# Identifying Characteristics Of Redbay (*Persea borbonia*)

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Redbay (*Persea borbonia*) is a unique tree of the lower coastal plain of the southern and southeastern United States. (Figure 1) Redbay has many highly variable characteristics which have caused some historical and modern misidentification. This publication is to assist people in visualizing the physical attributes, as well as the historic medicinal uses and wildlife values, of redbay.

## Natural Form

The natural form of redbay is noticeably different than many other trees. The crown is oval to round shaped with densely packed single layers of foliage held on slender but stiff twigs. Redbay holds branches low to the ground and does not self-prune lower limbs well. In the understory of a forest it tends to form a crooked, muti-stem shrub. With small gaps in the canopy from overstory tree failures, redbay can slowly attain single stem tree form.

Training redbay for shade and street tree use should begin early and will require more effort than with many young native trees. Redbay should be trained quickly into a single dominant stem. Branch subordination throughout the crown will be required. Raising the crown of redbay should be attempted only if essential, and then slowly over many years to assure a strong tapered stem. Crown raising should at least keep branches from reclining on the soil surface. Maintaining a natural appearance would conserve the crown close to the ground. Training is needed to develop twig and branch structure because redbay is prone to wind and ice damage.

## Leaves

Redbay leaves are simple with an entire, smooth margin which is slightly curled under. The leaves are thick, leathery, evergreen, and fall from the tree after 1.5 to 2 years, usually in early summer. When crushed the leaves have a aromatic spicy fragrance (like a kitchen ìbayî leaf). The leaves are elongated-elliptical to wide-oval in shape, tapered at each end. On average the leaves measure 3 to 6 inches long and 1 to 2 inches wide.

Redbay leaves are bright, smooth, shiny and a medium green color on top. The leaf underside is paler due to a scattered covering of minute golden to brown colored shiny hairs (tricombes) and a pale grayish-white surface coating. The leaf tricombes lay flat along the leaf surface, and are straight and unbranched. The leaf mid-rib on the underside is reddish-orange in color. The leaves tends to develop a more yellowish tint in the cooler and more northern portions of its range. Redbay leaves are held on 0.5 to 1.0 inch long petioles. The petioles are stiff with a v-shaped groove running along the upper side. Petioles are reddish-brown in color and covered with minute tricombes. Note Table 1 for identification of different *Persea* species.

## Flowers

Redbay is monoecious with perfect flowers (both male and female parts in the same flower). Redbay is usually not self-fertile, requiring cross-pollination for viable seeds. The flowers are small,

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about 1/8 to 1/4 inch long. They are not showy, nor usually noticeable, among the leaves. The flowers are a pale creamy white to pale yellow in color. The flowers are tiny and bell-shaped with no petals. They are held on short flower stalks which are about the same length or shorter than the leaf stalks (petioles). The flowers grow from the leaf bases (axils) in loose groups of several flowers. Redbay flowers in mid-May to June. Bees and wind are cited as the primary pollinators for redbay.

Fruit

Redbay fruiting occurs every year in October. The fruit is a small, round to oval, single seeded, shiny, dark blue to very deep purple colored drupe. Average fruit size is 0.5 to 0.9 inches long. The fruit has a thin, bitter tasting flesh which hangs onto the tree into winter. Fused flower parts are visible at the base of the fruit as a six-lobed, green colored, persistent receptacle. The fruit stem is no longer than the leaf petioles and is reddish to orange-yellow in color. The single seed inside the fruit is round with a slight point. Inside the seed are red cotyledons. Seeds should be sown as soon as gathered after the first of October. Germination occurs under wet (not flooded), mucky or wet organic litter conditions. Seed passage through animals (small birds, quail, turkey, bear and deer) stimulates germination. The tree is considered messy from the fruit fall -- as well as from the evergreen leaf fall and twig drop. The fruits can stain porous materials and damage painted surfaces if not promptly removed.

Twigs & Buds

Redbay has slender, somewhat looping, stiff twigs. The twigs densely fill in gaps within the leaf canopy. The twigs are green when young, aging to a light brown color. The lateral buds are small and round with two outer bud scales densely covered with tricombes. The twig has elliptical leaf scars, a single linear bundle scar, and no stipule scars. Tricombes on the twigs are sparse. The twig has a terminal bud about 0.25 inches long which is densely covered with red tricombes. The twig pith is large -- about Ω the twig diameter -- white colored, square to round in cross section, and solid ñ not diaphragmed or chambered.

Branches

Redbay branches droop with age. They are poor self-pruners even when hanging dead on the tree stem. The branches are stiff, stout, and wide spreading. Branch unions are notoriously weak and fail easily in wind storms when the tree is in an exposed location. Proper training and mature tree pruning helps control some storm branch damage. The branch order number is controlled by active twig shedding. Twig shedding, along with shedding of fruits and evergreen leaves, make redbay messy from a litter standpoint.

Roots

Little has been examined on redbay roots. Redbay roots have a high oxygen demand and are stressed by approaching anaerobic soil conditions. They contain an antibiotic compound (borbonol) which acts as an anti-root pathogen material to protect roots. Borbonol has been shown to be a defense against *Phytophthora* root rots. The roots have a yellowish tint and are thick. They can be found growing far from the main stem near the soil surface under the litter layer. Moving young understory redbay wildlings can be difficult unless they are root-pruned first.

Bark

Redbay bark in its native form can be showy. Bark color can range from dark reddish brown to grayish brown. The bark texture is furrowed with shallow, irregular ridges expanding into scales with old age. Bark thickness is relatively thin (0.5 inches thick). On the younger bark of twigs there are scattered, golden-reddish colored, fine hairs (tricombes) laying against the surface which fall off with age. A number of other organisms growing on the bark can discolor or darken the bark. Sooty molds can make the bark black colored.

Wood

Redbay wood is difficult to find and then it is found in only small pieces. As such, redbay has only limited local use as a wood material. The heartwood is red-colored, fine-grained, brittle, water resistant, works moderately well and polishes very well. It was traditionally used for tableware (like spoons), furniture pieces, boat and interior trim, and cabinets. It was gathered for boat trim in the live oak maritime forests during the live oak gathering days of the early sailing vessels.

Wildlife Uses

Redbay fruit is consumed by many birds, including quail and turkey. Birds cited for eating and distributing redbay include bluebirds, mockingbirds, brown thrashers, fish crows, robins, and other seed-eating generalist songbirds. Because the fruit is held on the tree well into winter, it is a good winter food source. Rodents, like squirrels, also make use of the fruit. The tree as a whole is considered intermediate in palatability for browse, especially for deer and bear. New growth is especially susceptible to deer browse when other browse is limited. Redbay can periodically (every couple of years) be heavily grazed for short times with little long-term damage. Constant heavy grazing will kill redbay. The foliage is potentially poisonous to domestic grazing animals. Other animal users of note are three butterflies. Redbay is the host for the larvae of the palamedes (sometimes called laurel), Schausí and spicebush swallowtail butterflies.

Food & Drug

Dried redbay leaves have been used for generations as the ìrealî Southern bay leaf for flavoring savory foods and considered essential for gumbo. Before European Americans, the Native Americans found great medicinal value in redbay. The Seminole and Creek nations used redbay for a number of purposes including treatment for: insanity (craziness), stiff neck, deep cough, drooling, numbness in limbs, arthritis, loss of appetite, nausea and vomiting, to cause vomiting, stomachache, dizziness, staggering, backache, fever and chills, headache, extreme thirst, constipation, diarrhea, blocked urine flow, frequent urination, abortion, eye problems, protracted labor, kidney problems, and unconsciousness. Redbay was also used to make a medicine given for grief, and redbay parts were used in funeral ceremonies.

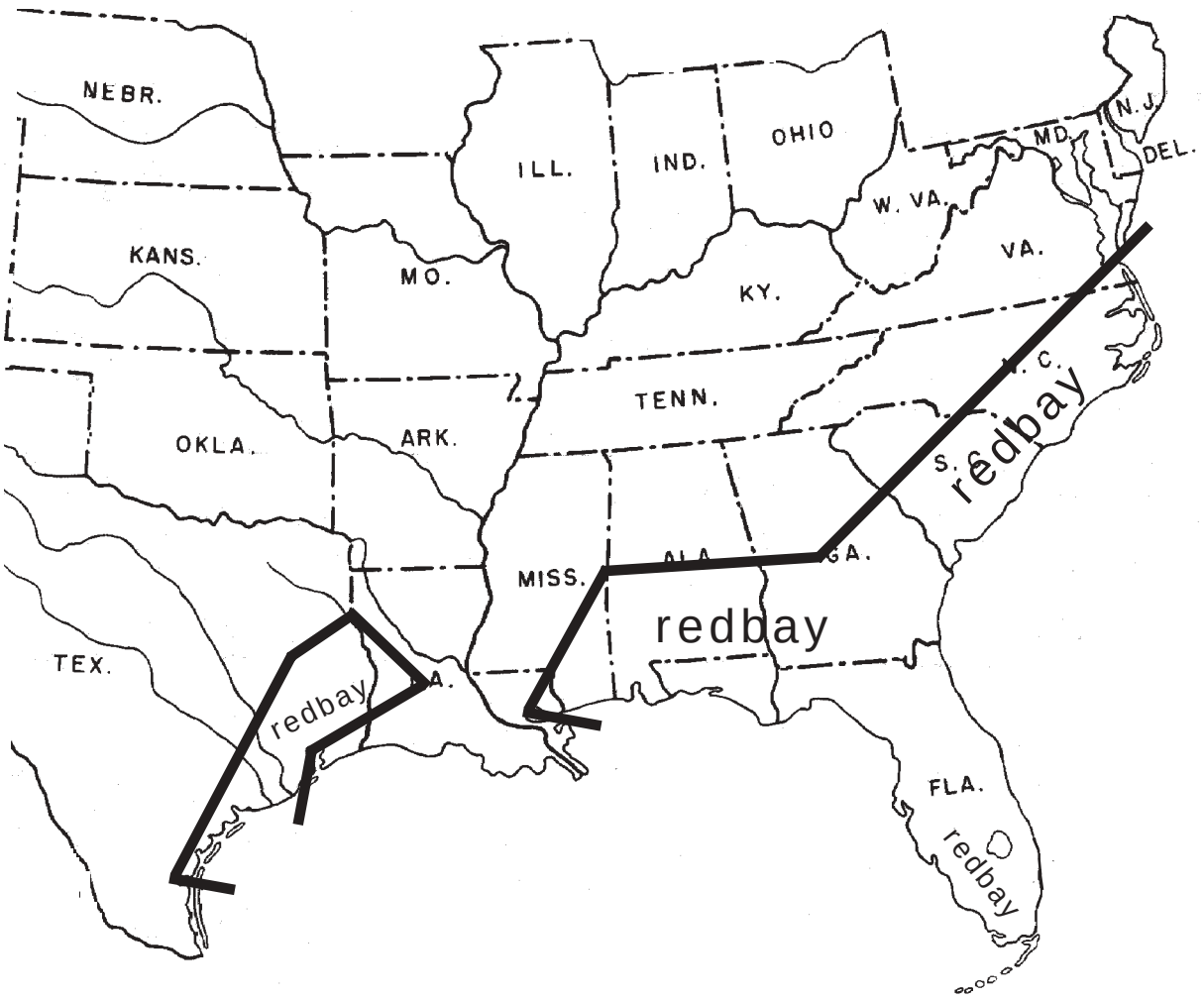
The portions of redbay used were leaves (leaf tissues, decoctions, infusions, and burned for smoke) and roots (root tissues and root decoctions). Redbay infusions were made by making a tea with hot water and seeping the tissue (~10 min) at a tissue concentration of 1oz redbay plant material to 8 oz of water. This ìteaî contained volatiles, essential oils, and easily dissolved materials. Redbay decoctions were produced by boiling woody tissues in water for a long time (4-10 min) and then letting it seep (3-10 min) before straining the liquid out. This liquid would contain minerals and materials only partially water soluble. Note these historical medical uses can be dangerous and poisonous! They are mentioned here without correlating tree tissues used, treatments, applications, or recipes followed only to show historic cultural uses for redbay.

Conclusions

Redbay is a botanical, ecological, and cultural treasure. People of the southern and southeastern coasts of the United States have been blessed with redbay along wetland edges. Animals have found winter food in redbay after most other food sources have been exhausted. This unique species is now under attack from new pests which could destroy this old flavor of southern gumbo. Understanding how redbay grows may help us to combat new threats as well as appreciate what we have always had but may have overlooked.

**Additional Information Sources**

Redbay (*Persea borbonia*): A Tree of Confusion SFNR06-3, 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.




# 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.

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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