

Please follow the black and white directional arrows and number signs. Not all of this tour is wheelchair accessible.

This tour will focus on trees at VanDusen that belong to the Pine Family, which has the greatest species diversity of any conifer family (220-250 in 11 genera). It is also the second largest in geographical range, reaching from the subarctic to the tropics, with the majority of its members growing in the northern hemisphere in temperate climates. Their often conical shape and drooping limbs helps them to shed snow and many may change their biochemistry to resist freezing. Seed dispersal is primarily by wind but sometimes by birds or squirrels. The Pine Family is further divided into four subfamilies which categorize the trees and shrubs according to their microscopic anatomy and the morphology of their cone, pollen, wood, seeds and leaves. Cedars, firs, hemlocks, larches, spruces and pines are part of this important plant family. We have examples of all of these in the Garden. As you take this tour, take time to compare the bark, needles, cones and shape of the trees we will visit.

To begin the tour, exit the Plaza by taking the ramp leading right and stay on the main path leading into the Eastern North America Garden. Turn left at the arrow and continue on the mulch paths to a patch of lawn. On the opposite side you will see **1 - the eastern white pine (*Pinus strobus*)**. Native to eastern North America, it is the provincial tree of Ontario and the state tree of Maine and Michigan. *Pinus strobus* needles grow in bundles of five. The Haudenosaunee (Iroquois) Confederacy has designated it the Tree of Peace, with the five needles representing the five nations united in the confederacy (the Mowhaks, Oneidas, Onondagas, Cayugas, and Senecas). This pine prefers well-drained soils in humid climates. It is fast growing and long-lived. It is the tallest tree in that part of the continent and can grow one meter annually during its first 45 years, after which its growth slows. Mature trees can live for about 250 years, with some recorded between 400-500 years old. *Strobus* means 'spinning top' which refers to the crown shape of the tree. They contain five times more vitamin C (by weight) than lemons and make a good herbal tea. Their straight-grained wood makes them ideal for paneling, floors and furniture. And when the British came to eastern North America, they claimed the largest of these trees as masts for their Royal Navy. So, because of extensive logging during the C18 to the early C20, only 1% of old-growth forests remain. In the C19, for example, 1/4 million white pines were sent to Chicago in one year! They are now grown in plantation forestry. They make good Christmas trees and wreaths because they hold their soft, leathery needles well.

Now turn to find **2 – tamarack (*Larix laricina*)**. The common name is Algonquian and means “wood used to make snowshoes”. Its range is from the northeastern US and Canada to the Northwest Territories and east of the Rockies. This tree is a shade-tolerant, deciduous conifer, grows in boreal forests and wet areas like bogs and muskegs and can withstand high soil acidity. However, flooding from beaver dams can kill it. Its best cone production occurs from age 50 to 150 years old, at intervals of three to six years. Because of its thin bark and shallow roots, it is susceptible to fire damage. It is also the first to invade burned areas. Like other slow-growing trees, its wood is high in resin, which makes it decay resistant and good for use as poles, posts, rail-road ties and in boat construction. Its bark contains tannins sometimes used in tanning leather. Due to insect damage by the larch sawfly and other disease problems, however, its commercial value is limited. It is used for pulp products, like the transparent windows of envelopes.

Walk to the gravel path, turn left and then right at the crossroads. As you walk along the lakeside, look left to see a **3 – Brewer's spruce (*Picea breweriana*)** named for the botanist and Yale professor of agriculture, William Henry Brewer. Native to western North America, primarily southwest Oregon and northwest California, this species was widespread from the late Mesozoic to mid Cenozoic era, but today is one of the rarest spruces on the continent. It grows very slowly and doesn't develop its pendulous foliage until it is about 2 meters tall. The oldest specimen is reported to be 900 years old. The species is considered 'Vulnerable' on the IUCN Red List of Threatened Species.

In references to spruces from the C16 and C17, the word 'spruce' means 'from Prussia' and 'smart'. The Prussian connection may stem from the fact that ship masts from that region were considered the best. And maybe the expression 'to spruce things up' stems from the idea of making things look smart!

Continue along the path bordering the lake, stop and look right to **4 – Italian stone pine (*Pinus pinea*)**, which can be seen leaning over the water's edge on the opposite stream bank. This pine is still cultivated in the Mediterranean after 6,000 years and is the source of pine nuts. The cones take 36 months to mature, which is longer than for other pines.

Cross over the stone bridge until you come to **5 - a group of true cedars**. In the background on your right is a **cedar of Lebanon (*Cedrus libani*)**. By the number sign is a **blue Atlas cedar (*Cedrus atlantica* syn. *C. libani* subsp. *atlantica*)**, exhibiting a more bluish tinge to its needles. True cedars are native to Asia Minor, the Himalayas, Cyprus and northern Africa and can live for thousands of years. Unfortunately, *Cedrus libani* and *C. atlantica* have been logged almost to extinction. King Solomon used *Cedrus libani* to build the

Temple of Jerusalem. Huge trunks became the temple beams and cedar planks paneled the walls to cover the stones. In Hebrew, the word for cedar means 'a strongly rooted tree'. Crusaders may have brought the cedar of Lebanon to Europe, but it was not recorded as growing in England until the late C17.

Now turn left at the crossroads and follow the path through the Southern Hemisphere Garden as it curves right, then cross the Zig-Zag Bridge. Continue to follow the path up the slight incline and past a bank of mugo pines. On the hillock to your left you will see a small **6 – ancient pine (*Pinus longaeva*)**, native to the high mountains of California, Nevada and Utah. It is a long-living species of bristlecone pine, with the oldest specimen recorded to be over 5,000 years. This tree was grown from seed and donated to the Garden by Roy Forster, VanDusen's first director. Walk to the entrance of the Grotto and look up at a tall **7 – ponderosa pine (*Pinus ponderosa*)**. Its delicate but long needles and airy silhouette contrast with the heavy, lumpy looking black basalt rocks, originating from False Creek. This is the only native BC pine with bundles of three needles. It is generally found in the southern interior of this province and can live up to 600 years. Unfortunately it has been seriously affected by the mountain pine beetle. On warm sunny days the bark of mature trees give off a vanilla-like scent. Its light wood is used in construction and furniture building.

Go through the Grotto to the Heather Garden. Here you will find several examples of the Pine Family. Keep right and admire the **dwarf eastern hemlock (*Tsuga canadensis* 'Curley')** a little way down on your left. Turn right at the end of the path, then left at the arrow and cross over the large stones bridging the stream banks. You will find yourself in **8 – a grove of Douglas-firs (*Pseudotsuga menziesii*)**. They are old fairway plantings about 100 years old, reminders of when the Shaughnessy Golf Club leased this land (1910-1960) from the Canadian Pacific Railroad. They are examples of coast Douglas-firs. Their common name is misleading, since they are not true firs. Ridged bark helps them to survive moderate surface forest fires. Their wood is used commercially in construction because of its weight-bearing capability. In fertile sites this tree can grow to a tremendous size, with BC records listing the tallest at 125 meters. This tree's common and botanical names honour both David Douglas, the Scottish plant collector who introduced it into cultivation in Britain, and Archibald Menzies, who sailed with Captain Vancouver and first documented the species.

Pass the Michael Prentice sculpture *Developing Form*, keep walking on the grass until you come to a break in the garden beds on your left and walk towards the main paved pathway. On your left you will see beautiful specimens of the **9 - Chihuahuan spruce (*Picea chihuahuana*)**. Turn left and keep on this path. On your right is a **10 – white spruce (*Picea glauca* 'Coerulea')**. *P. glauca* is native to forests throughout Canada, except for the west coast. It is used for lumber and pulp but its most interesting use was in the preparation of spruce beer to protect crews embarking on long sea voyages from scurvy. Next, note the unusually shaped **11 - snake-branch spruce (*Picea abies* 'Virgata')** on your left. This is a cultivar of the Norway spruce. Firs and spruces are closely related. *Picea abies* actually translates as 'spruce fir'. A helpful hint to distinguish between the two is to note that the needles of spruces are usually squarish while those of firs are flat. Also, the cones of spruces are pendulous, whereas those of firs grow upright. Keep on this path until you reach a four-way crossroad and a view of the Perennial Garden. Turn left until you come to a number of pines on your left. Note the interesting two-toned needles of the **12 – dragon's-eye pine (*Pinus densiflora* 'Oculus Draconis')** with its yellow-banded needles that are said to resemble a dragon's eye when viewed from above and the **13 - Japanese white pine (*Pinus parviflora* f. *glauca*)** with its stately shape, prized in Japanese gardens.

Keep going on the same path until you reach the **14 – Himalayan pine (*Pinus wallichiana*)**. Considered to be one of the most beautiful of pines, the typical habitats for this species are mountain screes and glacier fore-lands, such as those of the Himalayas. It is a commercial source of turpentine and is more resistant to air pollution than other conifers.

Now continue on this path that leads under a stone archway into the formal Rose Garden. Turn left, go down the steps, turn left again, follow the path to the intersection, and then turn right. Watch for **15 – Serbian spruce (*Picea omorika*)** on your right. This distinctive tree is native to the Drina River Valley, which cuts its way through Serbia, Bosnia and Herzegovina, where only small isolated populations remain. It is a fairly popular garden conifer, however, and is grown in European and North American gardens. At VanDusen we have at least eight specimens. Have a look at the way the needles are twisted on the branches to reveal a two-toned grey-green colour.

You are now close to the Plaza and can return to the Garden entrance by proceeding straight ahead or explore other areas of the Garden. See how many other examples of the Pine Family you can find!