylon* seed in the past for The Palm Society. Together with these gracious young hosts we made our plans for the next few days and shared our treasures from the Pasto area. We rented a small Renault and squeezed shoulder to shoulder as we honked our way up the highway into the mountains to the northeast of the city. After climbing a steady grade for an hour and a half, we reached about the 2,500–3,000 m level and were amazed again at the similarity of the vegetation to that of northern California. We were reminded of being in Colombia only by an occasional *Ceroxylon quindiuense*. In San Jose de la Montana, at 2,600 m we turned down a gravel road, and more *Ceroxylon* palms began to appear until soon we were among large stands in the cattle lands on the hillsides. We spotted

several trees with ripe fruit and soon were dancing down the hillsides to find seed everywhere. Ripe seeds fell from the trees around us and on us while we stood there marvelling at the serene beauty of the scene. Birds twittered and enjoyed their *Ceroxylon* fruit meals. We began to gather fallen seed, some from caches the mice had collected beneath the bark of fence posts, and also a few seedling plants while Gabriel began a three hour ascent up one of the slippery, wax-coated trunks using a rope sling. He cut down thousands of seeds more. Also present here were several trees of *Ceroxylon flexuosum*. We found a few seeds beneath to which Gloria later added several hundred she had collected two weeks before.

Cows eat the young *Ceroxylon* plants in these remaining stands, and pigs delight in munching the seeds. We saw one waist-high plant struggling to live that must have



6. Collecting seeds of *Euterpe microcarpa*. Left to right: Gloria Galeano-Garces, Cynthia Anderson, Dale Motiska, Gabriel Bolivar. 7. *Dictyocaryum platysepalum* against the sky at 2,000 m.



8. *Aiphanes pachyclada* at 2,000 m with Gabriel Bolivar.

been chewed back thirty times over the years. Beneath the few broad-leaved trees along stream banks were perhaps hundreds of palm seedlings. The soil tested to a pH near 7 and was 54–56° F in early afternoon. Groves of white-trunked majesty on the emerald green hillsides together with distant blue mountains and white-washed farmhouses created the most serene and peaceful setting imaginable. Cumulonimbus clouds built and the smell of coming rain swept over us as a golden orange sunset displayed itself. The rain poured on us all the way back to Medellin. Throughout the night we cleaned seeds.

The next morning we were up into the mountains again on the other side of the valley. At 3,000 m elevation, the vegetation here was more lush and less disturbed. We were here to have our most successful day of collecting yet. We encountered the small stilt-root palm *Wettinia fascicularis* (Fig. 4) in full ripe fruit.

We collected small plants of *Geonoma pulcherrima* (syn. *G. euterpoidea*). *Euterpe microcarpa* was nearby with its graceful, drooping leaflets, and also full of ripe fruit (Fig. 5). We collected thousands of seeds and also young plants (Fig. 6). Beautiful *Dictyocaryum platysepalum* trees devoid of fruit kept us going down the road in search of one in seed (Fig. 7). In a grove of them on a cleared hillside Gloria spotted one with a recently dried infructescence. Sure enough, there were a few hundred seeds beneath the tree, many already sprouting. Gloria pointed out *Aiphanes pachyclada* growing nearby, a small clumping palm covered with vicious needles even under the fish-tail leaflets (Fig. 8). We collected a few hundred ripe seeds. Once again the afternoon clouds were building and we felt a few drops of rain, so we took a last look at the *Dictyocaryum* palms with their plume-like leaves mounted on long blue-green crownshafts. The soil had temperatures of 58–61° F in the early afternoon and was acid (about pH 5). We again returned to Medellin to clean and package seeds most of the night. The next morning we sadly said goodbye to our gracious hosts with hopes of return again soon.

We flew on to Bogota, our last stop in South America. The first evening we met with the other author of the *Principes* article on *Ceroxylon mooreanum*, Rodrigo Bernal-Gonzalez, who was in Bogota for a few days of study. Because he had to return to Medellin the next morning we made the most of our time together and at 2 AM we were still out in the park in Bogota counting stamens on the fallen flowers of a magnificent *Ceroxylon quindiuense*. This was of very suspicious interest to the local police. The weather was very much like that of San Francisco. We returned to the park again after sunrise and were lucky to find a few seeds of the *Ceroxylon* there. We met our other Colombian Palm Society member, Sr. Eduardo Puyana, who introduced us to



9. Young *Ceroxylon* palms in the Bogota Botanical Garden. Left to right: J. Garrin Fullington, Sr. Eduardo Payana, Cynthia Anderson, Dr. Francisco Sanchez.

Dr. Francisco Sanchez, the director of the fairly new Bogota Botanic Garden (Fig. 9). We spent the afternoon in the garden seeing hundreds of young *Ceroxylon* set in groves among the tall trees. An effort is being made to preserve all the species of *Ceroxylon* there. We saw at least a hundred palm species on the lawns and in the conservatory. For an age of only seven years the garden is extremely impressive. After a last minute shopping spree we packed and prepared for our return to the U.S.

Thanks to our good cleaning work, mostly Dale's and Cindy's, the agricultural inspection in Miami was routine, and

both the seeds and the plants were allowed entry. Enjoyable visits were made in Miami to Fairchild Tropical Garden and to the wonderful garden of member Paul Drummond.

From the U.S. our seeds have gone to collectors throughout the world and to our seed bank. After 60 days the *Euterpe* seeds began breaking the ground, a few *Ceroxylon* and *Parajubaea* seeds began to grow, the *Dictyocaryum* seeds were sprouting, and the plants of *Ceroxylon* had recovered and begun to grow again. We hope they are now doing so around the globe.