



SWEETGUM

... an american wood

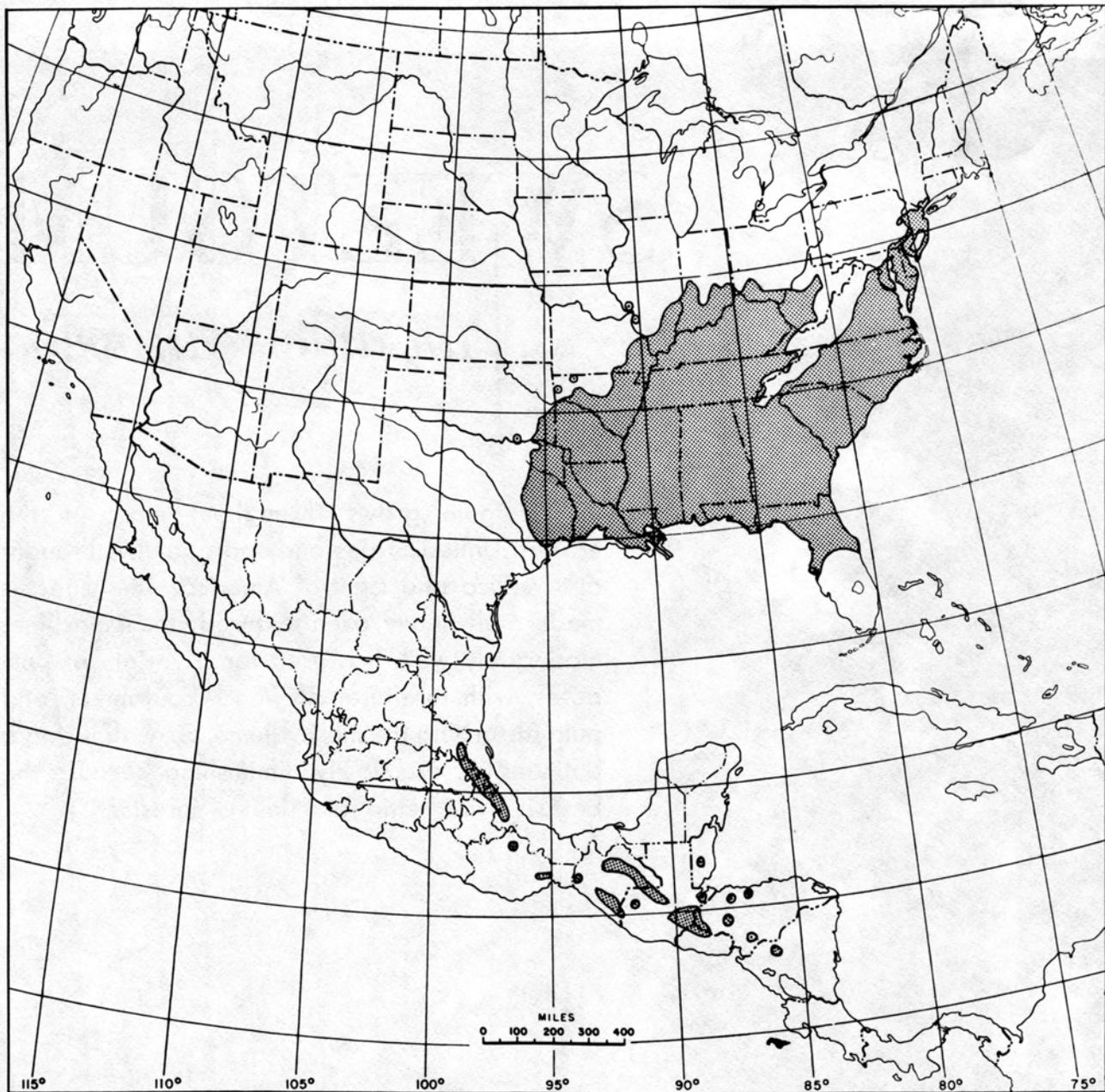
Sweetgum grows throughout most of the eastern United States and sporadically throughout Mexico and Central America. The wood is moderately heavy, even-textured, and machines moderately well. It is used for a variety of purposes, with furniture, plywood, containers, and pulp absorbing the most volume. Growth is good, but supplies are slowly diminishing because the best sites are being taken out of forests.

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Figure 1.—Natural range of sweetgum.

SWEETGUM

. . . *an American wood*

C. B. Briscoe¹

DISTRIBUTION

Sweetgum (*Liquidambar styraciflua* L.) occurs naturally in southwestern Connecticut, westward to Missouri, and southward to central Florida and southeastern Texas. It also grows in several states of Mexico and in Guatemala, British Honduras, Honduras, El Salvador, and Nicaragua (fig. 1).

Within that area, it can be found from sea level to about 2,000 feet elevation in the United States and up to nearly 7,000 feet in Central America. It tolerates a wide variety of soils. Average annual minimum temperature varies from -10 degrees to above 60 degrees F. Growing season ranges from about 150 days in the northern United States to 365 days in parts of Central America. Rainfall varies from less than 40 inches per year to more than 80. However, where rainfall is less than 40 inches, occurrence is generally restricted to areas close to a water course, swamp, lake, or spring.

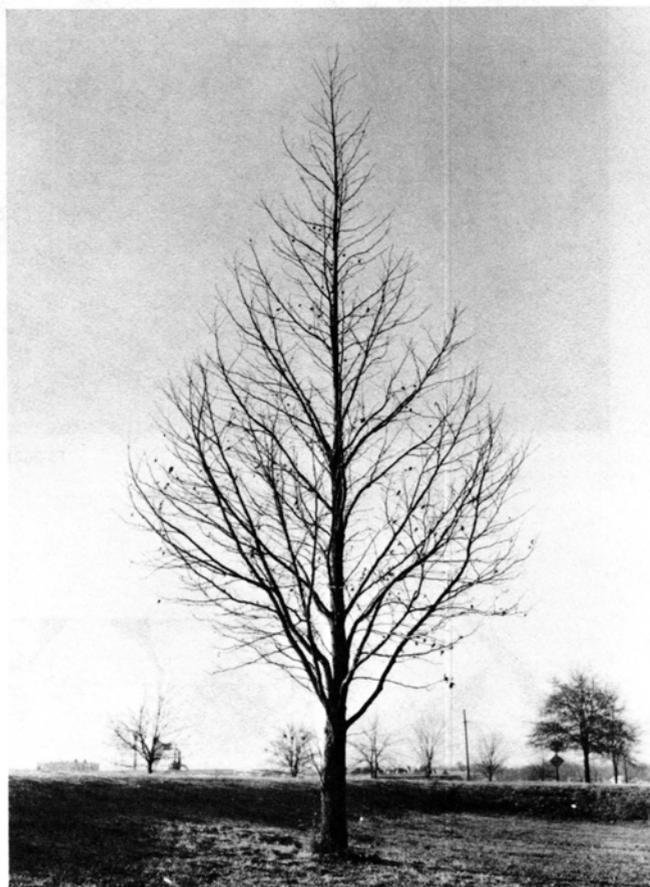
Best growth, and most commercial production, is on moist, well-drained soils. Alluvial lands of the Ohio and Mississippi Rivers, valleys of minor rivers and stream bottoms of the Gulf and Atlantic coastal plains, and coves of the Ozark and Cumberland uplands provide excellent sites.

DESCRIPTION AND GROWTH

Mature trees are 1.5 to 3 feet in diameter and 80 to 120 feet tall, depending on the site. The largest known sweetgum in the United States is 6.3 feet in diameter at breast height, is 125 feet tall, and has a crown spread of 100 feet. In the forest, the bole may be straight and cylindrical for fully two-thirds of the total height. Young trees normally have a compact, conical crown with excurrent branching (fig. 2), but at maturity the crown often becomes open, round-to-

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NOTE: This publication supersedes unnumbered publication *Sweetgum*, issued 1954.



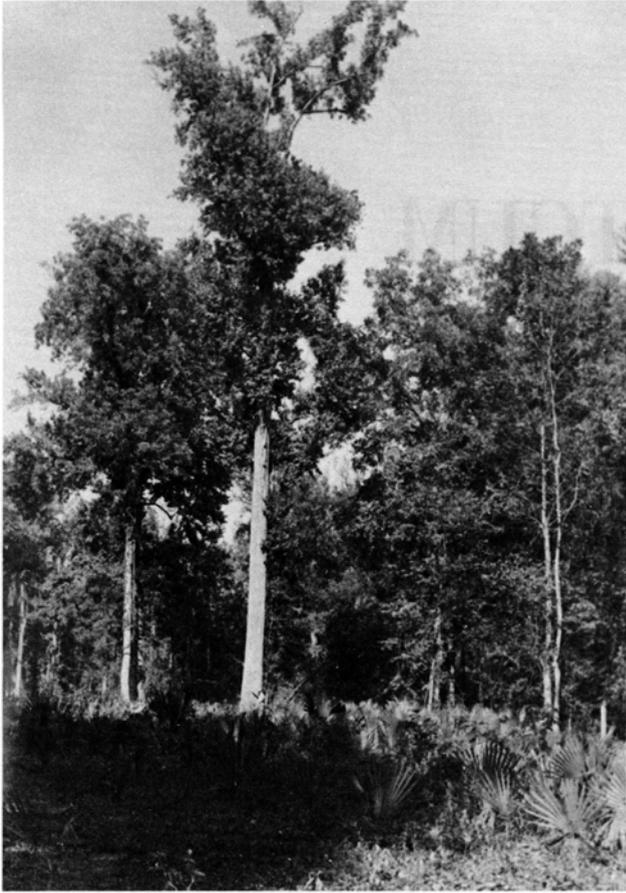
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Figure 2.—Immature sweetgum.

flat on top, and some of the branches become quite heavy (fig. 3).

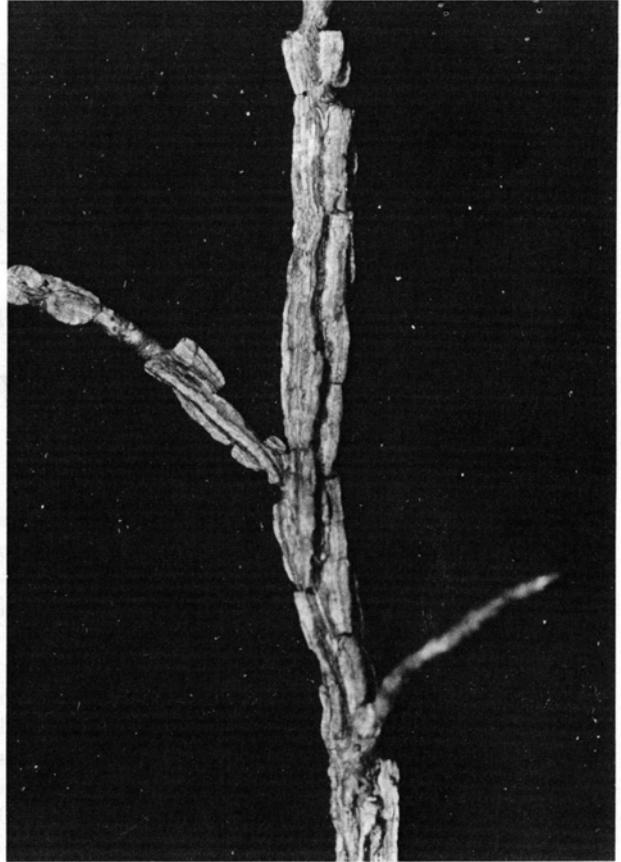
Leaves are alternate, simple, and deciduous; their star shape distinguishes them from all other trees native to the United States (fig. 4). Fall coloration may be yellow, red, or purple, making the tree very attractive.

Twigs, especially of young trees, often bear corky



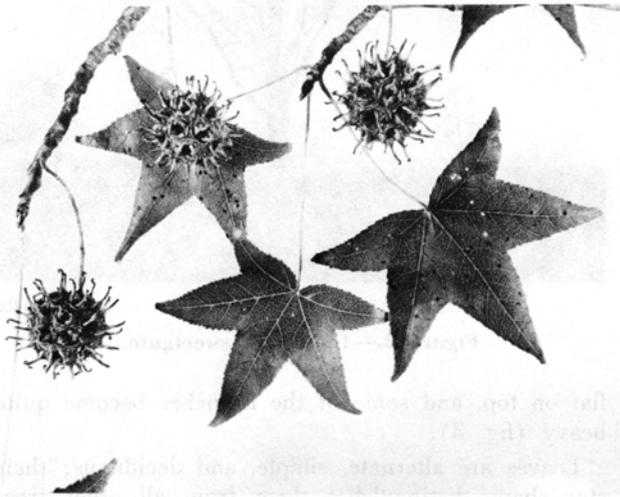
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Figure 3.—Mature sweetgum.



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Figure 5.—Sweetgum twig.



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Figure 4.—Sweetgum leaves and fruit.



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Figure 6.—Sweetgum bark

ridges (fig. 5), adding to the tree's interest for landscape planting. Sweetgum bark is gray and deeply furrowed, (fig. 6).

The relatively inconspicuous flowers are monoecious and borne in early spring; production on open-grown trees, or those in well-spaced plantations, begins as early as age four. In natural stands, flowers are scarce or absent until age 20 to 25.

The fruit is a spiky ball (fig. 3) which persists through most of the winter. It is composed of many small fruits, each with two long curved or spiny projections, which open in autumn to release one or two small, winged seeds.

The winged seeds mature in the early fall and are usually completely dispersed before winter. Some seed is produced practically every year; abundant crops occur every 3 or 4 years.

Seedlings survive under moderate shade but grow well only where they receive a substantial amount of light. Saplings and mature trees in hardwood stands are normally a part of the upper crown canopy. When they fall behind, growth reduction is marked, followed by stagnation and death. Under relatively open pine canopies, however, sweetgum often persists in such abundance as to reduce the growth and to prevent natural reproduction of the overstory pines.

The species habitually grows in mixture with other hardwoods and pines. It is a key species in the northern red oak-mockernut hickory-sweetgum, pin oak-sweetgum, sweetgum-yellow-poplar, and sweetgum-Nuttall oak-willow oak types. It is also an important component in 25 other types, ranging from the scarlet oak to cabbage palmetto-slash pine. On old fields, particularly clay or silt loams, sweetgum is often preponderant or may even form pure stands containing up to 40,000 board feet per acre. Small pure stands often arise as root sprouts when the ground is physically disturbed around recent stumps. Such trees appear to be as desirable and free from defect as those of seedling origin, although there is some indication that they are more susceptible to drought damage.

Growth varies greatly with conditions, but may attain 3 feet per year in young saplings of seedling origin or 5 feet for sprouts. Diameter growth in stands is commonly 2 to 4 inches in 10 years.

Natural regeneration is abundant from both seeds and sprouts where conditions are suitable. Stumps of trees up to at least 50 years old will sprout, and root sprouts will develop from trees that old or older.

Sweetgum is very resistant to disease and insect attacks, but it is quite susceptible to damage by fire. Rodents clip many seedlings and are occasionally a serious obstacle to plantation establishment.

COMMON NAMES

Sweetgum is the common name preferred by the USDA Forest Service, but the species is also called

gum, red gum, star-leaved gum, white gum, alligator tree, opossum tree, and bilsted.

The heartwood is commonly called red gum in the trade. Sapwood is referred to as sap gum, or simply gum, in common with the tupelos (*Nyssa aquatica* L., *N. sylvatica* var. *sylvatica* Marsh., and *N. sylvatica* var. *biflora* (Walt.) Sarg.). In Europe heartwood and sapwood are sometimes sold as satin walnut and hazel pine, respectively.

SUPPLY

It is estimated that in 1920 the total supply was 44.2 billion board feet, approximately 90 percent of which was in the Mississippi Valley and the Gulf and South Atlantic coastal plains. By 1945, the estimated volume had dropped to 26 billion board feet. In 1963 the estimate was virtually the same—25.9 billion board feet, 92 percent of which was in the South.

In the same year, the volume in cubic feet was estimated as 10 billion, with 25 percent in trees less than 10 inches in diameter and only 10 percent in trees larger than 19 inches.

As indicated earlier, however, growth is good and the gradual reduction in overall volume is not the result of overharvesting, but of conversion of so much of the best sweetgum forest to reservoirs and row crops.

PRODUCTION

The production of sweetgum lumber increased from 4 million board feet in 1869 to a peak of 1.13 billion board feet in 1926. Volume slowly climbed after the 1930's nadir of 202 million to a post-World War II peak of 1.08 billion board feet, fell again in the 1950's, and was only a little over 300 million in 1960.

CHARACTERISTICS AND PROPERTIES

The sapwood is wide and white to pinkish. The faint-to-marked bluish tinge often seen is the result of fungus infection. Heartwood varies through shades of red, reddish brown, and brown, and may include very attractive grain figure.

Annual rings are definite but inconspicuous. The wood is diffuse porous, and the texture is uniform. Interlocked grain is common and contributes to both the difficulty in seasoning the lumber and to a ribbon-stripe figure.

The wood is moderately heavy (34 pounds per cubic foot at 12 percent moisture content) and moderately hard and stiff. It is above average for southern hardwoods in turning, boring, and steaming properties. It is intermediate for planing, shaping, bending, splitting, and for nail- and screw-holding ability. The heartwood is non-durable, difficult to treat and does not glue readily.

