

Liquidambar styraciflua
today and the tertiary

I am sweetgum, a large tree native to eastern North America. I got this name because of my good-smelling gum. I also get called star-leaf gum, satin-walnut, alligator-tree, redgum, opossum-tree and sapgum. But fortunately I've only got one scientific name – *Liquidambar styraciflua*.

You can recognize me by my long-stemmed, star-shaped leaves which have five long-pointed, saw-toothed lobes. My brown bark is deeply furrowed into narrow scaly plates or ridges.

Still, people often think I am a maple tree. That's because my leaves are similar. If you look at the leaves on a maple tree, you'll see they are arranged in opposite pairs. My leaves appear alternately on the leaf shoots.

I also get mistaken for the London plane tree. We both have fruits that ripen to spiky brown globes and stay all winter. The difference is my fruit hang singly, whereas the London plane tree has fruit that tends to appear in bunches.

I really grow well in rich, moist soil in sun or part shade. But I have to tell you I don't do well in polluted areas or small areas which stop my roots from growing. And I am not drought tolerant. What people like about me is I am fast growing, attractive, and long-living. They also love the shade I give them. There's a special treat that comes in fall - my leaves turn purple, deep red, and orange. You will hear birds too because my seed balls attract them.

I like to be useful. My wood is dense and fine-grained. People use it for veneers and furniture. My gum is used in adhesives, perfumes and in incense. Also, you can peel my bark, scrape off the resin and have a nice piece of chewing gum. That's what everybody did in pioneer days. The gum was used medicinally then and tea was made from my leaves to clean a cut or wound.

But there is one use that I feel especially good about these days. I am planted for stream bank protection and for reclaiming sites disturbed by strip mining. This is working very well.

I am a flowering plant (anthophyta). Way back in time (the Tertiary, 65 to 2 million years ago), we flowering plants became more abundant than the nonflowering ones (coniferphyta). At that time there was the Bering Strait Landbridge and the North Atlantic Landbridge. The flowering plants developed large forests in the

north temperate region and became widely distributed. Sweetgum grew in these temperate forests along with magnolias, tulip trees and many other early plants.

But not everything stays the same. Near the end of the Tertiary period, the polar ice caps extended and the temperate forests died. The world entered a glacial period. The early plants died off from most of Europe and northern Asia. But in parts of China and North America, conditions remained warm enough for the original plants to survive.

Sweetgum was lucky because the mountains in North America run north-south and my ancestors could retreat before the advancing ice to warmer areas. It was the same for my ancestors in China, where the mountain ranges run north-south as well. But the Alps in Europe and the Himalayas in Asia blocked sweetgum from retreat. That's because they are transverse mountain ranges. Their icecaps prevented southward migration.

So today I have a sweetgum cousin living in southwest Asia, *Liquidambar orientalis* and two cousins in the temperate forests of eastern Asia, *Liquidambar formosana* and *L. acalycina*. I seem to have the most in common with my southwest Asia cousin. That is probably because we sweetgum in North America were in contact with this cousin over the North Pacific and North Atlantic perhaps as late as the Miocene (23 – 5 million years ago). There are some differences though. My southwest Asia cousin doesn't grow quite as tall as I do and its leaves are more rounded at the lobe tips.

My eastern Asia cousins have three lobed leaves. There is a good chance the separation from my Asian sweetgum cousins occurred much earlier. These cousins are in South China, South Korea and Taiwan. You'll find *L. acalycina* at higher elevations than *L. formosana*. But besides that, they are very similar.

Names change and theories change. I used to be in the witchhazel family (*Hamamelidaceae*). Recently I got changed to *Altingiaceae*. I am not sure why but it's got something to do with my DNA. There is one thing I know for sure though – I am planning to stick around.

Sources:

<http://www.jstor.org/pss/2419604> and <http://www.jstor.org/pss/2445172> - Margaret Hoey and Clifford Parks <http://www.amjbot.org/cgi/content/abstract/92/8/1234> - Stefanie Bond, Kathleen Pigg and Jun Wen <http://www.fs.fed.us/database/feis/plants/tree/liqsty/all.html>
The Gardener's Atlas – Dr. John Grimshaw; Trees & Shrubs for Pacific Northwest Gardens – Grant & Grant; Trees of North America – Phillips



Liquidambar styraciflua leaf



Liquidambar formosana leaf

These pictures are from VanDusen. The five lobed leaf photo is from the *Liquidambar styraciflua* at the end of the floating bridge in the Eastern North American Garden. The three lobed leaf photo is from *Liquidambar formosana* near the entrance to the Meditation Garden in the Sino Himalayan Garden.