

Malaysia in 1963, plans to reach the Langkawi Islands off the west coast of Malaya, where this palm grows, did not materialize. Thus it was an exciting day when Dr. Benjamin Stone of the University of Malaya in Kuala Lumpur forwarded photographs of the rare species.

Dr. Stone writes as follows: "These photos, which I took on May 10, 1967, on the north-central limestone face of Pulau (Island) Dayan-Bunting, in the Pulau Langkawi group, off the west coast of Perlis, Malaya, show some of these palms in their native haunts. They are often on very steep slopes or cliffs and mostly quite inaccessible . . . In one photo you will see the figure of Inche Mahmud bin Sidek, our herbarium technician, who did the collecting proper and gives a convenient "scale" to the photo. Incidentally, I used Tri-X film exposed at ASA 400, a Pentax camera with a 35 mm. f. 3.5 Takumar lens, and exposed for 1/125 at f. 11.

"Some of the palms reached a height of perhaps 25-30 ft.; the stems in these were somewhat arched, by no means straight or erect. On very steep exposed cliff-faces some trunks formed a U-shaped figure, that is, bending downward from the rooted base, then up-curved to the crown and apex. The leaves are a medium green, not especially dark and not glaucous."

An inhabitant of limestone areas, *Liberbaileya gracilis* would seem to have potential as a plant for cultivation in southern Florida as might its equally problematical relative *Maxburretia rupicola* from limestone hills near Kuala Lumpur.

There is an interesting story connected with the name for this species, for it was independently treated by two botanists during the year 1940 when war had disrupted communication. Dr. Max Burret in Berlin described the genus *Symphyogyne* to include two species, *S. gracilis* Burret and *S. rupicola* (Ridley) Burret. Five months later, Dr. C. X. Furtado placed the same two species in separate genera as *Liberbaileya lankawiensis* Furtado and *Maxburretia rupicola* (Ridley) Furtado.

*Symphyogyne* proved to duplicate an earlier name for a genus of liverworts so cannot be used, as Burret and Potz-tal showed in 1956 (*Willdenowia* 1: 530). These botanists accepted Furtado's two genera. Thus *Liberbaileya* is a legitimate name even though published later but its species must be called *Liberbaileya gracilis*, using the earlier published epithet, not *L. lankawiensis*.

LIBERBAILEYA Furtado, Gardens' Bulletin, Singapore 11: 238. 30 Aug. 1940.

*Symphyogyne* Burret, Notizblatt des Botanischen Gartens und Museums zu Berlin-Dahlem 15: 316. 30 Mar. 1940 not *Symphyogyna* Nees & Montagne (1836).

LIBERBAILEYA GRACILIS (Burret) Burret & Potz-tal, *Willdenowia* 1: 530. 1956.

*Symphyogyne gracilis* Burret, Notizblatt des Botanischen Gartens und Museums zu Berlin-Dahlem 15: 317. 30 Mar. 1940.

*Liberbaileya lankawiensis* Furtado, Gardens' Bulletin, Singapore 11: 238. 30 Aug. 1940.

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## Some Palms of Nicaragua

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On several occasions in recent years, I have visited the marvelous and truly

amazing country of Nicaragua, principally in continuing pursuit of my stud-

ies of orchids. My botanical interests also take in the palms, and during orchidological explorations, I have quite naturally paid some attention to these princes of the vegetable kingdom.

The flora of Nicaragua is as yet very incompletely known. Though this is the largest of the Central American countries, scientific investigation has been remarkably scanty through the years. An indication of the wealth of plants to be located in Nicaragua is seen in the results of my work with orchids there, in close collaboration with A. H. Heller, of Monte Fresco, near Managua. When our study of the Nicaraguan Orchidaceae was commenced in 1956, a total of 139 species and variants was recorded from the republic. At the end of 1966, a total of authenticated indigenous representatives of the Orchid Family of 552 was arrived at, and additional records are being added with extraordinary frequency.

The only published roster of Nicaraguan palms known to me is that afforded by B. E. Dahlgren, in his valuable *Index of American Palms*, published by the Field Museum of Natural History in 1936. This consists of fifteen species, as follows, using Dahlgren's names, in alphabetical sequence.

*Acrocomia vinifera* Oerst.

*Asterogyne Martiana* Wendl.

*Bactris dianeura* Burret

*Bactris horrida* Oerst

*Calyptrogyne glauca* (Oerst.) Wendl.

*Chamaedorea graminifolia* Wendl.

*Chamaedorea membranacea* Oerst.

*Chamaedorea sphaerocarpa* Burret

*Cryosophila Warscewiczii* (Wendl.)

Bartl.

*Euterpe macrospadix* Oerst.

*Geonoma microspadix* Wendl. ex

Spruce

*Pyrenoglyphis minor* (Jacq.) Karst.

*Pyrenoglyphis ovata* (Oerst.) Karst.

*Reinhardtia simplex* (Wendl.) Burret

*Socratea durissima* (Oerst.) Wendl.

Nicaragua is an extremely diversified land physically. The western quarter or so, where by far the bulk of the population exists, is characterized by a longitudinal line of volcanic mountains, several of which are persistently active, with fertile hilly lowlands extending to the Pacific. A distinct and protracted dry season occurs here. In the west-central quarter, northward towards the border of Honduras, we find the highest mountains of the country, these carpeted with dense hardwood forests, with scattered stands of pines (*Pinus oocarpa*), and some excellent and spectacular examples of "cloud forests" on the tallest peaks.

The eastern half of Nicaragua is a complex array of mountain ranges, draining toward the Caribbean, and tremendous expanses of lowland rain forests which are very sparsely inhabited, essentially impenetrable by car, and to a large extent unexplored. The dry season in this immense region is very short, often virtually non-existent.

Palms are naturally most common, both in numbers and in kinds, in the areas of high annual rainfall. In the lowlands extending from around the two huge lakes, Managua and Nicaragua, to the Pacific, about the only native species the casual visitor is likely to encounter is *Acrocomia vinifera*, the country's most widespread palm. Handsome stands of it can be seen on the grassy hillocks along the highway between Managua and the picturesque old city of León, and scattered specimens still exist in some of the suburban districts of the capital city itself. Dahlgren notes that this *Acrocomia* is called *palma de vino* and *corozo* in Nicaragua, but I have found *coyol* to be a far better known vernacular in the countryside.

In the attractive hills southward from

Managua, on the Inter-American Highway, especially near Casa Colorado, and on towards the often active twin craters of Volcán Masaya - Santiago, a very pretty cluster-forming *Chamaedorea* is rather frequent in moist ravines, growing with a splendid big spreading tree-fern (genus *Cyathea*). And along the road extending from this Highway to Granada, a lovely and famous old town on the shores of Lake Nicaragua, around the base of towering Volcán Mombacho, I have found isolated specimens of a huge palm which appears to be *Orbignya Cohune*, and which is common in the central and eastern departments.

Nearer Granada, one sees tattered tight clusters of a viciously thorny small *Bactris*, growing fully exposed in pastures, with towering buttressed ceibas their only arborescent companions. This same species (*Bactris minor*, probably) is also found along streams along the road between Managua and Tipitapa, growing almost hidden by great ranks of heliconias.

Mombacho volcano is no longer active—its entire upper third was blown out in cataclysmic eruptions agés ago—and despite the difficulties of scaling its wet, precipitous slopes, it offers fascinating botanizing. A cloud cap customarily covers the shattered summit, and here we find marvelous formations of small, gnarled trees so heavily laden with orchids, bromeliads, and other epiphytes that large branches often break off under their weight. A small caespitose *Chamaedorea* occurs sporadically somewhat lower down on the mountain, in an oddly restricted belt extending horizontally around the slopes. It grows with a glorious big tree-fern, one with viciously ebony-thorned frond-bases, and a robust *Diefenbachia* frequently as tall as a man.

On the side of Mombacho facing

northeastward, toward Granada, yet another *Chamaedorea* occurs on the margins of clearings, often in company with a splendid big *Begonia* with erect inflorescences four and more feet in height. This palm is a solitary one, of considerable charm. Near here, too, I found three specimens of a spectacular palm which is highly reminiscent of *Welfia Georgii*, known from Costa Rica and Panama.

Travelling along the Inter-American Highway from Managua eastward and northward toward Honduras, the clump-forming *Bactris* noted previously can be seen near Tipitapa, a quaint town with some famous hot springs. In the same district, in open grassy fields among deciduous trees such as the calabash (*Crescentia Cujete*), several kinds of bull-horn acacias, and the very handsome orange-yellow-flowered *coyote* (*Platymiscium pinnatum*), there is a stocky *Sabal* in small numbers. This same palm is also to be found near the town of Ciudad Darío, further northward along the Highway.

In the northwestern mountains (reached by taking the road to Matagalpa and Jinotega), near the charming rustic hotel at Santa Maria de Ostuma, fabulous montane forests are found. Here some of our most interesting orchids have been discovered, and it is a botanical showplace which every visitor to Nicaragua should not neglect. Indigenous palms are infrequent, consisting of two or three apparently different *chamaedoreas*, one solitary, the others forming rather open clusters, and an odd dwarf pinnate palm which is much like a *Synechanthus*, this growing in limited numbers near the rim of the impressive Guasgualí Valley.

Returning southward towards Managua once again, we come to the new road being constructed to the river port of Rama, far away into the immense

reaches of Zelaya Department, which occupies almost as much territory as all of the rest of Nicaragua combined. Called the Roosevelt Highway, and built with U. S. assistance, this is by far the most rewarding trip the palm enthusiast can make in the country. This provided he does not object to camping out, since hotel accommodations are, at best, primitive.

Leaving the Inter-American Highway at El Empalme, one travels through generally serene hills with thickets of thorny xerophytic vegetation — uncomfortable botanizing on foot, with aggressive ants, wingless wasps, and the like adding to one's distress. A few of the sabals noted near Tipitapa are to be found along the way, but otherwise scurfy epiphytic bromeliads and some showy flowering trees (mostly *Tabebuia pentaphylla*) are the principal horticultural sights.

Further along, near Juigalpa, appear occasional rather sad specimens of the cultivated peach palm or *pejibaye*, long known as *Guilielma Gasipaes*, but presently called *Bactris Gasipaes*. A side trip from the Rama Road to the old gold-mining towns of La Libertad and Santo Domingo takes one into some fascinating country, even though most of the original forests near the habitations were destroyed long ago. Sharp hilltops and valleys, though, still retain intriguing stands of trees, underset with marvelous big marantads and gingers, and occasionally, a giant *Heliconia* with pendulous inflorescences some four feet in length. Orchids, bromeliads, aroids, ferns, peperomias, and other epiphytes abound, of course—and in La Libertad such things even occur on the aged tile roofs of the houses!

*Bactris Gasipaes* is here, and is much relished for its edible fruit, these eaten boiled and often served with roast pork with happy culinary results. Our old friend, the *coyol* (*Acrocomia vinifera*),

stands in solitary spinose splendor on some of the exposed hump-shaped hillocks—the palm is just too painfully difficult to cut down and remove, say the inhabitants of the area. And, too, their pigs delight in the abundant big fruit when these fall to the ground.

April and May are reasonably “dry” months in this district. But even during this season, rain falls almost daily, so that walking about usually involves mud up to the knees in many spots on the trails. The most conspicuous palm around La Libertad is a graceful species which I suspect is *Euterpe macrospadix*. Its sleek, slender trunks attain heights upwards of forty feet, and are topped by a dense crown of splendid feathery foliage. Like many palms found in such constantly wet forests, its roots are exposed to some degree above the level of the ground. In this species, these roots—as thick as a man's thumb—are of an amazing vivid orange-red color.

A few terribly spiny climbing *Desmoncus* were encountered and given a wide berth, since these neotropical “rats” can cause nasty wounds if approached incautiously. *Asterogyne Martiana* forms rather extensive colonies hereabouts. This is one of my favorite palms, and I can only hope that the little seedlings which we now have coming along from Nicaraguan seed here in Coconut Grove will thrive under our conditions. Its short stems in the wild are often set with delicate ferns and such charming little orchids as the pendant, flattened dichaeas, with their chocolate-scented diminutive blossoms. I find the dull dark-green leaves of the palm, normally split only at their tips, notably neat, and the red branches of the rachis, set with lustrous blue-black fruits are a perfect accompaniment to this unique plant.

Some giant trees had been cut down near the mucky trail, and as I searched

the fallen branches for orchids, I found my first *Reinhardtia*, right at my feet! This was an exciting discovery for me, and upon wandering further around the area, *R. gracilis* var. *gracilis* proved to be frequent. As we travelled a bit further on, literally thousands of these delightful dwarf palms appeared in small clumps, growing consistently in heavy yet humusy soil in the deepest of shade, often under the broad paddle-leaves of multi-colored marantads.

Returning to the Roosevelt Highway (the Rama Road on many maps), and continuing towards the east, through the spectacular scenery of Chontales Department, the *pejibaye* (*Bactris Gasipaes*) increases in numbers. Its tight stem-clumps and glossy dark-green leaf-crowns are highly attractive until one discovers how wickedly spiny are almost all parts of this palm. *Acrocomia vinifera* forms stately groups on the hills near Villa Somoza, and hereabouts once again we encounter the big pinnate palm previously seen near Granada, which is probably *Orbignya Cohune*.

The oil palm, *Corozo oleifera*, is also seen around habitations, especially near rivers, though the natives seldom seem to make use of the oil expressed from its massive fruit-clusters. This species is far more common further eastward towards the Caribbean, in the swampy lowlands of the Rio Mico and Rio Escondido basins of Zelaya.

A splendid group of flowering trees of *Andira inermis* prompted a stop—the vivid lavender-purple flowers in huge pyramids are marvelously attractive! Growing around the bases of the stately trees were dense clumps of a showy *Bactris*, with graceful almost golden-yellow trunks set with rings of ebony, elongate spines, and very feathery fronds. One of the physical problems of collecting in Nicaragua here

again presented itself, when all of us bumped into bushes and reedy grasses on which crouched walnut-sized masses of tiny ticks. These diminutive *garrapatos* can move with the speed of a racing car, and for days thereafter we were infested with these nasty little insects. During previous treks in Central America, I have developed a severe fever from the attacks of the pin-headed beasts, whose danger is far more immediate than snakes or such well-publicized (but rarely seen) species.

Once down into the humid lowlands of the Rio Mico drainage basin, palms increased rapidly both in numbers and variety. Endless expanses of showy heliconias (of some five species) occupied the wet gulleys and often extended in solid phalanx up hillsides. Several kinds of marantads with handsome powder-white undersides to the huge entire leaves were scattered amongst them, as were some lovely orange-coned gingers. An unusual pinnate palm grows here in abundance, seldom more than ten feet in overall height, with glaucous lower surfaces to the foliage. It is very attractive, and perhaps our Editor can offer some idea of its identity.

The impressive *guarumos* (*Cecropia spp.*) abound in such regions, with their huge, long-stalked, hand-shaped leaves—white or glaucous underneath—and typically hollow, ant-infested jointed trunks. Near Muelle de los Bueyes, where an *Episcia* carpeted wet slopes above a cascading crystalline stream, *Asterogyne Martiana* again appeared with a very pretty slim-trunked *Geonoma* fifteen feet or so tall which seems much like the Costa Rican *G. congesta*. Both of these, along with the glaucous pinnate palm noted above, continued to increase in abundance as we approached the temporary end of the road, over the Rio Siquia, where we set up our camp surrounded by palms, *guaru-*

mos, and balsa trees (*Ochroma lagopus*).

*Bactris Gasipaes* is frequent hereabouts, and some of the tallest specimens of this palm I have ever seen were scattered along the larger streams. Coconuts naturally abound in settlements, and *Corozo oleifera* is often found near swampy areas. Huge clumps of the poorly-named Panama hat palm, *Carludovica palmata* (which is a member of the *Cyclanthus* Family, not a palm, of course) form spectacular arrays on wet hillsides, but reach their most impressive development in boggy gulleys, where the palmate leaves on very elongate petioles often attain heights of fifteen feet.

A walk along a muddy trail towards one of the larger tributaries of the Rio Siquia brought us to a veritable botanical wonderland! Immense tangled masses of *Vanilla Pompona* vines (an orchid) hung over carefully "landscaped" ranks of *Asterogyne* and the sleek, tall *Geonoma*. Some splendid big ferns with coppersy juvenile fronds vied with tall ginger and marantads for space in wet spots, and showy parrots and over-sized hummingbirds flew about on every side. I inadvertently walked into one of the long whip-like leaf-extensions of a clambering *Desmoncus* palm, and while attempting to extricate myself, fell into a clump of the huge terrestrial bromeliad, *Aechmea Magdalenae*. Though this plant—much like an overdone pineapple in vegetative appearance—is prized by the natives for its edible fruit and excellent leaf-fibers, its marginal thorns are vicious, turning both forwards and backwards, and easily ripping clothes and flesh.

Torn and tattered, I progressed, to catch up with my companions, and despite the discomfort, I delighted at every step in the plants on all sides. A

little brook, soggy-banked and set with trees on which perched proportionately huge anthuriums, gave me an excuse to pause for a rest. And here about a dozen beautiful specimens of *Socratea durissima*, their astounding stilt-roots far taller than my head, and their crowns almost hidden in the umbrage overhead.

And nearby, with showy masses of shrubby *Warscewiczia coccinea* — its incredible waxen paired orange bracts surrounding the tiny flowers and Chinese blue fruits—was a group of stemless pinnate palms whose glorious big fronds reached some twenty feet upward and outward in graceful array. None of these palms gave any evidence of flowering or fruiting, but they are apparently of the *Scheelea* alliance.

The Roosevelt Highway now continues beyond this river, towards its eventual destination at Rama, and when I next visit Nicaragua, I look forward to travelling onward into this amazing eastern section of the country, with its glorious palms and other plants.

## PHOTO GALLERY



*Sabal Palmetto* growing in the crotch of a live oak tree in New Smyrna Beach, Florida. The palm has no connection with the ground, but according to local residents has been growing in the tree for twenty years. Photo by Dent Smith.