

# *Persea borbonia* (L.) Spreng.      Red bay

Lauraceae      Laurel family

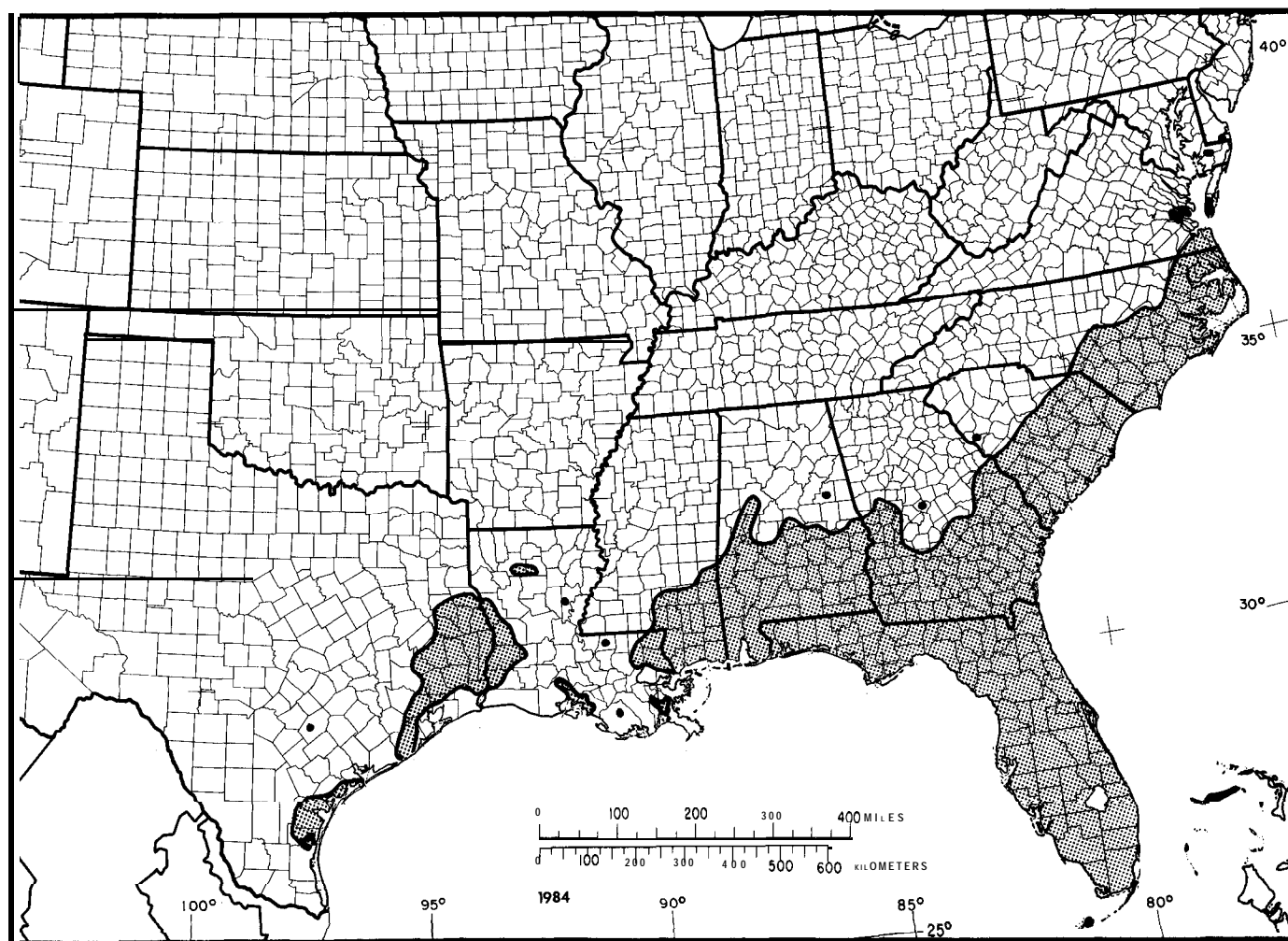
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Redbay (*Persea borbonia*), also called shorebay, is an attractive aromatic evergreen tree or shrub of the southeastern Coastal Plains. This tree's size and growth habit varies considerably over its range and commercially important trees are not common. The wood takes a fine polish and is used locally for cabinetwork and boatbuilding. The seeds are eaten by wildlife and deer browse the foliage. The leaves are used as a seasoning for cooking. Redbay is also planted as an ornamental.

## Habitat

## Native Range

Redbay (fig. 1) is a minor hardwood of southeastern and southern United States. It is a common but seldom an abundant component of the swamp forests of the Atlantic and Gulf Coastal Plains from southern Delaware south through



**Figure 1**—The native range of redbay.

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Florida and west to the lower Texas gulf coast (7). It also grows in the Bahamas.

### Climate

Redbay grows in a climate ranging from warm-temperate along the Atlantic Coast to semitropical in southern Florida and the lower gulf coast of Texas. The frost-free period varies from a minimum of 200 days to a maximum of 365 days and is more than 250 in much of its range. Average January temperatures of these coastal areas range from 3° C (38° F) in southern Delaware to 20° C (68° F) in south Florida, with 10° to 13° C (50° to 56° F) characteristic of most of this region. Summers are hot and humid. Average July temperatures range from 26° to 28° C (78° to 82° F). Temperatures above 38° C (100° F) or below -12° C (10° F) seldom occur over most of this species range.

Average annual rainfall within the natural range of redbay varies from a low of 1020 mm (40 in) in southern Delaware increasing to about 1320 mm (52 in) along the Atlantic coast of Florida and reaches a maximum of 1630 mm (64 in) in several areas along the gulf coast. Rainfall is quite well distributed, with about 55 percent of the total annual rainfall occurring in the warm season (April through September). Periodic summer droughts are more common in the western part than in the rest of this species range (9).

### Soils and Topography

Redbay (fig. 2) is found growing on the borders of swamps and swampy drains in the rich, moist, mucky soil of the lower Coastal Plain. Such muck swamps are not of alluvial origin but generally originate from impoundment of water in land-locked depressions. The water of these swamps is usually dark brown from accumulated organic matter. The bottoms of the swamps do not provide firm support. Sites similar to the deep muck swamps are found in the shallow ponds, strands, and pocosins in the longleaf, slash, and pond pine woods but here tree growth is usually stunted (8). These soils are most commonly found in the order Histosols.

### Associated Forest Cover

In the forest cover type Sweetbay-Swamp Tupelo-Redbay (Society of American Foresters Type 104), redbay is a major component (1). Stocking within this type may consist of combinations of any two or all three of these species, but locally a single species may dominate. It is a common associate of the fol-



**Figure 2**—Two stems of redbay, one overtopping another on the edge of a Dorchester County swamp in South Carolina.

lowing cover types: Loblolly Pine-Hardwood (Type 82), Pond Pine (Type 98), Baldcypress-Tupelo (Type 102), and Water Tupelo-Swamp Tupelo (Type 103). Redbay is a minor component of the following cover types: Cabbage Palmetto (Type 74), Loblolly Pine (Type 81), Atlantic White-Cedar (Type 97), Pondcypress (Type 100), and Baldcypress (Type 101).

Numerous species that grow on moist to wet sites may be associated with Sweetbay-Swamp Tupelo-Redbay, depending on the geographic location, site, and stand history. Common hardwoods include red maple (*Acer rubrum*), black tupelo (*Nyssa sylvatica*), loblolly-bay (*Gordonia lasianthus*), sweetgum (*Liquidambar styraciflua*), water oak (*Quercus nigra*), laurel oak (*Q. laurifolia*), yellow-poplar (*Liriodendron tulipifera*), and southern magnolia (*Magnolia grandiflora*). Associated conifers include

slash pine (*Pinus elliottii*), longleaf pine (*P. palustris*), loblolly pine (*P. taeda*), pond pine (*P. serotina*), baldcypress (*Taxodium distichum*), pondcypress (*T. distichum* var. *nutans*), and Atlantic white-cedar (*Chamaecyparis thuyoides*). Small trees and shrubs associated with redbay include buckwheat-tree (*Cliftonia monophylla*), dahoon (*Ilex cassine*), yaupon (*I. vomitoria*), inkberry (*I. glabra*), lyonia fetterbush (*Lyonia lucida*), bayberry (*Myrica* spp.), and poison-sumac (*Toxicodendron vernix*).

## Life History

### Reproduction and Early Growth

**Flowering and Fruiting-**The flowers are perfect, appearing in the spring in the axils of the new foliage. Insects, primarily bees, are the principal pollination vector; however, pollen is also disseminated by wind. The fruit is a small drupe about 13 mm (0.5 in) long that is bright blue or blue-black when ripe. A thin layer of rather dry flesh surrounds the seed or pit of the fruit (4).

**Seed Production and Dissemination-**Redbay produces annual crops of fruits. Seeds are disseminated mainly by several forms of wildlife, including songbirds, white-tailed deer, bobwhite, wild turkey, and black bear. No direct information is available on size of the seed but based upon drupes of similar size from *Nyssa*, it is estimated that there are approximately 4,630 seeds per kilogram (2,100/lb).

**Seedling Development-Germination** of redbay seed is hypogeal. No further information on seedling development was available.

**Vegetative Reproduction-**No information on vegetative reproduction of redbay could be found in the literature.

### Sapling and Pole Stages to Maturity

**Growth and Yield-**Redbay is included in a list of commercial trees of southern hardwood forests, but its growth or the size it attains varies considerably over its range. Presumably these differences in growth are a reflection of variation in site quality (8).

One source (4) describes redbay as a beautiful evergreen tree, sometimes 18 to 21 m (60 to 70 ft) in height and 61 to 91 cm (24 to 36 in) in diameter. Under forest growth conditions it develops a clear, cylindrical bole and a dense, pyramidal crown with ascending branches.

A second source (3) describes redbay as a small evergreen tree seldom more than 9 to 15 m (30 to 50 ft) tall with a trunk diameter of 31 to 61 cm (12 to 24 in). Redbay found growing in the pocosins along the Atlantic Coast has been described as a shrub.

**Rooting Habit-**Information pertaining to this aspect of the life history of redbay could not be found in the literature.

**Reaction to Competition-**Redbay is classed as tolerant of shade but is also found growing well in the open, and in both young and old forest stands. Reproduction is generally erratic and scattered in groups among swamp tupelo and sweetbay. Overstory competition may account for the scarcity and poor form of redbay growing under certain forest conditions (8).

**Damaging Agents-Fire** may cause substantial damage to redbay. Fire scarring with the associated deterioration of the butt portion of the tree is common. It may also prevent or forestall the establishment of reproduction.

Insects or diseases apparently do not cause serious damage to redbay. It is the principal host of *Trioza magnoliae*, a psyllid or jumping plant louse. This psyllid forms large, unsightly galls on redbay leaves but apparently causes little damage to the tree because a large proportion of the leaves remain unaffected (6). A leaf spot of redbay caused by the fungus *Phyllachora perseae* has been reported. Evidently this disease is not a serious problem because only a portion of the leaf area is affected (5).

Although some species of the genus *Persea* are susceptible to a root disease caused by the fungus *Phytophthora cinnamomi*, redbay is resistant. This resistance is due to a borbonol, a preformed antifungal substance that is a component of the roots and stems of certain species of *Persea*. Some species of this genus, including several avocado cultivars highly susceptible to this root disease, do not contain antifungal compounds with the properties of borbonol (10).

## Special Uses

The wood is heavy, hard, strong, and bright red, with a thin, lighter colored sapwood, but it has no established place in commerce. It is used locally for cabinet making and interior finish and for boatbuilding. Dried leaves of redbay make an excellent substitute for those of the tropical bay and may be used in the same way for seasoning food. The tree is oc-

asionally used as an ornamental because of the evergreen leaves and its fruit.

Redbay is reported to be of significant importance to wildlife. The fruit is eaten by several species of songbirds and wild turkey. In order of volumetric importance, the redbay fruits were in 15th place in a list of 63 food items. Redbay seeds may form a sizable portion of the bobwhite diet during the fall and winter months. The fruits and leaves of redbay are eaten by deer. It is browsed heaviest in fall and winter but withstands such grazing well. As much as 40 percent of the annual growth has been removed as browse for 2- or 3-year periods without causing death of the plants. Reports that black bear consume both the fruits and leaves of redbay have been noted in North Carolina and Florida (2).

### Genetics

No information on the genetics of redbay is currently available.

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