

BAHAMIAN TREES FOR THE SOUTH FLORIDA LANDSCAPE

JOHN POPENOE
Fairchild Tropical Garden,
10901 Old Cutler Road,
Miami, Florida 33156

Abstract. Over the past 20 years the Fairchild Tropical Garden has been active in introducing native trees of the Bahamas into South Florida. Over 150 species have been introduced. Most are well adapted to the climate and soils of South Florida. Some have been found to be very useful in the landscape and are described here. Such species as *Catalpa punctata*, *Jacaranda caerulea*, *Peltophorum adnatum*, *Pithecellobium glaucum*, and *Tabebuia bahamensis* will add color and interest to the landscape. They do not require the high maintenance of supplemental watering or much fertilizer because of their adaptation to our area.

An active program of introducing native trees of the Bahamas to South Florida was initiated in the late 1950s by Nixon Smiley, former director of Fairchild Tropical Garden. The author initiated his introduction work in 1963. In this period of over 20 years some 150 species have been introduced. Most of these have been found to be well adapted to our area and are now established in the Fairchild Tropical Garden.

Although some of the species introduced are of more interest botanically than horticulturally, many are very attractive and have proven to be of considerable horticultural value. One of the most important reasons for using these species is that once established they need very little care. They will grow in our poorest soils if they are well drained and they do not require supplemental watering or fertilizers. Pests are generally a very minor problem. The hardiness to cold of these species is not known as most of them have not been tested in colder areas of Florida. Generally they should be considered comparable to Florida's own tropical tree species in cold hardiness.

Some of the most interesting of these introductions are reviewed below. Most species from the Bahamas have been described botanically by Britton and Millspaugh (1). There are no useful common names for many of them.

Bursera frenningae (Burseraceae) is a dwarf tree with reddish bark and a more delicate foliage than its close relative the gumbo limbo (*B. simaruba*). It comes from the rocky ridges and coastal coppices of Great Exuma island. It was just recently described by Donovan S. Correll (2) and named after Mrs. A. B. Frenning a member of the Fairchild Tropical Garden who has a home on Great Exuma and who has cooperated closely with the Fairchild Tropical Garden in its program of introducing trees from the Bahamas. This tree must be grown in full sun, but its smaller size and dependably red bark make it a very promising landscape plant. It generally flowers in the spring and ripens fruit in the fall. Flowers and fruit are similar to gumbo limbo. It can be propagated from seed or from large cuttings as with gumbo limbo.

Caesalpinia vesicaria (Leguminosae) is known as brasil-etto. It was once the most important dye wood exported from the Bahamas. A red dye was obtained from the heart wood. It is a bushy small tree with shiny green compound pinnate leaves that persist all year. It has bright yellow flowers. The fruits on this tree are pods which can develop a beautiful red color and be more attractive than the flowers. It is adapted to almost any of our soils and will stand a lot of drought. There is a lot of variation in this

species including some plants with very thorny stems and some without thorns. As with most species, cultivars should be selected and propagated but no one has done this. The plants are grown from seed and scarification is very helpful in germination. It is found on many of the Bahama islands but is perhaps most abundant on Great Exuma. It is also found in Cuba, Jamaica and Yucatan. It flowers and fruits throughout the year.

Casearia nitida (Flacourtiaceae) is a dense shrub or small tree with shiny ovate to elliptic leaves. Aside from the beautiful foliage the show of yellow berries produced in summer makes this a very worthwhile ornamental. It is found in dry rocky areas on many islands in the Bahamas and in Cuba. As with most Bahama natives it must be grown in full sun. It grows easily from seed.

Catalpa punctata (Bignoniaceae) is a medium sized tree similar to *C. longissima* from Hispaniola which has been grown in our area for many years. *Catalpa punctata*, however has yellow flowers and a more spreading growth habit than *C. longissima* which is lavender flowered and erect in growth. *Catalpa punctata* flowers abundantly in spring and grows in very rocky dry areas on South Andros island. It grows easily from seed and could be useful as a street tree or in a home planting where a medium sized tree with a rounded top is needed.

Jacaranda caerulea (Bignoniaceae) has been grown in Florida for some time but is still uncommon. It makes a smaller tree than the commonly cultivated jacarandas from South America. Because of its smaller size and evergreen foliage it is desirable for the home yard. It generally does not have a massive bloom in spring but produces flowers sporadically throughout the spring and summer. It grows easily from seed. The flowers are about the same color and size as other jacarandas. This species occurs on most of the larger Bahama islands and in Cuba.

Peltophorum adnatum (Leguminosae) is another species from the Bahamas with close relatives in cultivation in Florida. Although there is no data on comparative hardiness, this species has an advantage over *P. pterocarpum* from the far East in being a smaller tree with more delicate foliage. Selections of *P. adnatum* produce a fine show of yellow flowers in spring and these are followed in summer by copper colored pods. There seems to be a lot of variation among seedlings so even though they grow easily from seed, selections should be made and propagated asexually.

Picrodendron baccatum (Picrodendraceae) is a small tree from a habitat similar to that of our native buttonwood (*Conocarpus erecta*). That is, it will grow in dry rocky areas or moist soils with fairly high salinity near mangrove areas. It has attractive trifoliate leaves of a light green color that persist throughout the year. The flowers are inconspicuous, usually appearing in summer, and are followed by yellow fruits about the size of an olive. The texture and color of the bark is similar to buttonwood, but the trunk does not develop the fluting. The seeds germinate readily, even on the ground under the tree during wet weather. It is found on most of the Bahama islands and other islands in the caribbean area but seldom in large numbers. It has considerable value as a tree that is salt tolerant and wind resistant.

Pithecellobium glaucum (Leguminosae) (syn. *P. discolor*) is an unusually ornamental species of a common genus. It forms a small erect tree. The flowers and foliage are reminiscent of women's tongue (*Albizia lebeck*) except that the foliage is a little finer and the tree is evergreen.

The seed pods are small and contain blue colored seeds which are unusual in the Bahamas. The seeds germinate readily if they are scarified. This species has been found only on Abaco and South Andros in the Bahamas. It is also known from Cuba. The flowers are produced in the spring and fruits ripen in summer.

Tabebuia bahamensis (Bignoniaceae) is another attractive small tree from the Bahamas. There are many species of *Tabebuia* grown in Florida but this one is unusual in making a small slender tree with a sparse grayish foliage. The leaves generally have 3 to 5 leaflets. Flowers vary in

color from white to pink. The seeds germinate readily but are only viable for a short time. Selected cultivars are easy to graft by the side veneer method. This species is very useful where small slender trees without heavy foliage are needed. It flowers and fruits throughout the year.

Literature Cited

1. Britton, N. L. and C. F. Millspaugh. 1962. The Bahama Flora. Hafner Publishing Co., N.Y.
2. Correll, D. S. 1979. New species and varieties from the Bahamas, Caicos and Turks Islands. *Jour. Arn. Arb.* 60:154-162.

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THE AUSTRALIAN PINE OR BEEFWOOD (CASUARINA EQUISETIFOLIA L.), AN INVASIVE "WEED" TREE IN FLORIDA

JULIA F. MORTON
Morton Collectanea,
University of Miami,
Coral Gables, FL 33124

Abstract. The Australian pine has become widely distributed in the tropics and subtropics. It was introduced into Barbados about 1870, into Hawaii before 1895; was naturalized in the West Indies and Florida before 1920. It is very fast-growing (5 to 10 ft—1.5 to 3 m per year), salt-tolerant and readily colonizes rocky coasts, dunes, sandbars, islets and islands, and invades moist sites far inland, forming dense stands largely devoid of wildlife. On sandy coasts it usurps the nesting ground of sea turtles. It has crowded out native vegetation over vast stretches of Florida. Attaining 85 to 115 ft (25 to 35 m) in height and being shallow-rooted, the trees are readily toppled by hurricanes. The wood cracks and splits when dried, is valued as fuel in parts of Africa and Asia; has no economic value in Florida. The pollen is plentifully airborne from December to April and has been definitely linked to respiratory complaints during these months. Some efforts are being made to eradicate the tree from environmentally critical areas and former landscape plantings are being removed from some highways. Giant specimens along city streets, which have greatly increased in height since South Florida's last hurricane in 1966, are a definite threat to adjacent dwellings.

Casuarina trees have received little mention in the Proceedings of the Florida State Horticultural Society despite their predominance in the Florida landscape and impact on the environment. All are fairly stout-trunked, rough-barked, fast-growing trees with nearly erect or semi-spreading main branches, slim branchlets, and tufts of deciduous, jointed, grooved, green twigs resembling pine needles but separating easily at the nodes where the true leaves are seen as tiny, pointed teeth ringing the joint. Male flowers are borne in slender, cylindrical spikes at the twig tips; female in lateral heads on non-shedding branchlets, forming woody cones when ripe. In moist soils at certain sites in Australia and elsewhere, the roots of one-third or more of the trees of a given species (including those cited below) are well-nodulated by nitrogen-fixing bacteria (37).

Casuarina Species in Florida

Seven Australian and one East Indian species were introduced into the United States before 1924, beginning

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with seeds brought from France by the U. S. Department of Agriculture's Plant Explorer, Dr. Walter T. Swingle, in 1898. Some seeds were distributed under erroneous names (40, 41) and problems of misidentification still persist. It is important to distinguish the three common species in southern Florida:

C. equisetifolia L. (*C. litorea* L.); AUSTRALIAN PINE, WHISTLING PINE, BEEFWOOD, or HORSETAIL TREE; native to coastal Queensland and offshore islands, Malaysia, southern Asia and Oceania; reaches 100 to 150 ft. (30 to 45 m) in height, usually 60 to 80 ft (18 to 24 m) in Florida; is slender and open in aspect though the trunk may attain 3.3 ft (1 m) in diameter; has pale, slim, often drooping branchlets and drooping twigs 4 to 18 in (10 to 45 cm) long, 1/32 to nearly 1/16 in (0.79 to 1.5 mm) thick, deeply grooved; nodes 1/4 in (6.35 mm) apart; with 5 to 8 (usually 7) teeth at each node; monoecious, or sometimes dioecious; producing twice a year an abundance of spiny cones nearly 1/2 in (12.5 mm) wide, 3/8 to 3/4 in (1 to 2 cm) long, each containing about 12 rows of dehiscent achenes. The winged seeds are said to number 300,000 in one pound. The tree is non-suckering; highly salt-tolerant.

C. glauca Sieb. ex Spreng., the so-called "BRAZILIAN OAK" which would be better given its Australian name, SWAMP SHE-OAK, is native to northwestern Victoria, coastal New South Wales, western Australia and Queensland. It reaches 60 to 80 ft (18 to 24 m) in height, is a dense, spreading, opaque tree, branching close to the ground; with drooping twigs 8 to 12 in (20 to 30 cm) long, 3/64 to 4.5/64 in (1 to 1.5 mm) thick, moderately grooved; the nodes 5/16 to 3/8 in (8 to 10 mm) apart; with 9 to 16 (usually 10 to 15) teeth at each node. Cones are barrel-shaped, 1/2 to 3/4 in (1.25 to 2 cm) wide; but not produced in Florida (35), Puerto Rico (29) or Malaya (11). This species has been often planted as a roadside tree, windbreak, or hedge; it suckers aggressively from the wide-spreading roots, especially when pruned; prefers inland, swampy sites or dry land with subterranean freshwater, but will also thrive in brackish and salty coastal locations (20, 40). It has been long misidentified as the following species which is rarely if at all seen in Florida (3).

C. cristata Miq. (*C. lepidophloia* F. v. M.; *C. glauca* Benth., in part; NOT Sieb.), the BLACK SHE-OAK, is native to Victoria, New South Wales and South Australia. It reaches 45 to 70 ft (14 to 21 m) in height; has ascending branchlets bearing twigs 3/64 to 4.5/64 in (1 to 1.5 mm) thick, smooth or faintly grooved, the nodes 5/16 to 15/32 in (8 to 12 mm) apart; with 9 or 10 (rarely 11) teeth;