

Postcards from **PARADISE**

Roger Hammer (a.k.a. Father Nature) is taking a break from this regular feature that examines “look alike” species. Dick Workman is filling in with “Mahoe: Native or Exotic or Both?” Roger will return in the next issue with a bad case of *Dioscorea*.

MAHOE: Native or Exotic or Both?



The Old World mahoe, *Hibiscus tiliaceus* (on the left) is distinguished from the New World species, *H. pernambucensis* (on the right) by its red center. Both flowers start out yellow in the morning, and turn red throughout the day, as *H. tiliaceus* has done here. Photo by Dick Workman.

By Dick Workman (Copyright 1998)

Out of favor in landscapes and listed as an invasive exotic, the sea hibiscus could be suffering from mistaken identity. There is, in fact, a species that may well be a Florida native.

With its big colorful flowers, fast growth, and salt-tolerance, the sea hibiscus—a.k.a. mahoe—became a favorite South Florida landscape tree during the 1960s and 70s. Its ease of propagation—cuttings can be grown into six-foot-tall, ready-to-plant trees in just one season—made it popular with nurseries. And the professionals have long endorsed it as well. In their 1972 booklet, *Native Trees and Plants for Florida Landscaping*, Charles Bush and Julia Morton featured the mahoe, known by the scientific name *Hibiscus tiliaceus*, as a native to the southern peninsula and called it “a good tree for seaside landscaping.”

But most stewards of natural systems in South Florida might wince at those endorsements. The *Hibiscus tiliaceus* they know is a pest plant listed by the Exotic Pest Plant Council (EPPC) as a category II pest species. When mahoe shows up in natural areas it can form dense thickets of branches that are nearly impenetrable. Its water-transported seeds often form thick stands at the upland edge of mangroves, eventually shading mangroves out of their habitat. It is this characteristic that got *Hibiscus tiliaceus* added to the EPPC list of invasives.

How could Julia Morton have been so right about melaleuca, earleaf acacia and many other ornamentals-turned-pest-plants and so wrong about the mahoe? While preparing a revision of “*Growing Native*”, a book of native south Florida landscape plants written in the late 1970s; I asked that question of Drs. Derek Burch and Dan Ward, both respected Florida botanists. Dr. Burch told me told me

there were several New World mallow family trees I should check out and Dan Ward suggested I look for *Hibiscus pernambucensis*, a mahoe bearing yellow flowers without a red center.

I started searching—unsuccessfully—for such mahoe flowers. Then, while taking a group of students from Washington D.C. on an interpretive walk in the J.N. “Ding” Darling National Wildlife Refuge on Sanibel, we stopped at a planted row of mahoe outside the refuge. I told them about the many practical uses of this tree, which had been introduced from the Old World tropics and, pointing to the flowers with red centers, asked for their help in spotting all-yellow flowers on their upcoming trip to the Keys. One of the students asked, “You mean like this one?” and indeed, there was a tree with yellow flowers and no red center.

After many trips back to this stand of trees to record what I perceived to be the differences, the confusion about mahoe origins became much clearer to me. I sent specimens to Dr. Ward in Gainesville and to Dr. Richard Wunderlin at the University of South Florida and ended up connecting with Dr. Paul Fryxell of Texas A&M University via the internet. Dr. Fryxell, an expert on the *Malvaceae*, produced a major work on the plants of that family in Mexico. In his book, he cites the case for “splitting” the Old and New-World mahoes and offers a list of distinguishable characteristics that justify the distinction between *H. tiliaceus* and *H. pernambucensis*.

I should note at this point that the photograph of the “native” mahoe in the Bush and Morton book does not have a red center to its flowers. After checking several herbarium specimens of *H. tiliaceus*, I found that most lack the red center flowers. It makes sense that most specimens gathered for herbarium collections would have been gathered from natural areas where the majority of those trees would have been the New World species. I expect we will find that *H. pernambucensis* is indeed native to Broward, Dade and Monroe counties, but much work will have to be done before everyone will be convinced of this. In south Florida, both *H. tiliaceus* and *H. pernambucensis* are cultivated and not

COMPARISON OF TWO FLORIDA HIBISCUS SPECIES

SPECIES	<i>H. tiliaceus</i>	<i>H. pernambucensis</i>
FLOWER COLOR	yellow with red center	yellow
FLOWERING TIMES	all year, flowers in clusters bloom individually	all year, clusters of flowers bloom at same time
STEMS, TWIGS AND LEAVES	smooth, sparse star-shaped hairs	star-shaped hairs over a dense, spider web-like mat of hairs (hand lens required)
MATURE HEIGHT	30 to 40 feet	20 to 25 feet



▲ *Hibiscus pernambucensis*. Photo by Dick Workman.

Hibiscus tiliaceus. Photo by Dick Workman. ▼



distinguished one from the other in the nursery trade.

The name, mahoe, confuses things further. It is a corruption of the Spanish word, majagua, a common name for several unrelated trees used to make cordage. The common tree species grown in Florida grouped under this common name include:

- The Old World mahoe (*Hibiscus tiliaceus*), thought to have originated in India, established throughout the Pacific islands and is now present in all areas that support tropical trees.
- The New World mahoe (*Hibiscus pernambucensis*), first described from South America in 1810. Probably arrived in Florida through aboriginal trade.
- A third mahoe (*Hibiscus elatus*) from Cuba. A much larger tree with a different growth habit that is easily distinguished from the other species. It is reported to grow to a height of 80 feet in Cuba.
- The seaside mahoe or portia tree (*Thespesia populnea*), an Old World tree in the same family, *Malvaceae*, is another exotic pest plant of concern to coastal natural area managers.

The rapid growth rates and showy flowers of these trees have made them popular with impatient Florida home landscapers. But the primary reason these trees were moved around so much by primitive cultures has to do more with their extreme usefulness. They have been a favorite of coastal cultures around the world for centuries, since all four of these mallow family species have fibrous bark used to make various kinds of cordage and clothing - a property of great value to indigenous cultures.

After some processing, the bark of the sea hibiscus makes wonderful raffia-like fiber. Dr. Willard Payne, a retired botanist, is an expert at making mahoe bark into twine and rope. To do it, he peels the bark from trimmed sea hibiscus branches and immerses it in water for a week or two. This soaking process, called retting, allows microorganisms to eat the pulp away from the bark fibers and leaves paper-thin crossed sheets of fiber that are a delight to work with, according to Dr. Payne. Cordage made by twining these retted strands of bark together makes a nice strong rope. Unfortunately, it doesn't last very long if exposed to the elements.

H. tiliaceus is used for ropes, mats and fish nets in its native Micronesia in the South Pacific. And it is the primary fiber used to make "grass" skirts. The Polynesians introduced both the tree and grass skirts to Hawaii during the 19th century. The Hawaiians call the plant "hau," and use it for cordage, as a base for leis and in their folk medicine, where its sap was valued as a mild laxative and an aid to women giving birth.

The plant is considered naturalized in Hawaii, as it is in South Florida, meaning that it can (and does) reproduce in the wild and grow without help from people. However, naturalized trees can cause problems for their new environments, since the mahoe's growth habit is to sprout branches from the trunk near the ground. When these low-growing branches touch the ground, they root and send new branches straight up through the canopy.

The *H. tiliaceus* mahoe has wood that is light and strong and is prized for tool handles in Hawaii. It also carves very well and shrinks very little as it dries. The heartwood is an interesting light brown to olive green and turns very well on a lathe. An additional benefit to removing them from the landscape is that you can endear yourself to the craft community; connect with one of the fiberarts or woodworking groups in your area, and they'll provide consumptive—and creative—uses of all the mahoe you can supply.

Telling *H. tiliaceus* and *H. pernambucensis* apart is most

easily done by checking the flowers. Both species produce very similar flowers that have yellow petals when they open in the morning and then change color throughout the day until they are dark red by night. But the Old World mahoe's petals of the corolla are dark red at their base, providing a red center to the flower. And once the trees mature, their relative sizes set them apart as well; in the row of mahoe on Sanibel where both species were planted at the same time, *H. pernambucensis* looks like a 1/2- to 3/4-scale model of *H. tiliaceus*.

Without flowers the best way to distinguish the two species is by examining the underside of the leaves for hairs. Most *H. pernambucensis* leaves have a fuzzy underside. With a hand lens you see stellate hairs over a dense mat of arachnoid (spider-like) hairs. The same kinds of hairs are present on *H. tiliaceus* leaves but they are far fewer in number. To the naked eye, these leaves appear glabrous instead of fuzzy.

Dr. Fryxell and others make a convincing case for treating these two mahoes as distinct taxa. Natural area managers should make a point to learn to distinguish one from the other and adjust their management practice accordingly. *Dick Workman is the former director of the Sanibel-Captiva Conservation Foundation. He is president of the environmental consulting firm Coastplan, Inc. in Ft. Myers, FL.*



The bright yellow flower of *Hibiscus pernambucensis*. It's native to the southernmost counties of Florida. Photo by Dick Workman.

Mahoe Control

Seedlings: Hand pull

Cut Stump: 50% Garlon 3A/water solution

Basal Bark: 10% Garlon 4/oil solution.

Note: These rates also work for *Thespesia populnea* control. A higher rate of Garlon 4 (25%) may be required for larger trees with thick, corky bark.

Always read and follow all herbicide label directions.

References

- Abbott, Isabella Aiona; La'au Hawai'i, Traditional Hawaiian Uses of Plants; Bishop Museum Press, 1992.
- Bush, Charles and Julia Morton, Native Trees and Plants for Florida Landscaping, Florida Department of Agriculture and Consumer Services, 1972.
- Fryxell, Paul A., Malvaceae of Mexico, Systematic Botany Monographs, Volume 25, The American Society of Plant Taxonomists, 1988.
- Lamb, Samuel H.; Native trees and Shrubs of the Hawaiian Islands; Sunstone Press, Santa Fe, NM; 1981.
- Payne, Willard W., A Glossary of Plant Hair Terminology, Brittonia 30: 239-255, 1978.