

Pinus glabra Walt., Spruce Pine¹

Allie M. Mitchell and Michael G. Andreu²

This publication provides an in-depth profile of *Pinus glabra* for academic audiences and interested laypersons with some knowledge of biology.

Taxonomy

Family

Pinaceae, the pine family, includes 12 genera and 225 species. Characteristics of this family include small mature seed cones, winged seeds, and needle-like leaves. Members of the pine family are found naturally only in the northern hemisphere, but species of pine have been successfully cultivated in the southern hemisphere (e.g., South America, South Africa, and New Zealand) and are commercially important in those areas. Members of the *Pinaceae* family have been found in fossil records dating back to 200 million years ago and were likely a source of food for some dinosaurs.

Genus

Pinus is the only genus of the *Pinaceae* family with members native to Florida. All species within this genus found in Florida are evergreen (*P. clausa*, *P. echinata*, *P. elliotii*, *P. glabra*, *P. taeda*, *P. palustris*, and *P. serotina*).

Species

The species name *glabra* is from the Latin word “glabre,” meaning smooth. The name describes the bark of the tree, which is smooth in comparison to the bark of other Florida pine species.



Figure 1. Spruce pine trees.
Credits: Allie Mitchell, UF/IFAS

Common Names

This species is most commonly referred to as spruce pine, but it has several other common names, including cedar pine, Walter pine, and bottom white pine. It resembles both spruce and white pine, and it tends to be found on moist hardwood sites, such as swamps, river valleys, bottomlands, and hammocks (Figure 2).

Description

Spruce pine is a slow-growing, medium to large conifer found along the southeastern Coastal Plain from Louisiana/Mississippi to the Atlantic coast of South Carolina/Georgia and south into Florida (Figure 3) (Kossuth and Michael 1990). In Florida, it is mostly found in the Panhandle and northern portions of the peninsula.

1. This document is FOR405, one of a series of the School of Forest, Fisheries, and Geomatics Sciences, UF/IFAS Extension. Original publication date August 2024. Visit the EDIS website at <https://edis.ifas.ufl.edu> for the currently supported version of this publication. © 2024 UF/IFAS. This publication is licensed under [CC BY-NC-ND 4.0](https://creativecommons.org/licenses/by-nc-nd/4.0/)
2. Allie Mitchell, student research assistant; and Michael Andreu, associate professor and UF/IFAS Extension specialist; School of Forest, Fisheries, and Geomatics Sciences, UF/IFAS Extension, Gainesville, Florida 32611.

The Institute of Food and Agricultural Sciences (IFAS) is an Equal Opportunity Institution authorized to provide research, educational information and other services only to individuals and institutions that function with non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, marital status, national origin, political opinions or affiliations. For more information on obtaining other UF/IFAS Extension publications, contact your county's UF/IFAS Extension office. U.S. Department of Agriculture, UF/IFAS Extension Service, University of Florida, IFAS, Florida A & M University Cooperative Extension Program, and Boards of County Commissioners Cooperating. Andra Johnson, dean for UF/IFAS Extension.



Figure 2. Spruce pine (indicated by yellow arrow) growing intermixed with hardwoods.
Credits: Allie Mitchell, UF/IFAS

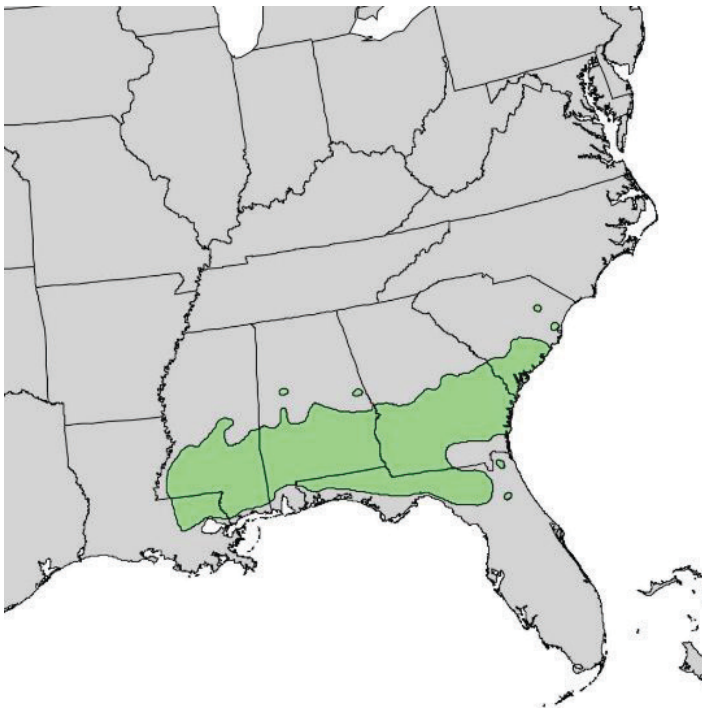


Figure 3. Native range of spruce pine (*Pinus glabra*).
Credits: This image was acquired from Wikimedia. It was marked as Public Domain or CC0 and is free to use. To verify, go to the source, https://free-images.com/display/pinus_glabra_range_map.html

Spruce pine is a highly shade-tolerant species often found within moderately to poorly drained sites such as in bottomlands and hardwood hammocks and along the slopes of ravines and creeks (Figure 2) (Sullivan 1993). Spruce pine rarely forms pure stands. Instead, it is commonly found at low densities in these areas. While it may be found on

wet sites, it generally does not tolerate areas that flood for prolonged periods of time. Spruce pine is included as a constituent species in the descriptions of three Florida Natural Area Inventory plant communities: upland hardwood, slope forest, and bottomland forest (see the [Florida Natural Areas Inventory \(FNAI\)](#) for more description) (Florida Natural Areas Inventory 2010). These sites do not experience fire regularly, and spruce pine bark is therefore relatively thin compared to the bark of other southern pines, resulting in a low fire tolerance for the species.

Spruce pine needles are in fascicles of two. They are twisted and grow to a length of 1.5 to 4 inches (Figure 4) (Bean 2021). The bark is thin and reddish grey-brown, with tight, irregular, shallow fissures (Figure 5) (Kossuth and Michael 1990). Higher up the bole (trunk) of the tree, the bark changes and is often smooth and gray (Proctor and Monrow 2019). Spruce pine bark is unlike the bark of other southern pine species. It more closely resembles the bark of spruce trees (*Picea* spp.) or hardwoods, such as some oaks (*Quercus* spp.) or mature black cherry (*Prunus serotina*). Female cones are small, only 1.5 to 3 inches (4–8 cm) long and will remain on the branches for three to four years (Figure 6) (Proctor and Monrow 2019; Gilman and Watson 2015).



Figure 4. Spruce pine needles (left) and canopy (right).
Credits: Allie Mitchell, UF/IFAS



Figure 5. (left) Mature spruce pine bark and (center, right) immature spruce pine bark.
Credits: Allie Mitchell, UF/IFAS



Figure 6. Mature female spruce pine cones (left and center) and male spruce pine cones (right).

Credits: Allie Mitchell, UF/IFAS

At maturity, spruce pine can reach heights of 90 to 100 feet tall (27–30 meters) with an average diameter of 24 to 36 inches (61–91 cm) when found in its natural habitat (Sullivan 1993). When it grows in full sunlight, as frequently when it is grown on urban sites, spruce pine usually reaches heights of only 30 to 50 feet tall at maturity (Gilman and Watson 2015).

Allergen

Species within the genus *Pinus* commonly produce large amounts of pollen each year. However, the pollen is waxy and not highly irritative, making their potential for allergy low (Ogren 2001). Reactions to the scent of *Pinus* species have been reported but are also rare (Ogren 2001).

Storm Tolerance

Spruce pine has the lowest wind resistance of all the southern pine species (“Hurricane Resistance of Trees” 2018). The wood is known to be brittle, and the taproot is typically moderately deep (Kosuth and Michael 1990).

Pests and Disease

Spruce pine is susceptible to attack by bark beetles, specifically the southern pine beetle (*Dendroctonus frontalis*) (Hain et al. 2011). However, because spruce pines usually do not grow in pure stands, they tend not to experience large bark beetle outbreaks throughout the population. It should be noted, though, that there is limited research on this interaction, and some research suggests that spruce pine is a preferred host for the beetle (Chellman and Wilkinson 1975).

Spruce pine is one of the main hosts of gall mites in Florida (*Trisetacus floridanus*). These mites attack terminal shoots, shortening the shoot and causing the tree to form galls (Kossuth and Michael 1990). Spruce pine is also one of the main larval hosts in Florida for various sawfly species (*Neodiprion* spp.), including the more common blackheaded

pine sawfly (*N. excitans*) and the less common *N. warreni* (Ridenbaugh et al. 2023; Dixon 2023). Pine sawflies deposit their eggs in the needle tissue and then feed on the needles after they hatch (Ridenbaugh et al. 2023; Dixon 2023).

Spruce pine is resistant to fusiform rust (*Cronartium quercuum* f. sp. *fusiforme*) (Kossuth and Michael 1990; Simons 2021). Canker diseases may cause dieback but are not a significant threat to spruce pine (Gilman and Watson 2015).

Lightning is the most common cause of death for spruce pine trees because they are so often the tallest single trees in the hardwood areas where they typically grow (Simons 2021).

Applications

Forestry/Commercial

Spruce pine is of limited commercial value in the United States due to the brittle, close-grained, and resinous nature of the wood (Kossuth and Michael 1990; Sullivan 1993). It can be used in limited quantities as it occurs for pulpwood. When grown in full sunlight, spruce pine boles/stems typically grow twisted, crooked, and more compact. For this reason, it is not grown on a significant scale in a plantation setting, although it is planted for use as a Christmas tree in some regions of the southeastern United States (Kossuth and Michael 1990).

Wildlife

Squirrels, northern bobwhite quail, and other mammals are known to use spruce pine seeds as a food source (Sullivan 1993). However, spruce pine is favored less in comparison to other southern pines. Raptors and pileated woodpecker-use spruce pines as nesting sites (Simons 2021).

Ornamental Use and the Urban Setting

Spruce pine is planted to a limited extent for use in urban settings, primarily for use as a shade tree (Figure 7). The unusual, twisted growth of spruce pine in full sunlight also has an aesthetic appeal.

Spruce pine grows best in fertile soils, and yet it is not recommended to be planted in soils with high pH values (Gilman and Watson 2015; PLANTS Database, n.d.; Kluepfel and Polomski 2020). While naturally found on sites with moist soils (moderate to poorly drained), spruce pine will tolerate dry soils in urban settings as well.



Figure 7. Spruce pine planted as an ornamental species on the University of Florida campus.

Credits: Allie Mitchell, UF/IFAS

A Note about Research

Relative to commercially important southern pine species (*P. elliottii*, *P. palustris*, or *P. taeda*), spruce pine is poorly studied, and current scientific literature is limited.

Works Cited

Bean, R. 2021. Differentiating Between Loblolly, Longleaf, and Other Southern Pines in the Woods. *Clemson Extension Forestry and Wildlife*. <https://blogs.clemson.edu/fnr/2021/07/20/differentiating-between-loblolly-longleaf-and-other-southern-pines-in-the-woods/>

Chellman, C.W., and R. C. Wilkinson. 1975. "Recent history of southern pine beetle, *Dendroctonus frontalis* Zimm., (Col.; Scolytidae) in Florida." *Florida Entomologist* 58: 22. <https://doi.org/10.2307/3493861>

Dial, S. C., W. T. Batson, and R. Stalter. 1976. "Some Ecological and Morphological Observations of *Pinus glabra* Walter." *Castanea* 41 (4): 361–377. <http://www.jstor.org/stable/4032730>

Dixon, W. N. 2023. *Pine sawflies, Neodiprion spp. (Insecta: Hymenoptera: Diprionidae)*. EENY317. Gainesville: University of Florida Institute of Food and Agricultural Sciences. <https://edis.ifas.ufl.edu/publication/IN592>

Florida Natural Areas Inventory. 2010. Natural Communities Guide. <https://www.fnai.org/species-communities/natcom-guide>

Gilman, E. F., and D. G. Watson. 2015. *Pinus glabra: Spruce Pine*. ENH625. Gainesville: University of Florida Institute of Food and Agricultural Sciences. <https://edis.ifas.ufl.edu/publication/ST466>

Hain, F. P., A. J. Duehl, M. J. Gardner, T. L. Payne, and R. N. Coulson. 2011. "Natural History of the Southern Pine Beetle," in *Southern Pine Beetle II*, edited by R. N. Coulson and K. D. Klepzig, 13–24. General Technical Report SRS-140, Asheville, NC: U. S. Department of Agriculture Forest Service, Southern Research Station.

Hurricane Resistance of Trees. 2018. *UF IFAS Blogs*. <https://blogs.ifas.ufl.edu/pinellasco/files/2018/03/wind-resistantance-of-trees.pdf>

Kluepfel, M., and R. F. Polomski. Pine Factsheet. *Clemson Cooperative Extension Home and Garden Information Center*. <https://hgic.clemson.edu/factsheet/pine/> (2020)

Kossuth, S. V., and J. L. Michael. 1990. "*Pinus glabra* Walt," in *Silvics of North America, Volume 1*, edited by R. M. Burns and B. H. Honkala vol. 1, US Department of Agriculture, Forest Service.

Ogren, T. L. 2001. *Allergy-Free Gardening: The Revolutionary Guide to Healthy Landscaping*. Berkeley: Ten Speed Press.

PLANTS Database. *Pinus glabra* Walter. *USDA Natural Resources Conservation Service*. <https://plants.usda.gov/home/plantProfile?symbol=PIGL2>

Proctor, N. and M. Monroe. 2019. *Common Pines of Florida*. FOR21. Gainesville: University of Florida Institute of Food and Agricultural Sciences. <https://edis.ifas.ufl.edu/publication/FR003>

Ridenbaugh, R. D., A. N. Glover, and C. R. Linnen. 2023. "First Record of the Pine Sawfly *Neodiprion warreni* (Hymenoptera, Diprionidae) in the State of Tennessee and on *Pinus virginiana*." *Journal of Hymenoptera Research*. 96:937–947. <https://doi.org/10.3897/jhr.96.112395>

Simons, R. W. 2021. "Spruce Pine – *Pinus glabra*," in *The Ecology of the Trees, Shrubs, and Woody Vines of Northern Florida*. 1st ed., 32–34 Gainesville: University Press of Florida <https://doi.org/10.2307/j.ctv1t1kg94>

Sullivan, Janet. 1993. *Pinus glabra*, in *Fire Effects Information System*. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). <https://www.fs.usda.gov/database/feis/plants/tree/pingla/all.html>