Redbay (*Persea borbonia*): A Tree Of Confusion

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At the edge of streams, springs, and swamps hides the redbay tree. Redbay (*Persea borbonia*), with its evergreen aromatic leathery leaves, dark blue fruit hanging on into winter, and reddish bark is a jewel among trees. The Native Americans found a host of medicinal uses for this medium sized tree. Early European Americans found the fine grained, highly polished wood to be perfect trim for bay boats and sailing ships. Southern gumbos require redbay leaf flavoring to be authentic. Now exotic pests threaten this unique American tree. This publication is to assist people understand the great variability and confusion regarding redbay taxonomy, its lineage and where it grows.

Scientific Name Choices

The scientific name for redbay is *Persea borbonia*. Redbay was first clearly identified in 1739 and taken for plant collections. Redbay has had a number of different scientific names over the years. The genus and this species have many overlapping descriptions with various other species, varieties and forms, leading to taxonomic confusion. The genus name *Persea* was first used in 1601 and is a Greek derived name for a middle-eastern or Persian tree with fruit growing from its stem. Over the years, this genus has been called many things including *Persea* (1601), *Laurus* (1731), *Borbonia* (1760), *Farnesia* (1763), *Menestrata* (1835), *Tamala* (1838), and *Nothaphoebe* (1898).

Other early scientific names for redbay included *Laurus caroliniensis* (1731), *Laurus borbonia* (1753), *Laurus axillaris* (1789), *Laurus elongata* (1796), *Borbonia caroliniensis* (1825), *Persea caroliniensis* (1836), *Tamala borbonia* (1838), *Tamala caroliniensis* (1838), *Nothaphoebe borbonica* (1898), *Persea littoralis* (1903), *Tamala littoralis* (1913), *Borbonia borbonia* (1922), and *Borbonia littoralis* (1922). All of these scientific names were describing the same tree species we now call *Persea borbonia*.

Lumping or Splitting?

Because of variability in tree characteristics over its range, a number of varieties and forms have been identified over the years. Some experts have described this variability as multiple species and some have described this variability as varieties of a single species. It is clear there are a number of types of redbay in the southern and southeastern United States. The easiest way in the field to differentiate the types of redbay is either through the flower / fruit stem length, or through the hairs (tricombes) on the leaf undersides. Five unique variations have been described over many years.

The first type of redbay variation was first identified in 1814 (*Laurus caroliniensis* var. *glabra* (1814), *Persea caroliniensis* var. *glabriuscula* (1864), *Persea caroliniensis* for. *glabriuscula* (1889)). This was a slight variation of redbay which was found in isolated pockets at the northeastern portion of the species range and had leaf undersides with few or no tricombes.

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Swampy

The second type of redbay variation was widespread and also first identified in 1814 (swampbay -- *Laurus caroliniensis* var. *pubescens* (1814), *Tamala palustris* (1838), *Persea caroliniensis* var. *palustris* (1860), *Persea caroliniensis* var. *pubescens* (1864), *Persea caroliniensis* for. *pubescens* (1889), *Persea palustris* (1895), *Persea pubescens* (1895), *Tamala pubescens* (1913), *Persea borbonia* for. *pubescens* (1945), and *Persea borbonia* var. *pubescens* (1979). This variation of redbay was significantly different than standard redbay by having dense, long, kinked leaf tricombes and very long flower / fruit stems. This variation grew in more poorly drained swampy areas across the general range of redbay but tended to be concentrated in the more northern or cooler portions of the redbay range.

Silky

The third type of redbay variation was first identified in1895 (silkbay -- *Persea humilis* (1895) and *Borbonia humilis* (1922)). This variation was found in Florida and Texas scrub lands and had dense, silky tricombes on leaf backsides. The fourth type of redbay variation was first identified in 1903 (*Persea littoralis* (1903), *Tamala littoralis* (1913), and *Borbonia littoralis* (1922)). This was a slight variation or ecotype of redbay found on coastal dunes in Florida. The fifth type of redbay variation was identified in 1942 (*Persea palustris* var. *laevifolia)* as a slightly different Virginia type of swampbay with few tricombes on leaves.

Summing Variations

The standard type of redbay is sometimes called *Persea borbonia* var. *borbonia* to differentiate the main species description from later described species, varieties, and forms. In most modern texts they will list either three separate varieties or three species for *Persea* in the south and southeastern United States. The varieties are listed as: the medium sized standard tree *Persea borbonia* var. *borbonia* (1753) -- redbay; the dwarf tree or shrub *Persea borbonia* var. *humilis* (1895) -- silkbay; or, the small tree *Persea borbonia* var. *pubescens* (1814) ñ swamp bay. Some experts accept the varieties as separate species: *Persea borbonia* -- redbay; *Persea humilis* -- silkbay; and, *Persea palustris* ñ swampbay. Here I will accept these three variations as separate species and the rest of this publication will concentrate on the standard redbay. Note Table 1 for differentiating these three *Persea* sp.

Common Names

The common names of redbay are many and as varied as the different places its grows. Redbay has been called bullbay, red bay, redbay, redbay persea, scrubbay, shorebay, swamp bay, swampbay persea, swampbay, sweet bay, sweetbay, and tisswood. Because of the variation in redbayís appearance, many names have been applied to the variations in this species. The term ìbayî attached at the end of any name can be included as a one word name or separated out in two words (i.e. redbay = red bay). For common names, local preference determines which one is used and how it is spelled.

Can You Say *Persea*?

The genus for redbay is *Persea.* *Persea* species occur in the Western Hemisphere, plus one species in the Canary Islands. The total count of *Persea* in the Western hemisphere is approximately 81 species and 18 varieties for a total of 99 types. Most of these types are tropical and sub-tropical trees primarily in South and Central America. *Persea* is divided into two groups (or sub-genera). One group is the (*Persea*) *Eriodaphne* or redbay group containing most of the species. The second group is the *(Persea*) *Persea* or avocado group which includes six species or varieties. There is a great deal of overlap in all the species concepts for *Persea*.

Probably the most recognizable member of the *Persea* genus is *Persea americana* the avocado from Central America. *Persea americana* var. *americana* is the avocado in grocery stores and *Persea americana* var. *drymifolia* is the Mexican avocado of true ethic cuisine.

Scented Family

Redbay belongs to the plant order *Ranales*, one of the most primitive groups of angiosperms (historically called the Magnoliids). This ancient group includes the magnolias, yellow poplars, paw-paws, anise tree, wild cinnamon, and the laurels, along with a few others.

Redbay is in the laurel family *(Lauraceae*, sub-family *Lauroideae*, tribe *Perseeae*). The laurel family contains about 46 genera and about 2,500 species, mostly concentrated in tropical and subtropical parts of Central America, South America, and east Asia. The laurel family trees contain many commercial aromatic oils like anise, linaloa, sassafras, cinnamon, and camphor. A number of the trees have dark or unique heartwood and are used in cabinetry.

US Relatives

Redbayís Laurel family relatives include about 29 genera just in the Western hemisphere. The United States has roughly five native trees, two naturalized trees, four native shrubs, and one native herbaceous vine in the Laurel family. These United States laurel family genera include: *Cassyth, Cinnamomum, Laurus, Licaria, Lindera, Litsea, Misanteca, Nectandra, Ocotea, Sassafras,* and *Umbellularia* (Western US). Of the laurel family trees, four are native to the southern and southeastern United States.

Critical to health concerns in this family are the five southern and southeastern species closely related to *Persea* which could harbor, or be susceptible, to similar pest problems. These local close relatives are: *Sassafras albidum* of the central and southern hardwoods; *Lindera benzoin* the northern spicebush; *Lindera melissaefolium* an endangered species of the coastal plain; *Litsea aestivalis* from the coastal plain; and, *Persea americana* the commercially cultivated avocado which has escaped cultivation in places.

Confusion Ranges

Because of the confusion of species and varieties within native *Persia* in the southern and southeastern United Sates (especially between redbay and swampbay), identifying a species range can be a problem. Redbay is a tree of the Coastal plain growing roughly from the mouth of the Chesapeake Bay area south to the Florida Keys and west to the eastern Gulf area of Texas with a gap within its range in Louisiana across the Mississippi River valley. Redbay is at the northern edge of this large tropical / subtropical genus. Genetically redbayís closest relative is the Cuban shrub *Persea hypoleuca.*

The range of redbay is also confused due to differences among several taxonomic authors, with some sources being used for regulatory ranges. The literature lists five variations for the range of redbay, variously listing redbay growing in 8, 9, 11, 12, or 14 different states plus the Bahamas. Some suggest the Bahamas population is actually swampbay, not redbay. In addition, redbay is cultivated and has potentially escaped in Hawaii, Puerto Rico, and the Virgin Islands. Historically, it is believed redbay barely survived being driven into the Gulf and extinction during glacial periods, while it colonized farther north in-between the ice periods.

Geographic Range

The core range for redbay always listed by all sources include Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, and Texas. Far southeast Virginia is usually listed as having a significant area of redbay. The Arkansas, New Jersey, and Oklahoma outlying populations are now extinct. A small area in far southern Delaware is identified, as are several small pockets in southeastern Maryland, as having redbay. Maryland lists redbay as a state endangered species. (Note Figure 1 ñ range map of redbay)

Redbay can be found along the Coastal Plain of the Atlantic and Gulf coasts. Redbay grows to about 400 feet altitude above sea level. Redbay grows in heat zones 9 to 12 along the southern Gulf coast and 7 to11 along the southeastern Atlantic coast. Hardiness zones of minimum cold temperature

are between 8 and 11. Hardiness zone 7B is sometimes listed, but represents a hardiness zone range expansion placed for ornamental purposes. Redbay does not have a strong cold resistance process and requires winter temperatures to stay above 29°F / -2°C.

Tree Size

Redbay can be expected to reach approximately 45 feet in height on average sites. A maximum of about 75 feet in tree height is possible. An average stem diameter (dbh) is considered 1 to 2.5 feet, with 4 feet in diameter maximum. Crown width is wildly variable due to site and light interference. An average crown width gathered from multiple sources is 32 feet in diameter with a maximum of 70 feet in diameter. One of the largest redbays ever measured is in Florida and has reached a size of 77 feet tall, 48 inches in stem diameter, and 52 feet in crown diameter.

Locations

Redbay grows as single stems or in thickets along streams and on high spots along swamp edges and hammocks. The further upslope from wet, non-flooded conditions, the less chance of redbay growing and surviving. Redbay survives and thrives in a variety of wet and well-drained conditions, as well as a wide range of light conditions. Generally, redbay requires partial sun to full sun with plenty of water and root oxygen for best growth. One of the myths surrounding redbay is its growth in ìswamps.î Actually redbays grow in bayheads where fresh water flows out of a spring or seep, but flows or drains away. Redbays require plenty of water and plenty of root oxygen, which makes limited drainage and anaerobic soil conditions damaging to the tree. Redbay grows at the edges of wet areas on the warm coastal plain of the southern and southeastern United States.

Requirements

Compared with other native trees, redbay has a medium growth rate and a medium life span. Redbay seeds germinate and redbay seedlings grow well in mucky acidic soils, but it transplants and grows well in upland areas, including urban sites which are more moist and well-drained than most. As general rules: 1) the richer and more well protected the site, the taller the redbay; 2) the more water available and the more well-drained the site, the taller the redbay; 3) the farther inland and the higher altitude above sea level, the shorter the redbay; and, 4) the more droughty and well-drained the site, the shorter the redbay. Redbay is moderately tolerant of salt and intolerant of fire.

Mature redbay stems can be severely damaged and scarred by fire. Redbay is a late successional species which thrives on sites with little or no disturbance, especially from fire, site disruption, or soil compaction. Due to its crown form, evergreen leaves, foliage density, stand stocking, and the essential oils in leaves, fire can be devastating in redbay areas. On the other hand, fire does help stimulate seed germination. Prescribing cool winter burns every 4-6 years can minimize fire injury to mature trees and maintain good browse for wildlife.

Conclusions

Redbay grows on the edge of a ecological precipice. Coastal development, forest changes, and new pests are driving redbay into more stressful conditions. This burial tree of Native Americans, this historic wood of polished trim for captainís cabins on Yankee sailing vessels, and this special food and home for several rare butterflies is being pushed farther into oblivion and out of sight of our world. Care is needed to sustain our redbays for the next generation.

Additional Information Sources

Identifying Characteristics Of Redbay (*Persea borbonia*) SFNR06-4, Redbay Geographic Range In Georgia SFNR06-7, Selected References For Redbay (*Persea borbonia*) SFNR06-6, and, Stress, Pests and Injury In Redbay (*Persea borbonia*) SFNR06-5. All publications by Dr. Kim D. Coder, 2006. University of Georgia, Warnell School of Forestry and Natural Resources.

Table 1: Differentiating the primary species of *Persea* in the southern and southeastern United States using growing conditions, tree range, leaf underside tricombes, and flower / fruit stem length.

Persea palustris

swampbay ñ small tree (up to 30 feet tall and 15 inches in diameter)

- common from Virginia to Texas
- poor drained sites and wetland sites
- leaf more leathery and thick, 2-8 inches long, and elongated
- more leaf gall resistant than redbay
- twigs densely hairy
- tending to be in the northern or cooler part of the traditional redbay range
- tricombes stand erect, are very long and bent, and reddish brown in color
- tricombes are dense and providing a shaggy rough texture
- tricombes very dense along leaf mid-rib
- flower stalks much longer than leaf petioles

Persea humilis

silkbay ñ dwarf tree or shrub (up to 15 feet tall)

- found in Florida and Texas scrub lands only
- dry sites
- more black colored bark
- leaf thin and small (1-3.5 inches long and 0.4-1.2 inches wide
- tricombes lay flat, are Ω the length of swampbay and are very fine straight hairs
- tricombes are dense, with a shiny, silky smooth, light brown appearance
- flower much later than redbay by a month or more
- flower / fruit stem short

Persea borbonia

redbay ñ medium sized tree (up to 60 feet tall and 2.5 feet in diameter)

- found from North Carolina around to Texas on lower coastal plain
- well drained but wet sites
- leaf leathery and thick
- tricombes lay flat, and are short, straight hairs with shiny golden-brown color
- tricombes are sparsely scattered to moderately dense
- flower stalks same length or smaller than leaf petioles

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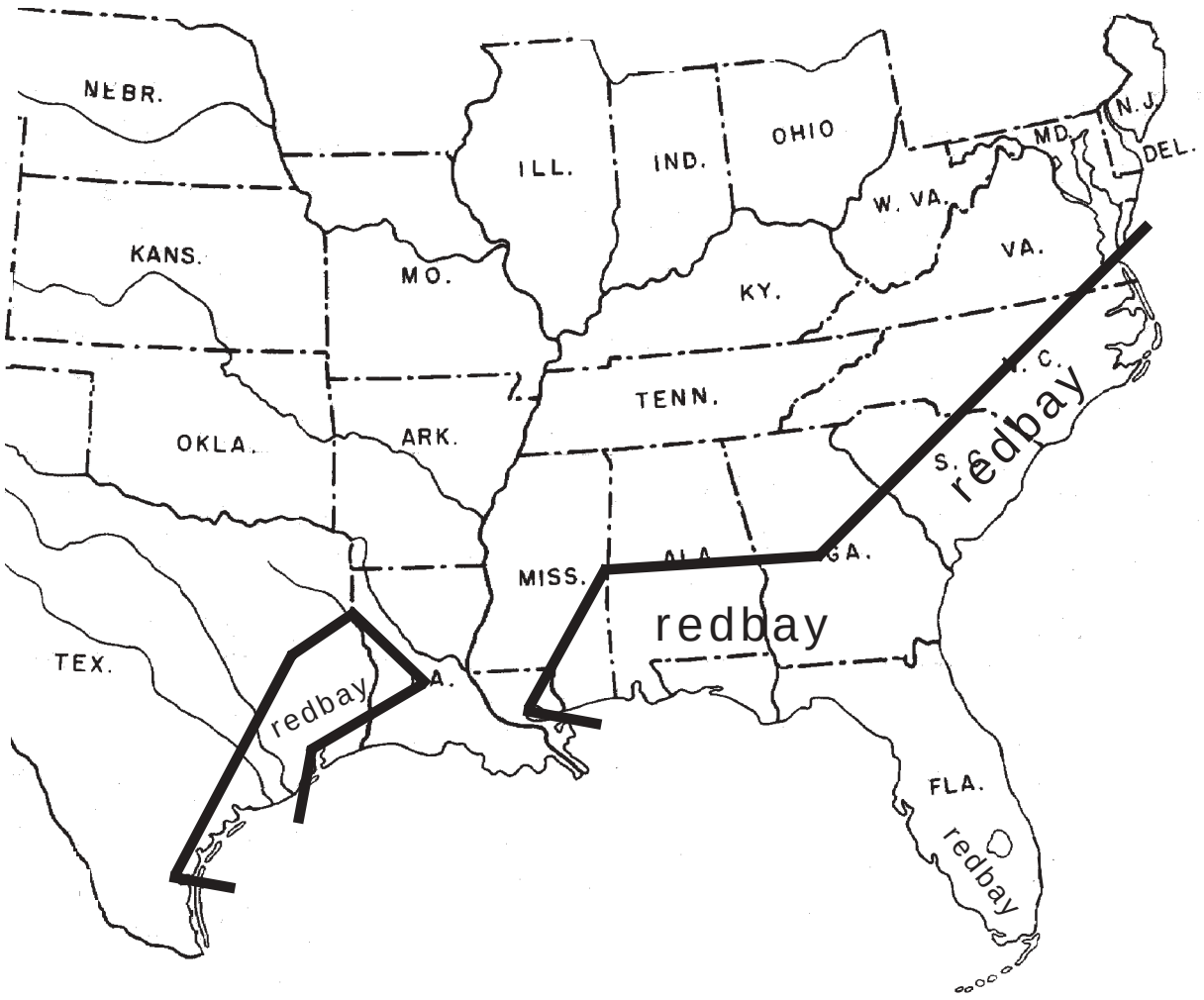

Figure 1: General geographic range map for redbay (*Persea borbonia*).

Small outlying populations are omitted. Area within, and south & east, of the lines is the redbay range, extending south to the Keys. Note that the ranges for the other native *Persea* species are found within redbay's range.