

PAU BRASIL

COMMON NAME

Caesalpinia echinata

SCIENTIFIC NAME

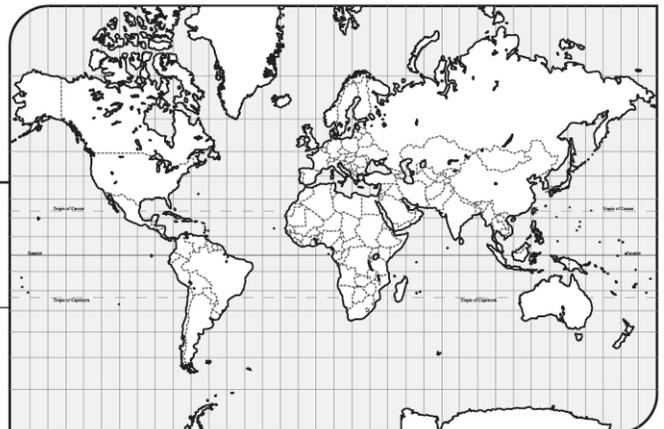


Photo Credit: Valentino Liberali, Wikimedia

Importance

Caesalpinia echinata, the famous Pau brasil, is the source of the name of the country, Brazil, and is endemic to the Atlantic coastal forest. Pau brasil has strong cultural links to Brazil's social and economic history and is the national tree of Brazil. The species is famous for the dye extract taken from the heartwood, although synthetic dyes have now reduced this trade. This stately tree has been highly valued for its timber and as a source of dye and has been reduced to the edge of extinction by logging and deforestation. Exploitation still continues because this extremely dense hardwood is ideal for making bows for stringed musical instruments. In the coastal forest ecosystems of Brazil it has been noted as an important habitat for orchids and other epiphytes. It is also known as brazilwood, peachwood, *brasileto*, *ibirapitanga*, *orabutã*, pau-Pernambuco or pau-de-Pernambuco, and pau-rosado.

For hundreds of years, pau brasil has been prized for the red dye that could be extracted from the heartwood. The name of the tree may even come from this dye: *brasa* means



Bean Family (*Fabaceae*)

FAMILY

Endangered

RED LIST CATEGORY

glowing coals and is a corruption of the local name for the tree. Because of the name, the original collectors were known as *brasileiros*. Even today, the tree is used locally for medicinal purposes.

However, the hard, compact timber of the tree is the tree's most valuable characteristic. Traditionally, pau brasil wood was used to make hunting tools, and the timber has been extensively harvested for use as construction timber, in cabinet making, furniture making, and other craftwork. But the wood of the pau brasil is most famous for its use in bows of violins, violas, cellos, and other stringed instruments. Because of the density of the grain, the straight, beautifully colored grain of the wood, and its tendency to be free of knots, the timber is unusually well suited for the shaping process and pressure required. No substitute bow material has been found that equals the quality of pau brasil wood, and despite trade restrictions, there is still significant trade in *C. echinata* for instrument making and the wood is seen as essential to the industry. A single violin bow may take over 2 pounds (up to 1 kg) of wood and may be worth up to \$5000! Accordingly, the trade is worth millions of dollars and there is significant potential for illegal harvesting and trade in this species. But as this species disappears, the trade, the beautiful instruments made from its wood, and the species that depend on this tree and its role in the ecosystem will disappear as well.

Description

Form: This tropical or subtropical tree in the legume family can reach up to 40 feet (12 m) in height with a trunk diameter more than 25 inches (70 cm).

Leaf: The leaves are alternate, and consist of many small oblong leaflets arranged bipinnately.

Flower: The beautiful yellow and red flowers are arranged in clusters called racemes or panicles. The flowers mostly contain both the male and female parts of the flower, though occasionally will hold only one or the other. Flowers with male parts have 10 stamens.

Fruit: The fruit is a legume, usually flattened and approximately 3 inches (7.5 cm) long, with the surface covered in prickles when green.

Bark & Twigs: *C. echinata* is notable for its prickly trunk. The bark is gray and spotty, and the wood has a deep, red hue.

Habitat and Ecology

The species is native to Brazil and is recorded in reserves in Bahia and Pernambuco. Pau brasil is confined to the Atlantic Coastal Forest of Brazil, an ecosystem recognized as a global biodiversity hotspot. It inhabits coastal regions with open forest and well-drained soils. Detailed information on the present geographical distribution of pau brasil is scarce, but in the last ten years remnant populations have been found in nine Brazilian states. The species is recorded in reserves in Bahia and Pernambuco. Determining the previous range of the species is also problematic because there are errors in the literature caused by incorrect identification and confusion with other related species. In addition to being an important tree for human use, the nectar found in flowers and in extrafloral nectaries is an important food source for insects. A good street tree in appropriate climates.

Threats

Today, only about 5% of pau brasil old growth forests remain. Deforestation due to exploitation of this wood for dye, instrument making, timber, and more, are a primary threat to this species. The extensive collection and export of the wood from pau brasil trees has resulted in the loss of large areas of forest. Until synthetic dyes became available in 1875, pursuit of dyewood resulted in the almost complete destruction of some natural stands, though some subpopulations remained in a few areas on the coastal plain. Even after synthetic alternatives to dye became available, the exploitation of timber remains a threat. There is significant waste in processing the wood for instrument bows; between 70 to 80% of harvested wood is lost as logs are converted to bow blanks and a further 70 to 80% is lost in processing these into bows. The logging of this tree also threatens the natural habitats of pau brasil, causing soil compaction and erosion.

Conservation Action

The remaining populations are protected in the reserves in Bahia and Pernambuco. There is also a reintroduction programme at Linareas Reserve and the species is listed on the official list of threatened Brazilian plants by IBAMA (the *Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis* or the Brazilian Institute of Environment and Renewable Natural Resources). In addition, *C. echinata* was included on CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) Appendix II in September 2007. However, in order to protect livelihood, an annotation exempting the finished products, the violin bows, has been incorporated, weakening the effectiveness of this measure.

A reintroduction program for pau brasil has been established at Linareas Reserve and an international action plan has been developed for this species. Organizations such as Fauna & Flora International and the Global Trees Campaign are supporting education and public awareness campaigns on the conservation importance of pau brasil. While many aspects of the biology of the pau brasil and the composition and structure of the plant community in which it occurs are poorly known, researchers are working to better understand this tree and the future viability of remaining populations. Want to help? Donate to [SoundWood](http://www.soundwood.org) (part of the Global Trees Campaign), a program working to save tree species used in making musical instruments.

References

- Botanic Gardens Conservation International. 2011. *Caesalpinia echinata*. (http://www.bgci.org/worldwide/Caesalpinia_echinata/, 31 March 2011).
- Global Trees Campaign. 2008. Global Trees Campaign – Pau brasil tree profile. (http://www.globaltrees.org/tp_paubrasil.htm, 30 March 2011).
- Bailey, L. H. 1976. *Caesalpinia echinata*. Hortus Third: A Concise Dictionary of Plants Cultivated in the United States and Canada. Macmillan, New York, NY.
- Mabberley, D. J. 1997. Mabberley's Plant-Book: A Portable Dictionary of the Vascular Plants, 2nd ed. Cambridge University Press, New York, NY.
- Mejía, Elena and Buitrón, Ximena. 2008. Brazilwood (*Caesalpinia echinata*) in Brazil. NDF Workshop Case Studies, WG 1 – Trees,

Case Study 5. Comisión Nacional para el Conocimiento y Uso de la Biodiversidad, Delegación Tlalpan, Mexico.

(http://www.conabio.gob.mx/institucion/cooperacion_internacional/TallerNDF/Links-Documentos/Casos%20de%20Estudio/Trees/WG1%20CS5.pdf, 31 March 2011).

USDA, ARS, National Genetic Resources Program. 2010. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland (<http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?8286>, 31 March 2011).

Rymer, Russ. 2004. Saving the Music Tree. *Smithsonian* 35: 52-63.

Varty, N. 1998. *Caesalpinia echinata*. In: IUCN 2010. IUCN Red List of Threatened Species. Version 2010.4. (www.iucnredlist.org, 31 March 2011).