

Tree of the Month, September 2014: Giant sequoia (*Sequoiadendron giganteum*)

Giant sequoias (*Sequoiadendron giganteum*) have become a common sight in temperate parks around the world; these fast-growing trees need a lot of space, so a park is a great place for them to be. When they are young, they are cone-shaped with a tapered trunk. They keep their conical shape for the first hundred years - after that they begin to lose their lower branches, exposing the tall reddish-brown trunk. Giant sequoias are quite resistant to insect damage and disease, as well as fire-resistant, so unless they are cut down or damaged in a storm, they can live for over 3000 years. Imagine how Vancouver's parks will look in a few thousand years with these enormous trees dominating the landscape.

Giant sequoias occur naturally in the western Sierra Nevada Mountains of California, from 1,830 to 2,439 meters up, where the winters are snowy, the summers are dry, and lightning strikes cause regular forest fires. Giant sequoias rely on fire to help them reproduce. The older trees have thick bark that helps them survive most forest fires, and the heat dries out their seed cones, releasing the seeds onto the newly cleared soil, full of nutritious wood ash. Giant sequoias are endangered; only a handful of groves of very old trees remain, mostly in national or state parks, and their population is on the decline. Fire suppression in these parks allows shrubs and small trees to grow in the understory, outcompeting giant sequoia seedlings. When the occasional fire does get away from firefighters, the over-accumulation of fuel in the understory, caused by fire suppression, allows it to burn hot enough to kill the older sequoias.

The oldest giant sequoias have thick cylindrical trunks and high, broken crowns, sometimes with damage from lightning. These are the largest trees in the world, in terms of combined height and width. When Europeans first stumbled across them in the mid-1800s in Calaveras Grove, California, they were astounded at the size of them. They cut one down to count the annual rings, a process that took five men three weeks, and found that the tree was 1300 years old, relatively young as giant sequoias go. Today, the largest known giant sequoia is General Sherman, at 84 meters tall, with a trunk 31 meters in circumference, and weighing an estimated 1.2 million kilograms. General Sherman grows in Sequoia National Park, which was established in 1890 to protect giant sequoias from logging and preserve them for future generations. General Sherman and other sequoias in the park are a huge tourist attraction, and now some of the trees may be suffering from soil compaction from so many people walking around their trunks.

Sequoiadendron giganteum is the only remaining species in the genus. Fossils of an extinct species, *Sequoiadendron chaneyi*, dating back over five million years, have been found in California and Nevada. *Sequoiadendron* have little awl-shaped leaves arranged spirally on the shoots. Their young cones are green, and turn brown with age. The cones release their tiny seeds when dried by heat, or when pulled apart by squirrels and birds.

At VanDusen we have a grove of *Sequoiadendron giganteum* that was planted in the 1970s. The trees are only in their late thirties, but are already about 25 meters tall.