

Fraxinus pennsylvanica Marsh. (green ash). 'Marshall's Seedless' is a vigorous male form with glossy dark green foliage. It exhibits good yellow fall color and is reportedly more drought and insect resistant than the species. Other selections exist and would likely be an improvement over the seedling forms currently being grown in Florida.

Gordonia lasianthus (L.) Ellis (loblolly bay). No named cultivars of this native tree exist at present, however, selections for better form, flowering characteristics, and site adaptability are needed.

Illex cassine L. (Dahoon Holly). This is another relatively popular native tree with no named cultivars. Trees with superior form and/or fruiting characteristics are patiently waiting to be recognized.

Liquidambar styraciflua L. (American sweetgum). Several selections of this tree have been made in the Mid-West and California. The California selections 'Burgundy', 'Festival' and 'Palo-Alto' grow well in Florida but don't generally color up in the fall as well as they do on the West Coast. 'Obtusiloba' is a male selection with unusually rounded leaves. It deserves attention if only for its lack of fruit which is the sweetgum's major disadvantage. This is another native tree that warrants local selection.

Magnolia grandiflora L. (southern magnolia). There are well over 50 named cultivars of this highly variable and versatile tree. Its variability gives it a wide range of landscape uses. 'Claudia Wannamaker' is a medium broad pyramidal form with a medium texture having dark brown russeted undersides. 'Emory' is a dominant columnar tree. The parent tree measures 90 by 12 ft. 'Little Gem' is a very compact tree with small dark green russeted leaves. The parent tree measured 14 by 4 ft at 16 years of age. It has a prolonged blooming period 'Samuel Sommer' is a round headed tree with large, thick, dark green leaves. The limbs are resistant to wind damage. 'St. Mary' is an excellent compact pyramidal form with showy russeted leaves. In

the past, most Magnolia cultivars have come into Florida from West Coast nurseries but southeastern sources are gradually becoming more available.

Magnolia virginiana L. (sweetbay). 'Opelousas' is a cultivar from southern Louisiana. It has leaves approximately twice as broad as normally found in the field and the flower is also larger. It grows well in north central Florida.

Michelia x foggi (savage). There are 2 named cultivars of this cross between *m. figo* (Lour.) K. Spreng. and *m. doltsopa* Buch.-Ham. ex DC. Both 'Allspice' and 'Jack Fogg' exhibit the upright tree form of *m. doltsopa* and the fragrance of *m. figo*. They develop into small upright trees with dark glossy green leaves and fragrant, white, 3-inch flowers in the spring. They have survived temperatures of -12°C (10°F) in Florida.

Platanus x acerifolia Willd. (London planetree). The cultivar 'Bloodgood' is reported to be very resistant to anthracnose which causes the early and unsightly defoliation of our native sycamore *p. occidentalis* L. It has also proven to be more tolerant of soil compaction, heat and drought.

Prunus campanulata Maxim. (Taiwan Cherry). This is an outstanding, low chilling, flowering cherry, well adapted to the lower South. There are no named cultivars, however, selecting one for ease of propagation alone would be worthwhile as it is quite difficult to root and seedlings take approximately 7 to 8 years to bloom. Another flowering cherry, *Prunus x incam* 'Okame' Ingram, is a cross between *p. campanulata* and *p. incisa* Thunb. It is a promising flowering tree at least for north Florida and possibly further south.

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THE EARLEAF ACACIA, A FAST-GROWING, BRITTLE, EXOTIC "WEED" TREE IN FLORIDA

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Abstract. Of increasing concern in South Florida are the fast-growing, exotic trees that have reached heights unsuitable for a hurricane area and are readily broken or felled by strong winds. Prominent among them is the earleaf acacia (*Acacia auriculiformis* A. Cunn. ex Benth.) which reaches 90 ft in its homeland, northern Queensland and New Guinea. It was commonly planted as a street and landscape tree in Dade County in the 1940's and 1950's but lost popularity when it was found to produce a great deal of litter, to be highly susceptible to wind damage, and to be proliferating freely as a "weed". Nevertheless, in the past few years, the tree has been "rediscovered" by landscapers and it is being unwisely planted in numbers in new developments. Such use of this

tree should be discouraged. Existing large specimens are a hazard to people and property. The wood is very desirable for handicraft.

Florida residents have always considered a fast rate of growth most appealing in trees chosen for shade or ornamental planting. Nurseries, for economic reasons, naturally prefer to raise fast-growing trees rather than those that may be more satisfactory in the long run but slower-growing. Many a professional landscaper wants to see his design materialize "instantly" regardless of future consequences. Unfortunately, the promotion of fast-growing exotic trees has burdened South Florida with an over-population of trees that have grown too big too soon. There is increasing concern over the many trees in our communities and along our highways that have reached heights unsuitable for a hurricane area and which are readily broken or felled by strong winds. Prominent among these is the earleaf acacia (*Acacia auriculiformis* A. Cunn. ex Benth.), now placed in the Subgenus *Heterophyllum*, Section *Juliflorae*, of the family Leguminosae (12).

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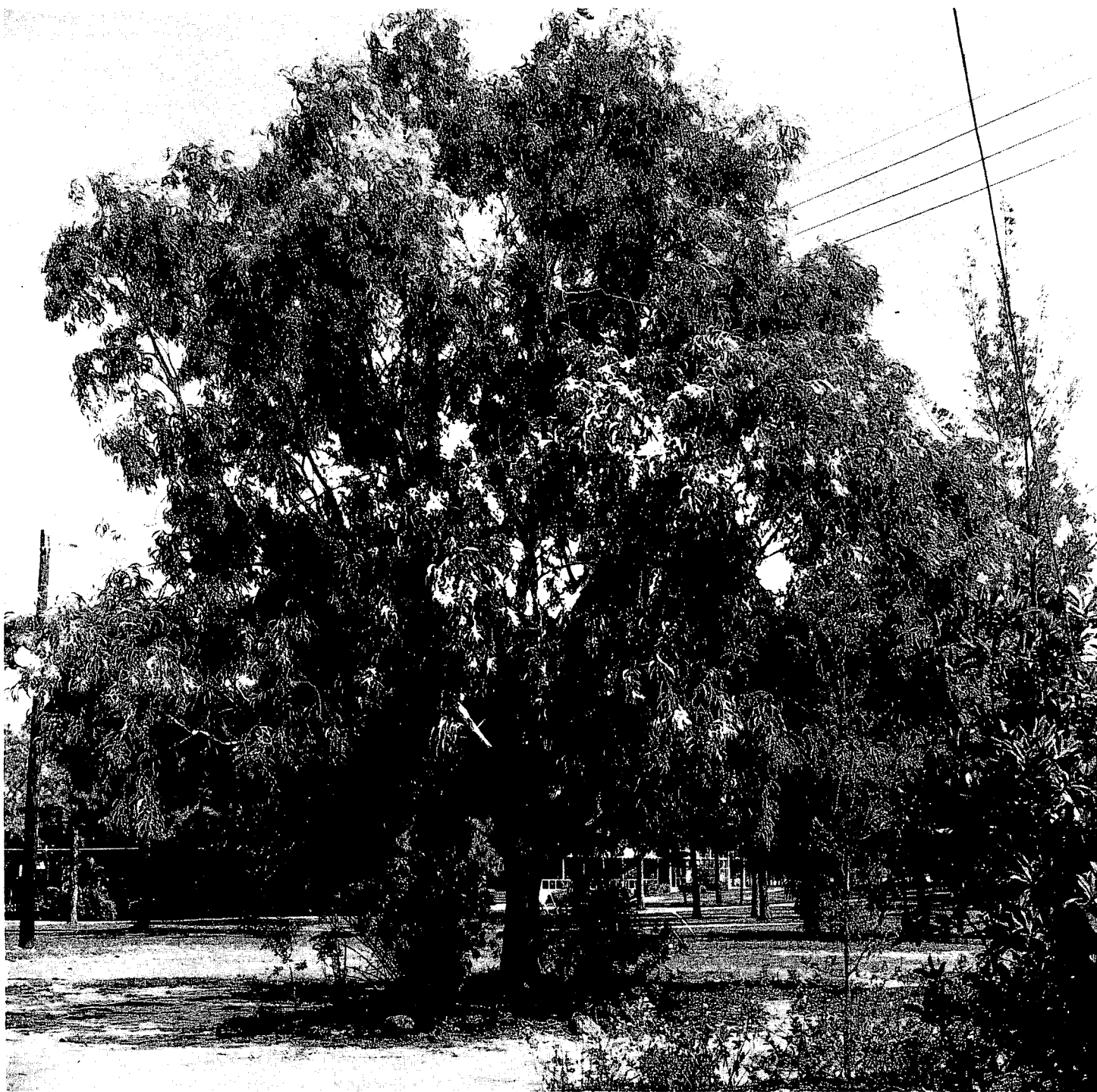


Fig. 1. The earleaf acacia is a fast-growing tree to 90 ft, with erect branches and drooping branchlets. It is highly susceptible to wind-damage.

Photo by Julia Morton

Description

The earleaf acacia is a fast-growing tree reaching 80 to 90 feet in height, with furrowed bark, short trunk to 2 ft thick, and rounded crown of upward-slanting branches bearing a profusion of long, drooping branchlets. These are lushly "foliated" with dull-green, somewhat leathery, leaflike, crescent-shaped phyllodes, 5 to 8 inches long, $\frac{3}{4}$ to 2 inches wide, tapered at both ends, and having 3 main, longitudinal nerves.

Tiny, fragrant, rich-yellow, fuzzy, 5-parted flowers are massed in cylindrical spikes to 3 inches long, borne singly

or in pairs in the "leaf" axils. The fruit is a flat, gray-brown, slightly woody pod, 2 to 4 inches long and $\frac{1}{2}$ inch wide, with oblique, crosswise veins and 1 rippled margin. It splits open, twists spirally and curves over backward when ripe. The 12 or so flat, circular, nearly black seeds, about $\frac{1}{4}$ inch wide, dangle from the opened pods on bright-orange, fleshy "threads" (arils) (2,3,4,13,16).

Origin and Distribution

The tree is native to Albany Island (2) and Cape York Peninsula on the north coast of Queensland, Australia, and



Fig. 2. Foliage (leaflike phyllodes), flowers and twisted seedpods of the earleaf acacia create much litter which does not break down quickly.

Photo by Julia Morton

from there to Arnhem Land and through southern New Guinea to the Kei Islands of the southeastern Moluccas (12,13). It is cultivated in north Borneo and Tanzania in timber plantations and in Zanzibar, since about 1912, as a source of timber and fuel (21).

It was first planted experimentally in Malaya in 1931, became common in parks and gardens, and multiplied naturally from self-sown seeds (21). There are many along streets and in home gardens in India, but not in Ceylon. It was introduced into Trinidad from India in 1916 (25). In 1920, there was a single tree in Hawaii at the Moanalua Japanese Garden, Honolulu (16). Surely this species could

not have become popular where it is far outclassed by the native *A. koa* Gray, for Marie Neal's *In Gardens of Hawaii* (1955) gives it only 2½ lines (9).

There is no mention of it in Dr. Charles Torrey Simpson's *Ornamental Gardening in Florida* (1926) (19), nor in Dr. Henry Nehrling's 2-volume *My Garden in Florida*, a collection of his articles published in the *American Eagle* from 1922 to 1929 (10,11). It was not listed by G. R. Wilson in his *Shade Tree Planting in Southern Florida* (1937) (26). A catalog of Royal Palm Nurseries which was undated but received in 1949 and announced as the first issued since 1930, included *Acacia auriculiformis* as a "recent introduc-

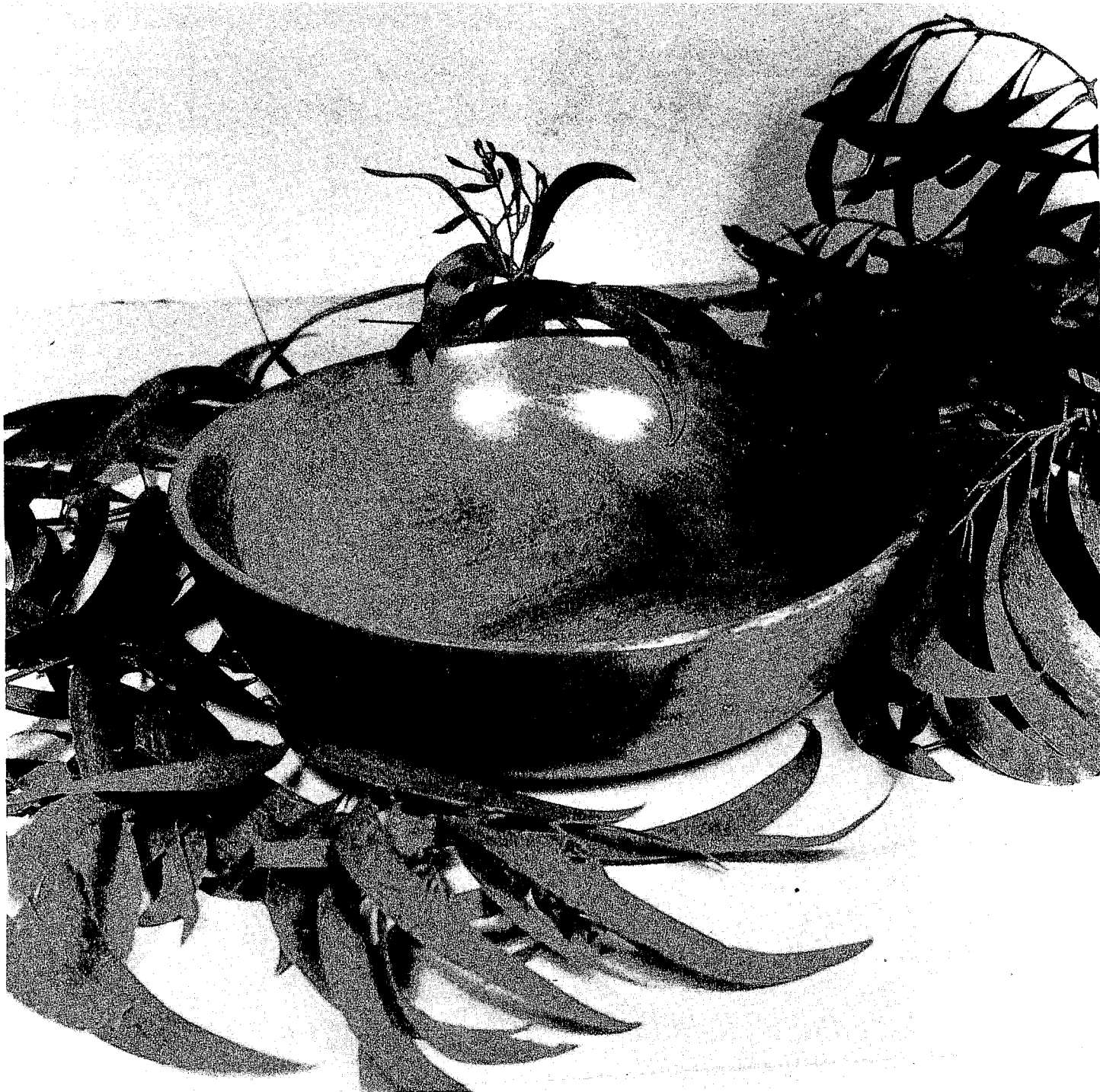


Fig. 3. This handsome, 9½-inch bowl, weighing 1½ lb. was made by John Matthew from earleaf acacia wood that had dried for 5-7 yr. The smooth texture has been enhanced by rubbing with tung oil.

Photo by Julia Morton

tion" (17). At the University of Florida's Agricultural Research and Education Center, Homestead, there was only one specimen, 21 years old, in 1953; therefore planted in 1932 (1). Sturrock and Menninger (1946) (23) stated that the earleaf acacia was "used in Miami, Stuart, and elsewhere as a parkway tree". It was being actively advocated in the 1940's and 1950's as an ornamental. Menninger (15), in his 1947 *Catalog of Flowering Tropical Trees*, commented: "This exceptionally good, evergreen parkway tree . . . is frequently planted in Florida for shade and ornament". Pasco Roberts (15), in an article entitled "Fast-growing

trees" (1955), spoke of the earleaf acacia as "One of the finest fast-growing trees for dense shade, beautiful form, and flowers."

In 1956, Mary Barrett (3) recorded it as "in almost all botanical collections and parks" and referred to "numerous specimens along W. side of Old Cutler Rd. between Cocoplum Plaza and Matheson Hammock; also along SW 27th Ave. from South Bay Shore Drive to W. Flagler St., Miami" and gave specific sites of individual or multiple trees of this species in other South Florida locations. It is notable that most of those she saw have disappeared.

Climate

The earleaf acacia is limited to low elevations in tropical or near-tropical regions. In January of 1985, trees about 4 to 5 yr old were killed at Stuart, Florida, by 3 consecutive days of frost (R. Woodbury, Prof. Emeritus, Univ. of Puerto Rico, Personal communication). Mature trees in Dade County have been unaffected by brief drops in temperature that have damaged mangos. The tree is well adapted to an annual rainfall of 60 to 80 inches with a dry season of 2 to 3 months or even as long as 6 months, for it has considerable drought tolerance (6,21).

Soil

This vigorous tree is found flourishing on a wide range of soil types from deep sand, clay or laterite to shallow coral in Zanzibar (21) and oolitic limestone in Florida. In Malaya, where it is acclaimed for its ability to grow on poor soils, it is planted on burned-over land, also on steep, deteriorating slopes to halt erosion, and on the spoil-heaps of tin mines (21). In Australia, it thrives on alkaline sand and acid tailings from uranium mines (8); in India, on acid papermill sludge (6). The roots often bear many nitrogen-fixing nodules and the tree tends to improve run-down impoverished land (8). The tree has noteworthy tolerance of salt spray (22), often growing naturally just inshore of mangroves (7).

Growth Rate

Seedlings have reached 20 ft in 2 yr; 40 ft in 3 yr; 35 ft in 6 yr; 30 to 55 ft in 8 yr (8,21), depending on locale, soil, spacing and other cultural factors. Seedlings outgrow competition, even the tenacious cogon grass (*Imperata cylindrica* Beauv.) of the Old World tropics (21).

Blooming Season

In Malaya, flowering and fruiting is almost continuous. In Zanzibar, the tree is said to flower several times a year. Blooming occurs in October and November in India (14). In Florida, there are 2 blooming periods annually—in spring and in fall.

Pests

The tree is remarkably healthy but in Zanzibar, the roots are attacked by nematodes (6). There, too, the seed-pods are preyed upon by sapsucking pests and the seeds may not develop (21).

Economic Value

Apart from its use as an ornamental and shade tree, the earleaf acacia, because it is a legume, is now being advocated anew as a fast-growing source of wood and fuel in developing countries. In Zanzibar, the timber is harvested for roofing poles, fence posts, and firewood (21). The tree is being cultivated for fuel in Indonesia (6); in Papua-New Guinea for paper pulp (8); in southern China and Hainan Island for furniture wood and fuel. The tremendous litter of fallen "leaves" and dead branches, amounting to as much as 15 tons per acre annually, is

collected for fuel (7). The bark contains 13% tannin, which has been used in treating leather (6).

In Florida, the wood from trees felled by storms or by man, is salvaged by woodworkers. After the 1945 hurricane, Francis ("Buddy") Fitzpatrick, of Homestead, was the first to make small tables, candlesticks and other articles from it. Expert craftsmen John Matthew of Hialeah, and Roger Tally, of Miami, describe the wood as highly desirable for turnery. The sapwood is pale and nondescript, thick in a young tree, becoming thin as the tree grows older and larger. The heartwood is a dark-honey or amber color enhanced by very fine brown lines and medium-brown, ribbonlike, irregular swirls of annual rings. It is hard, easy to work with sharp tools, finishes well; subject to a little checking unless treated with a preservative.

Disadvantages

Here and there in the limited literature on this tree, there is mention of its lack of wind-resistance (1,8,18,20,23). As the trees in South Florida grew large, there developed increasing realization that the branches are very brittle and easily broken by any strong wind, far less than a hurricane. Dade County long ago ceased planting it as a highway tree for this reason. Then, too, residents had been complaining of the strong odor of the flowers and some claimed respiratory reactions. There was much objection to the shedding of flowers, pods and "leaves" which do not break down quickly as true leaves do but accumulate intact as long-lasting litter. If not raked up, it shades out grass. In Singapore, the trees have been removed from the parkways because of this trashy outfall (7). In addition, birds attracted to the bright arils, distribute the seeds and masses of seedlings volunteer freely in open and slightly moist locations. The tree has become a common weed in Florida.

Despite these negative aspects, newcomers to South Florida, including landscape architects, have adopted the tree as a fast-growing means of achieving "instant landscaping" of civic projects and residential and commercial developments. It is being planted in numbers and is pleasant to behold when young. The day will come when the crowns of these trees, like those of their predecessors, will be unsightly with broken and dead branches and the earleaf acacia will be recognized as wholly undesirable and unsafe for our area. The seedlings that will inevitably spring up near the new plantings will add to the nuisance of "weed trees" already a widespread affliction in South Florida.

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PRESERVING FLORIDA'S AND THE NATION'S ENDANGERED PLANTS

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Abstract. A national Center for Plant Conservation has been established to coordinate a permanent, comprehensive, systematic, and accessible living collection of rare and endangered plants native to the United States. Through the use of this collection, the Center and participating institutions also promote botanical research, public education, and distribution of plant material. All of these objectives are intended to further conservation of the American flora and to serve as a complement to the preservation of the species' natural habitat. This is the first time on a national level that endangered plants of the United States will be brought into cultivation. Two Florida gardens, Bok Tower Gardens and Fairchild Tropical Gardens, are participating institutions. They will be maintaining living, regional collections on a permanent basis. Their collections will serve as a major resource for public education, garden ornamentals, and as a potential gene pool for medicine and food.

The Center for Plant Conservation is a network of botanic gardens and arboreta for the conservation of endangered American plants. The goal is a nationally coordinated program of plant conservation which will encompass species selection, permitting, field collection, propagation, establishing permanent collections, seed storage, and data

management. This program is part of an emerging national consensus of the need to protect rare and endangered plants native to the United States through *ex situ* conservation (e.g., seed storage, cultivation in living collections) as a complement to *in situ* conservation (e.g., nature preserves, wilderness areas).

Three thousand plant species native to the United States are threatened or endangered (1). Fewer than 10% are known in cultivation despite strong recommendations by the National Academy of Sciences (2), among others, that the creation of a national system of repositories for vulnerable germ plasm is vital for research, habitat management, and public information. Ward (3) lists 168 plant species as endangered, threatened or rare in Florida, and the Center comprehensively lists a total of 220 plant species as endangered, threatened or rare in Florida.

Eighteen gardens (Table 1) are currently affiliated with the Center as participating institutions in all of the 14 biogeographic zones of the United States (Fig. 1). The Center itself is an independent organization incorporated in 1984, funded by gifts and grants, and governed by a Board of Trustees. Scientists and staff from the U.S. Office of Endangered Species, the Smithsonian Institution, The Nature Conservancy, and the American Association of Botanical Gardens and Arboreta form an advisory council to direct activity. The long-term program of the Center as coordinated by the Center and carried out by the participating institutions is to 1) maintain a permanent, well-documented and accessible living collection of U.S. endangered plants supported by the necessary research, storage and propagation facilities; 2) assist preservation in the wild and reintroduction efforts by providing research support, propagation facilities, and a source of live plant material; 3) supply live plants for research and agricultural, medicinal, horticultural and botanical sciences; and 4) increase public awareness of the utility, fragility and beauty of the endangered American flora.