ARE ENDANGERED FLORIDA PLANTS REALLY ENDANGERED?

by Daniel F. Austin

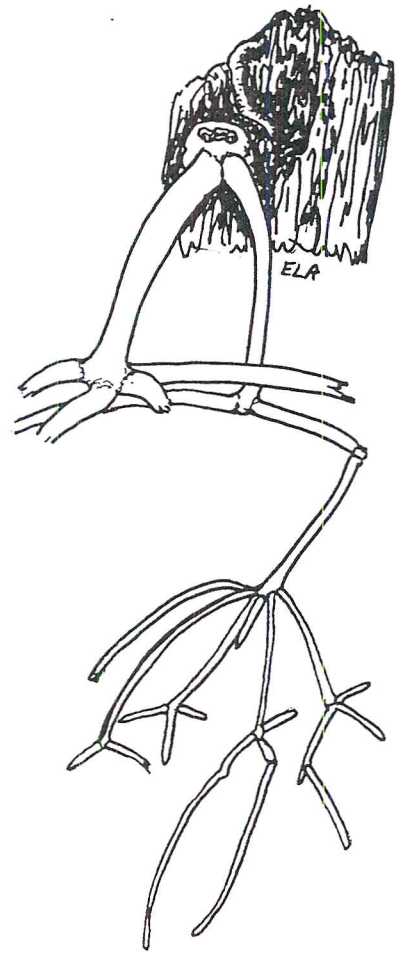
During the years following the passage of the Endangered Species Act of 1973, many biologists, both professional and amateur, have entered the fight to save organisms bordering on extinction. Of the many papers, books, and reports that have subsequently appeared, none seem to have addressed the very real and pertinent question: are the plants really native and endangered or are they exotic?

Perhaps involvement with plants in southern Florida has made me more aware of this question than some others. Or perhaps it is because my approach to Florida botany over the past decade has been strongly oriented toward man as a vector of plants and a modifier of habitats. In any event, there are many Florida plants about which too little is known. Some are indeed native and endangered; others are surrounded by circumstances which make me wonder.

The following discussion will address plants apparently in both of these categories.

CASE 1. *Rhipsalis baccifera*, mistletoe cactus - nominated as an endangered Florida species. These plants were found in one small region of southern Florida, now within the Everglades National Park, by J.K. Small in 1923. Before Hurricane Donna in 1960, the epiphytic cacti were not uncommon in mangrove forests near the coast, in a belt of a few square miles. Subsequent to the hurricane, the population was drastically reduced, and it was apparently the late 1960s when several people at Fairchild Tropical Garden and Everglades National Park saw wild plants. When Dr. William Robertson (ENP) saw them last he had the impression that they were in a state of decline. No one has been able to find the plants recently (1977 to present) and the wild population may have been extirpated from Florida. It is not known what changes might have taken place if hurricane Donna had not passed directly over the population. There are plants in cultivation originally taken from the wild areas, but in at least one case they have become somewhat weedy.

Everyone since J.K. Small in the 1930s, it appears, has taken these plants as unquestionably native. Yet, it is possible that they were introduced by man. All members of the cactus family (Cactaceae) appear to be native in the New World. One possible exception to this is *Rhipsalis*.



Rhipsalis
Portion of a specimen 2½ ft. long, showing one branch in detail. Drawing by Edith L. Alexander

Rhipsalis was "discovered" in Sri Lanka (Ceylon) in the 17th century, and in Africa at several places during the same time period. Then, in 1912, a French biologist, M. Roland-Gosselin, published a thorough study of the African plants. Because most of these were growing in France from the original collections, he was able to study them in detail not possible from preserved material. His conclusion was that all collections were American species introduced into Africa; he favored introduction by birds, a method now thought unlikely. N.L. Britton and J.N. Rose, 1920, also questioned whether any of the Old World *Rhipsalis* were native there, but their query has generally been ignored, and few seem to know of Roland-Gosselin's paper even though it was published again in English in **Torreya** in 1913. Even though there are valid doubts about the nativity of *Rhipsalis* in the Old World, some biologists continue to consider them native to both hemispheres. Some have even cited them as good supporting data for certain theories of dispersal.

I am convinced that the genus is native to Neotropical zones; now the question remains as to nativity in Florida. It was 5 August 1923 when C.A. Mosier and J.K. Small found *Rhipsalis* in Dade County, Florida. That date came 410 years after the official "discovery" of Florida by the Spanish. During the time period between 1699 and the middle 1800s, Bahamian, Cuban and other West Indian tree-cutters, fishermen, vegetable farmers, and other businessmen kept an active trade going between southern Florida (from West Palm Beach around the coast to Tampa Bay) and the West Indies. Indeed, that trade was started by the Glades Indians in 1699 when they travelled from the Keys to Havana, Cuba, in canoes to sell birds, bark, skins and other Florida products. In short, there was a lapse of 224 years between the beginning of this active transport of materials between the West Indies and Florida before *Rhipsalis* was found in the state. It has been shown elsewhere that a variety of plants — dates, coconuts, sweet potatoes and others — were introduced into Florida during that same time period.

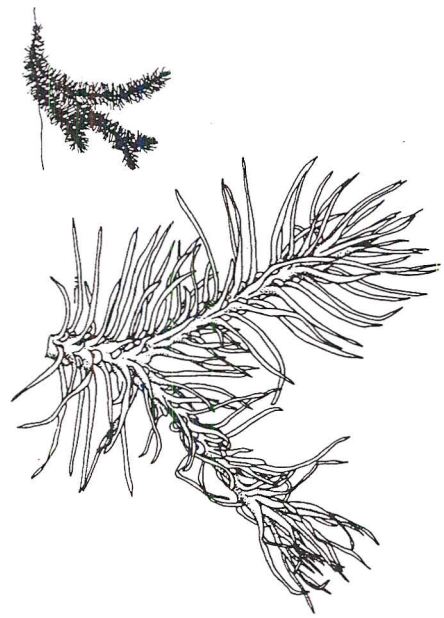
The plants listed above are obvious candidates for transport, for use as fiber, food, and the like by man. It is less obvious why, if indeed it was transported by man, *Rhipsalis* was moved. The simple answer is that it is a medicinal plant. In many parts of the American tropics, and even in the Old World tropics, this epiphyte is still used by certain people as a medicine. As supporting data, we know that castor bean *(Ricinus communis)*, as infamous a medicinal plant as possibly exists, was introduced into Florida before the middle 1700s.

surely these data are enough to at least question whether *Rhipsalis* is native to Florida. One may not exclude the possibility that the plants were brought to the state by "natural" (i.e., non-human) forces such as birds or hurricanes. Still, why were they confined to a small part of southern Florida in apparently small populations, where we know that man has been actively transporting a variety of plants for centuries?

CASE 2. ***Aristida floridana,*** **Keys wire-grass** - nominated as an endangered Florida species. This species was originally described by A.W. Chapman in 1883 on the basis of specimens from Key West. At the time, Key West was a town at least 100 years old, and a well-known stop-over point for ships for over 200 years. Little is known about the conditions under which the original specimens were found, but we do have data about the modern plants in the Florida Keys. Formerly there was a population on Ramrod Key, but it was extirpated in the past decade by urbanization. It grew on an embankment built for the over seas railway. There is now a single, shrinking patch of these grasses in Key West, also on the embankment for the railroad. It would appear that the wire-grass is confined to highly alkaline, well-drained soils, particularly marl ridges. Perhaps these occurred naturally before the railroad was completed to Key West, but that is debatable. Moreover, any plant growing on a railroad right-of-way becomes immediately suspect since this transportation method has been as successful for hitch-hiking plants as for people and their cargo. Dr. Viktor Muhlenbach has recently documented the sources and numbers of plants brought into St. Louis, Missouri, in just this manner. The figures are astounding.

As long as *Aristida floridana* was thought to be an endemic species in Florida, there was no reason to suspect that it might not be native. Now it has been shown that the grass is abundant in the Yucatan peninsula of Mexico, a very notably alkaline area. Since the Yucatan region was an important part of the shipping route between South and Central America, the West Indies and points north, is it not possible that *A. floridana* may actually be native to Mexico and exotic in Florida?

CASE 3. ***Lycopodium dichotomum,*** **hanging moss** - considered endangered by Florida, no status on Federal list. This inconspicuous club-moss was first found in Florida in 1934 although it had been known scientifically from the American tropics since 1762. Even with all the people who have been searching for rare and endangered plants in "tropical Florida" over the past few decades, the species remains known from a single location in Collier County. Up until about 1978 there were two individual plants known in the state. Since then two more have been found, bringing the total known "population" to four individuals. Perhaps there are more, but three years of study in the Big Cypress by at least a dozen people have not located them.



Hanging Club-moss
(Lycopodium dichotomum)

This fern-relative has been excluded from the Federal list of endangered plants because it is also known in the West Indies, Central and South America. Even outside the U.S.A. the populations are small; it is considered "rare" in the Lesser Antilles. Three months of intensive field study in Amapa Territory in Brazil produced one single population.

Unlike *Rhipsalis,* this plant is not easily cultivated. Attempts at growing this club-moss have met mostly with failure. Where *Rhipsalis* hangs in festoons along the street trees in Belem, Brazil, the unusual club-moss may not be found. As far as is known, there is neither food nor medicinal value derived from the club-moss, and no known reason for man to transport it from place to place. Its growing requirements are strict: high humidity, shade, and rough barked trees. Therefore, the number of potential habitats it may occupy in tropical America are limited.

Consideration of these factors leads me to conclude that the plants arrived on their own in Florida, somehow managed to become established in the Big Cypress, and there they remain. This plant has all the marks of a truly endangered, native Florida species.

CASE 4. ***Jacquemontia reclinata,*** **beach jacquemontia** - nominated for endangered status in Florida, as threatened in Federal list. These beach-binding vines were first found in 1903 and officially described in 1905. Formerly they were at the crests of beach dunes from northern Biscayne Bay in Dade County to Martin County. Now the population exists as patches in between these two points. A landfill has obliterated most, if not all, of the plants on Biscayne Bay, and urbanization of the coastal dunes has markedly reduced other sites. One of the largest populations remaining was in Palm Beach County until a recreation board-walk construction took most of it out. There are still reasonably good numbers of individuals in both Broward and Palm Beach Counties, but they appear to be declining as population pressure increases beach usage.

People, like the plants, have a preference for the high dunes. As beach developments continue to expand, less and less habitat will be available for the *beach jacquemontia.* Such fragmentation and obliteration of *beach jacquemontia* will continue over the next few decades to make inroads on the plant populations. Eventually, the plant communities will be so separated and extirpated that within the foreseeable future there may be no available habitat for these plants. It is entirely possible that this species will become extinct within the next decade. Such an event is difficult to predict because so little is known about the biology of the plants, but it appears possible. We do know that the plants are perennial, arising from a woody tap-root. This morphological trait may save the populations now extant. Also, it is known that the plants disappear with later successional stages, and that an early stage is needed. These two factors combined may help lenghthen the time we have this Florida endemic in the state, but there are many unanswered questions about management.

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THE AEOLIAN HARP TREE

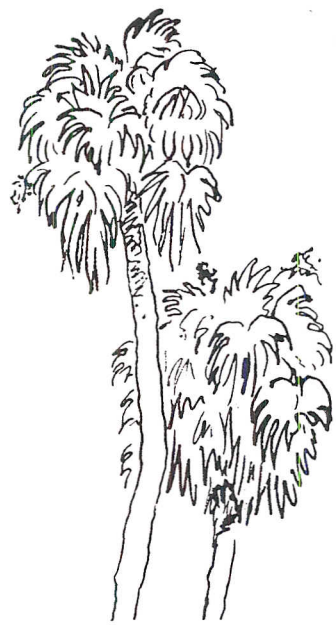
by Peggy S. Lantz

To many people, the cabbage palm is just part of the Florida background, like sand, sun, and mosquitoes. The cabbage palm should not be held in such disdain.

Marjorie Kinnan Rawlings, prize-winning author of **The Yearling**, says in **Cross Creek** that "there is no more sensitive Aeolian harp than the palm." And Mrs. Rawlings was particularly receptive to its beauty, for her "irriducable minimum of happiness" was a "treetop against a patch of sky."

I think mine is too. The only thing I cannot abide in a tree is its months of leaflessness in northern climes.

But Florida's state tree is a real native Floridian. The Sabal palmetto (or "cabbage palmetto" because of its edible heart) is never without its green fronds. In fact, it with stands freezing temperatures better than any other palm, growing as far north as North Carolina.



Sabal Palmetto

The Sabal genus includes many different kinds of palms from midgets to giants, all with high-sounding Latin names, but the only scientific name for the cabbage palm is *Sabal Palmetto.* The cabbage palm is one of the tallest of the Sabals, too, growing seventy to eighty feet tall. And it is tolerant of salt spray and brackish water.

The flower cluster usually appears in July and August, springing up from the center of the crown. The individual flowers are tiny and greenish-white, but the cluster is a huge mass. The black seed berries ripen in winter.

Do remember that if you cut out the heart of the palm to eat, you kill the tree.

I keep trying to get some expert to satisfy my curiosity as to why the trunks of some cabbage palms are "clean" and some are covered with "boots", the stobs of the broken dead fronds. The explanation that they drop off from old age, or are rubbed off by wind and rain, or animals, or branches of other trees, loses credence when a "booted" one and a "clean" one the same size and apparently about the same age are growing side by side. The difference is probably due to some unknown cause similar to why some men are bald and others are not!

Whatever the reason, the retention of these boots is a boon. They provide saucers of water for birds and small beasts to drink from. They catch dust and dirt as well as moisture to provide tiny individual pots of soil for ferns and orchids to grow in.

Cabbage palms can be successfully planted from seeds — more successfully than trying to transplant a large specimen. Several seeds should be placed in each hole, with holes ten feet apart. When the sprouts become seedlings, remove all but one. They can also be planted in groups of three or more about four or five feet apart. Planted in sandy soil, they will grow quite slowly; planted in rich soil and well cared for, they should become five or six feet high within as many years.

Massed plantings of cabbage palms are beautiful as part of any landscaping. They are resistant to disease, insects, and drought, but, of course, will do better with some food, water, and TLC.

When we moved to our few acres outside Titusville, the area had been subject to nearly annual burnover, but a few tall pines and palmettos had survived it all. Within a very few years the cluster of young palmettos that we carefully protected from the housebuilders became large handsome specimens with beautiful crowns. Our little palmetto "woods" made a natural playhouse for the children, and invited possums, coons, field mice, and birds to our backyard.

One of the loveliest places I have been in recently is the Tosohatchee Preserve in Orange County on the St. John's River. In one or two places there, the Aeolian harps are growing together in huge masses of several acres. The dead fronds lie in a crisp carpet underfoot, and the palms are all sizes. Many ferns and orchids — common, unusual, and even rare — grow in the humus-filled boots. The shade, the birds, the occasional animal, or green snake, and the sound of the harp make a calming, gentle haven.

Take another look at the cabbage palmetto — the name is pretty prosaic, but the tree is something special.

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All of these data combined lead me to believe that *beach jacquemontia* is declining at an alarming rate. Certainly, in my opinion, the species is worthy of endangered status and any concurrent protection.

SUMMARY. In point of fact, there are many more species facing possible extinction or extirpation than any of the "official" lists include. Those lists, both State and Federal, were constructed with definite goals and restrictions that may or may not reflect current population status. It is my opinion that both State and Federal lists include only about 50% of the plants in trouble in Florida. By using that tact, the lists are reasonable from a legal standpoint. And the bureaucratic system is making listing and enforcement as difficult as possible. Most of the Federal money that goes to the Office of Endangered Species of the Fish and Wildlife Service is ear-marked for animal studies. I fault no one for wanting to study the biology of rare and endangered animals, but without adequate funds, it is impossible to build a biologically **and** legally strong case for plants. For the past three years the Fish and Wildlife Service has funded my own research on plants proposed as endangered in southern Florida. In spite of that, we have only begun to know what the population trends in these plants might be. Moreover, of what I predict to eventually be about 300 endangered plants in southern Florida, we have been able to study in some depth only about 10%. It is with the input of the Florida Native Plant Society that we may be able to gather enough data on some plants to predict the eventual outcome.