

The Native Palms of Puerto Rico

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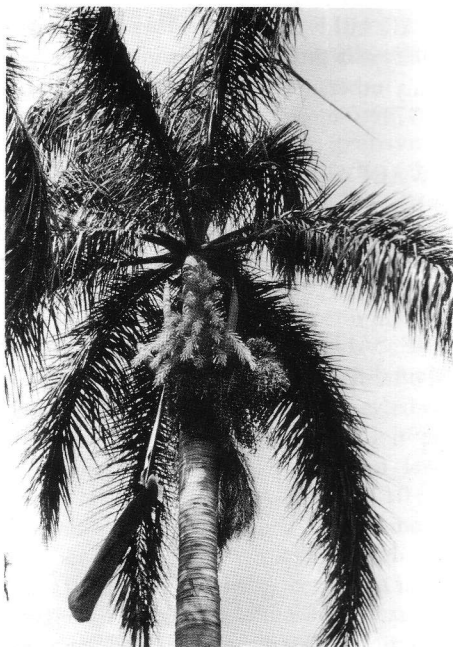
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Puerto Rico is one of the Antilles, an island chain curving from Florida to Venezuela, dividing the Atlantic Ocean from the Caribbean Sea. It is the easternmost of the four Greater Antilles, the others being Cuba, Jamaica and Hispaniola. It is also the smallest, about 100 miles long and 40 miles wide. The flora is distinctly Caribbean, and while the palms are not so diverse as those of Cuba, they are no less interesting. Puerto Rico has ten native species in ten genera, and half of these are endemic (Little and Wadsworth 1964; Little, Woodbury, and Wadsworth 1974).

The most widespread and abundant species is *Roystonea borinquena*, the "palma real." This palm is endemic to Puerto Rico and three small neighboring islands. It is a large and imposing palm, easily recognized at a distance by its stout grey trunk and large head of pinnate leaves. It is seen throughout the island in lowland forests, fields and planted as ornamentals. The fruits are used by farmers to feed hogs. It is said that you can tell the number of hogs a farmer owns by the number of roystoneas he has on his land, usually four palms to a hog. Although farmers are thus inclined to conserve these palms, it seems that roystoneas actually benefit from forest clearance, and can extend their range in cleared areas. There are about eleven other species of *Roystonea*, with a circum-Caribbean distribution. However, their variability, and frequency with which they are planted, means that their taxonomy is in a state of some confusion. *Roystonea borinquena* has a distinctive bulge in the trunk, and so do some of the other species. The explanation

of this is unknown, and it seems unlikely that it is entirely due to climatic changes.

The pattern of forest destruction in Puerto Rico is the same as that found in many areas throughout the Caribbean. During the last 100 years there has been extensive deforestation, leaving today only a small fraction of climax vegetation. Fortunately a well-developed conservation program has ensured that some of the most interesting vegetation types are preserved in national parks. These include subtropical dry forests, e.g., at Guanica, subtropical wet forest, e.g., at Maricao, and both



1. *Roystonea borinquena*, the most frequent palm in Puerto Rico.



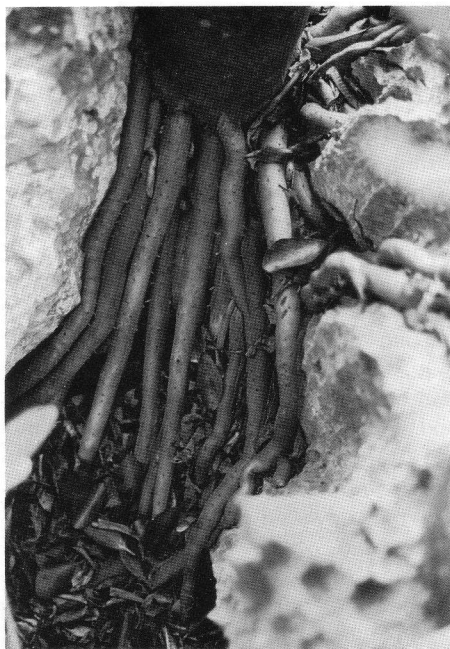
2. *Thrinax morrisii*, growing in limestone rocks.

lower montane wet forest and lower montane rain forest, e.g., at Luquillo. Also secondary forests have increased in area in recent years as a result of the abandoning of marginal agricultural areas.

In the limestone hills of the island, *Thrinax morrisii* is common as an understory shrub. Typically it occurs in large populations of sterile stemless plants with a few fertile specimens with stems up to 2 m. The habitat of this species is similar to that of other related Caribbean palms, e.g., *Coccothrinax*, and consists of xeric limestone areas with a seasonal subtropical climate. The common name of *T. morrisii* is "palma de escoba," and this refers to the practice of making brooms from the leaves. This was a common industry many years ago, which then declined. Now, because of the economic recession, the practice has started up again, and brooms can be bought in local shops.



3. *Sabal causiarum*, the Puerto Rican hat plant.



4. *Goussia attenuata*, the spine-like projections on the roots, anchored in limestone rocks.



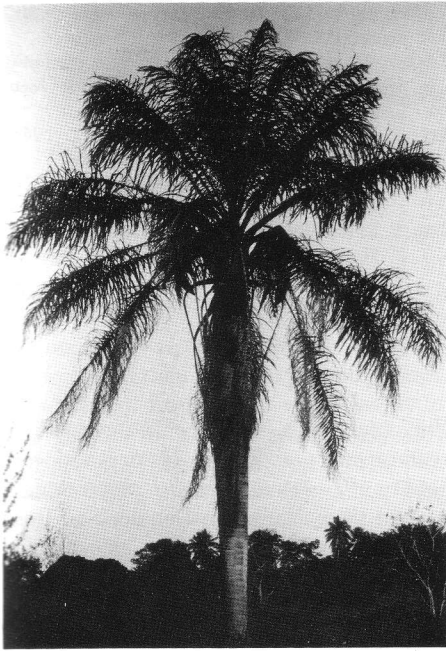
5. *Calyptronoma rivalis*, the rarest palm in Puerto Rico, growing beside a stream near San Sebastian.

Thrinax morrisii is very similar to another palmate-leaved palm, *Coccothrinax alta*, but the latter is more common in wetter limestone hills in the north of the island. The two genera can easily be separated because the bases of the petiole in *Thrinax* are split, while they are not in *Coccothrinax*.

The only other palmate-leaved palm in Puerto Rico is *Sabal causiarum*. This is another endemic species, and is found on coastal plains in the north and west of the island. Its stout grey trunks, up to 10 m, are a distinctive feature. It is known as the "palma de sombrero," although the practice of making hats from the leaves has declined over the years, with cheaper ones being made in other islands. *Sabal* is another Caribbean genus, but with wider inland extensions. Typically it inhabits lowland coastal regions, often on sandy soil. Again there is great diversity in this genus, leading to much confusion in naming.

There are two spiny pinnate-leaved palms in Puerto Rico, *Acrocomia media* and *Aiphanes acanthophylla*. The latter is rare in the forests of the subtropical moist zone, on the 'haystack hills' in the north of the island. It is easily distinguished, not only by its spines, but also by the truncated, jagged ends of the leaflets. The only other spiny palm, *Acrocomia media*, the "palma de corozo," is common at lower elevations in forests and fields. This species has deciduous spines on its trunk, and is found only in Puerto Rico and one of the Virgin Islands, St. Thomas.

In the hills between San Germán and Lajas, *Goussia attenuata* is frequently seen. It grows on ridges and sticks out above the surrounding vegetation, the slender leaning trunk supporting a small head of pinnate leaves. Normally only isolated specimens are seen, and in contrast to palms like *Roystonea*, it disappears when its habitat is disturbed. This palm is



6. *Acrocomia media* is common in lower elevations in forests and fields.

endemic to Puerto Rico, and although not common it has two strongholds, not only in the San German hills but also in the northeast of the island near Manati. The roots of this species are interesting. They are visible above ground and are covered with spirally arranged spine-like projections. There is only one other species, *Gaussia princeps* from Cuba. Like *Thrinax* and *Coccothrinax*, *Gaussia* only grows on calcareous soils, although it is in no way related to these two coryphoid genera, being a member of the chamaedoreoid group of palms.

In the wet forests of the Sierra de Luquillo and the Cordillera Central *Pres-toea montana* (syn. *Euterpe globosa*) is abundant, at altitudes of 300 to 1,000 m. There have been numerous ecological studies in these forests and much is known about the ecology of this palm, the "palma de sierra." It often occurs in dense strands, known as palm brakes, in very wet soil of steep slopes. Some ecologists believe that this palm is a secondary successional

species, invading areas that have been disturbed naturally, either by landslides or hurricanes. Others think that *P. montana* is a typical climax species, and its dominance in steep wet areas is a result of its ability to anchor itself by means of numerous above-ground roots. Set against both these theories is the fact that this palm is very slow growing, only 20–30 cm per year, and despite its tremendous reproductive ability (5,000 seeds a year per mature tree) only one in a million seeds reaches maturity (Bannister 1970). There are also some interesting associations between this species and other animals and plants. The seeds are eaten by scolytid beetles (Janzen 1972) and the flowers are bee-pollinated. The trunks and leaves of the palms are often covered with epiphytes, from lichens, mosses and liverworts, to ferns and flowering plants, such as bromeliads and orchids.

Certainly the rarest Puerto Rican palm is the endemic *Calyptronoma rivalis*. It was discovered in 1901 by O. F. Cook, beside a small stream between Lares and San Sebastian. It is still there today, and has recently been found in a second locality nearby. The original site contains about 30 mature specimens, and since they are all on private land they are in a perilous position. Part of one colony has recently been destroyed, but it is to be hoped that the high level of interest by local botanists will ensure their survival. There are other closely related species of *Calyptronoma* in the Caribbean, and three closely related genera, *Calyptrogyne* in Central America and *Pholidostachys* and *Welfia* in both Central America and northern South America. They are all allied to the large genus *Geonoma*.

The tenth and last Puerto Rican palm has least claim to be included in the flora. One single specimen of *Pseudophoenix sargentii* has been recorded from Mona Island, 35 miles west of the main island. This represents the eastern limit of this species which is found from Hispaniola to Mexico.

Acknowledgments

My thanks to the many botanists in Puerto Rico who were so helpful to me on a recent visit to the island.

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LETTERS

Dear Editors and Contributing Writers,

This is a thank-you note to all the people who contribute their efforts toward making *Principes* the outstanding publication that it is. A prime example in point is the January 1984 issue. That issue has something for everyone.

Who could ask for anything more than to discover, or in this case, rediscover a palm like *Livistona exigua* in Borneo? How about the possibility of an indoor *Livistona* that looks like a *Licuala*? Thanks to P. R. Morgan and John Dransfield!

How about an article on the thirteen things that could possibly be wrong with your palm? You never knew whom to ask before, because no one had done the research. Now, thanks to T. K. Broschat and the University of Florida Agricultural Research and Education Center, we know who and where to ask. Thanks for making our palms green and healthy!

Next, we boarded our worldwide traveling armchair to Nepal. Here, Melvin and Phyllis Sneed guided us past Mt. Everest, then from Kathmandu, via elephant, land-rover, and foot to see strange *Phoenix* palms, rare one-horned rhinos, and the Royal Botanical Gardens. Who wouldn't love to go along with the Sneeds? Thanks for sharing your adventures with us!

Perhaps the ultimate plant of all, the Coconut Palm, is discussed in the next article by Pablo Guzman-Rivas. The writer talks of other palms of Mexico and the

Philippines also. Who could ever tire of reading more about the history and versatility of *Cocos nucifera*? Gracias amigo!

And then, Nancy G. Dengler and Ronald E. Dengler explore the microscopic formation of plications in two palm leaves. Everyone should have a scanning electron microscope. Thanks to these two people for taking us into the microscopic world where the folding begins to occur. Without the scientist and those who ask why, we would all still be in the Dark Ages.

And then there is the news. Of course, Florida and California have it all, but can you imagine Texas, the almost largest state with the smallest chapter, and that new chapter in Ohio, burrrrrrrrr!

And of course, our very own bookstore with the latest and greatest literature about palms. For \$1.25 plus cost, you can build up your palm library.

In summary, we find that within this *Principes*, there is discovery, and/or, rediscovery of palms, how-to/or how not-to grow palms, a travelog, history and use of palms, and last but not least, the nitty-gritty of leaf formation. All of the above plus classified ads, Society news, a bookstore, and a Palmeter. What Dent Smith started and Harold E. Moore worked for (along with countless others) has turned into a marvelous Society with a truly remarkable publication, *Principes*. Thank you all!

Sincerely yours,
ERWIN M. RUHLAND