M. Splendens

Puerto Rico's Lustrous Magnolia

by Richard B. Figlar

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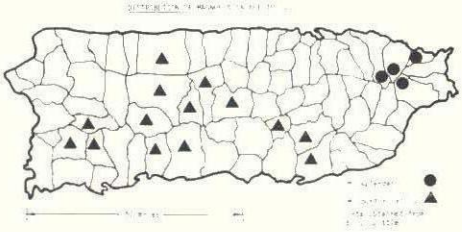
While on a business visit to Puerto Rico during November 1981, I had the opportunity to see *Magnolia splendens* growing wild in the Luquillo Mountains of that island. *M. splendens*, also known by the common name laurel sabino, is one of eight magnolias native to the West Indies Islands (Greater Antilles) of the Caribbean. Except for botanical field work by Richard A. Howard[1] and E.L. Little[2] these magnolias, including *M. splendens*, have been largely unobserved since they were discovered. Thus, the prospect of seeing and studying one of these magnolias was compelling.

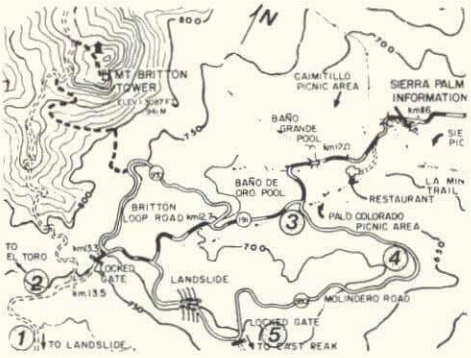
Knowing that my business plans would allow me only the half part of a day to find this magnolia, I did as much advance planning as possible. Through E.L. Little, Jr., retired chief dendrologist at the USDA Forest Service, I got in touch with the Institute of Tropical Forestry in Rio Piedras, Puerto Rico. At the institute, my letter found its way to researcher Julio C. Figueroa, who had been studying *M. splendens* (and Puerto Rico's other native magnolia, *M. portoricensis*) the past three years. Julio wrote back, graciously offering to coordinate such a trip. I confirmed the dates by phone and by the time I boarded the plane for San Juan, thanks to Julio, my plans were complete.



First encounter with Magnolia splendens.

Description: *M. splendens*, or laurel sabino, is a large tree 75 feet or more in height with a trunk diameter of 4 feet when fully mature. The evergreen leaves are elliptic or ovate, 4 to 7 inches long, coriaceous, shiny dark green above, densely sericeous-pilose below. The fragrant white flowers are borne on pubescent pedicels and are 3 to 4 inches across. The fruit cones are glabrous and small, about 1½ inches long. Probably the most unusual feature of this species is the satiny white "indumentum" on the undersides of the leaves and on the stems. None of the other West Indian magnolias has this feature.

M. splendens is known to occur only in eastern Puerto Rico in an area restricted to the higher elevations (greater than 2,000 feet) of the Luquillo



Map of El Yunque section showing magnolia locations 1 through 5.

Mountains (see map - Distribution of Magnolia in Puerto Rico). Fortunately, much of the Luquillo Mountains and all of the range of laurel sabino are preserved in the 28,000 acre Caribbean National Forest. This is a rain forest, unusual in that within its boundaries are 225 native trees. This is more than that for any equal area of the United States. Moreover, 23 tree species, of which *M. splendens* is one, are found nowhere except the Caribbean National Forest.

The other magnolia endemic to Puerto Rico, *M. portoricensis*, has a more widespread distribution that covers the higher elevations of the mountains of central and western Puerto Rico. This species differs from laurel sabino in its glabrous leaves which are almost orbicular in shape.

Large Magnolia splendens *tree at location #2.*

The ranges of the two magnolias are separate but come as close as 25 miles to each other (see distribution map).

The forest zone of the Luquillo Mountains where *M. splendens* occurs is known as the Colorado forest type. It was named after the tree islanders commonly call palo colorado or *Cyrilla racemiflora*, one of the forest indicator species in this region of approximately 2,000 to 2,500 feet elevation[3]. *Cyrilla racemiflora* also occurs as a shrub or small tree in wide areas of southeastern coastal United States, where its common name is ti-ti. In Puerto Rico, however, *Cyrilla* is a large open-crowned tree often associated with laurel sabino in its mountain habitat.

The field trip: Julio met me at my San Juan hotel early Saturday morning on November 14. The actual drive to the Luquillo Mountains was simple and direct: east on route 3 for 20 miles, then south on route 191 for 5 to 7 miles. This brought us into the 2,000 to 2,500 foot elevation level of the Luquillo Mountains - the heart of *Magnolia splendens* territory.

Our first glimpse of the magnolia came near the Mt. Britton Loop Road (Route 930 - see field observations map). We parked our car and proceeded on foot along a semi-paved road. Along the way, Julio pointed out a number of interesting trees native to this section of the mountains, notably *Cyathea arborea* (tree fern), *Prestoea montana* (sierra palm), *Cecropia paltata* (yagrumo), *Cyrilla racemiflora* (palo colorado), *Micropholis chrysophylloides*, and many others. I was particularly impressed with *Croton poecilanthus*, which has handsome, shiny leaves.

We continued along the semi-paved road about a half a mile. At that time Julio slowed down and looked around as if he were going to identify another

plant for me. Glancing upward, I suddenly recognized magnolia fruit cones among magnolia-type foliage. There it was — *M. splendens*. I'm sure Julio had deliberately decoyed my attention to allow me to "discover" the magnolia for myself! I took pictures and more pictures. We examined the foliage in detail and managed to collect several of the green fruit cones. The tree was moderately old with a trunk diameter 12 to 18 inches. On the way back to the car we noticed an older specimen and took a few more pictures (see map - location #2). This one was 70 to 80 feet tall.

We got back into the car and headed north on Route 191 until the road met the return loop of Route 930 (Molindero Road — see location #3). At this intersection, off into the woods, was a smaller specimen which Julio thought might contain more fruit. Sure enough, we found two ripe cones (green in color but with dehiscing red/orange seeds). To our surprise this tree had a one day-old (or so) flower on it. It was fully opened but had browned tepals.

The balance of our trek revealed two more *M. splendens* locations, and both sites contained very large trees. After that we ate lunch, then headed back to San Juan airport.

Analysis: J.G. Millais[4] in his 1927 book *Magnolias* describes *M. splendens* as "One of the most beautiful of trees, but unfortunately too tender for cultivation in our islands (British Isles)." Though Millais was probably generous with his description of the beauty of laurel sabino, this magnolia does have some fine features, with the lustrous white indumentum being the most interesting. It is likely that in cultivation *M. splendens* would be a dense conical tree, and with its smaller leaves would be of finer texture than *M. grandiflora*.

As for cold hardiness, it is likely that this species would not be sufficiently hardy for cultivation in the British Isles or most of the U.S.A., though no hardiness tests are known to have been conducted, since it has never been cultivated.

Although *M. splendens* is fully protected within the Caribbean National Forest, E.L. Little points out that the attrition rate of existing trees

Magnolia splendens *(author in foreground) at location #3.*

Fruited branchlet of Magnolia splendens *at location #1.*

Magnolia splendens *leaves contrast in color to one (bottom) of* M. grandiflora *'St. Mary.' Note pointed buds.*

exceeds the rate of replacement seedlings. Moreover, in a study of 46 magnolia trees in the preserve, Little found the average growth rate in the trunk diameter of each tree was only 0.06 inch each year. It is possible that *M. splendens* is a relict species, perhaps because of the gradual warming since the last ice age. That the species does not occur on the central and western mountains is possibly related to its preference for the rain forest habitat of the Luquillo Mountains. The passage of hurricanes has not aided in seed dispersion, even though hurricanes usually occur when Magnolia seeds are dehiscing. Perhaps the extremely limited range of *M. splendens* has also weakened the genetics of the species.

Seed germination. A total of 72 seeds were collected, 52 from the tree in Location #1 (unripe when picked) and 20 from the Location #3 tree. All were sown immediately (November 16,1981) except for 31 of the 52 seeds from Location #1. These were given 3½ months of cold treatment. Within 7 to 15 weeks, 65 percent of the 20 from Location #3 had germinated. None of the others ever sprouted, so the final tally was 13 out of 72, or 18 percent.

As of June 1, 1982, only 7 seedlings remain. All are of generally poor quality and extremely slow growing. The surviving seedlings, if any will be dispatched to selected sites in Zones 8 and 9 for outdoors testing later.

A note on morphology. An interesting characteristic of all eight West Indian magnolias, including *Magnolia splendens*, is the presence of stamens with connectives which are extended into setaceous tips. When the flowers are in bud, these connectives become embedded in the gynoecium. After the flowers open, the stamens dehisce from the main floral axis but remain attached to the gynoecium by the setaceous tips. The overall effect is that of upside down stamens attached at the wrong end to the floral axis. Apparently this feature aids in the shedding of pollen at the proper time to avoid self-pollination of individual flowers. For this reason many botanists or taxonomists, including the late J.E. Dandy, have separated the West Indian magnolias as a sub-section of Section Theorhodon.

I would like to express a special Thank You to Mr. Julio Figueroa. Without Julio's generosity with his time and knowledge this report would have been impossible.

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(4) Millais, J.G., *Magnolias*, pp. 230-231. First published 1927, reprinted Minerva Press, London, 1972.