

#1 – Garry Oak. As you step onto the Vandusen Botanical Garden Plaza, turn to your left. Here you will find a small hillock adorned with an assortment of flowering perennials and grasses. The tree towering over you is a #1 **Garry oak (*Quercus garryana*)**. During a visit to Vancouver in November 2009, the Duchess of Cornwall planted the smaller Garry oak to your left, commemorated by a bronze plaque. The Garry oak is native to British Columbia, Washington State, Oregon and Northern California.

THE POKÉMON CONNECTION: The Duchess is only one famous name attached to this species. Gary Oak, a Pokémon character, gets his name from this beautifully gnarled oak. Pokémon has a number of tree connections: Ash and Alder are also characters.

COLD, HARD FACTS: The tree is named after Nicholas Garry, deputy governor of the Hudson's Bay Company (1822–1835).

#2 - Ginkgo (*Ginkgo biloba*). Turn around and walk to the pond and a planting of cattails at the foot of the Plaza. In my opinion, the trees growing just beyond these cattails are some of the more interesting trees on the planet. The more we learn about the DNA of plants and animals, the more we learn about the connectedness of all living things on earth. The genus *Ginkgo* dates back millions of years and appears in fossil records almost everywhere. The last wild forests of these trees were part of the landscape in China up until a couple hundred years ago. All known ginkgoes on Earth are now domesticated plantings.

HISTORY: One famous incident shows how tough this tree is. At the end of WWII, the atomic bombs dropped on Nagasaki and Hiroshima killed just about everything animal or vegetable within a large radius. One of the survivors at Hiroshima's ground zero was a ginkgo. Still alive 73 years after the blast, it plays a role in memorial services for the victims every year on the date of the bombing.

CONNECTEDNESS: Like mammals, the ginkgo has two distinct sexes, male and female. This is not uncommon among trees, but what happens between male and female ginkgoes is more than just a little bit similar to human propagation at a microscopic level. In the spring, the male ginkgo produces a cloud of extremely fine pollen that can circulate in the air for months. The female produces two ovules at the end of a stalk. Waiting for the pollen, the female exudes a single drop of butyric acid at the tip of the ovule. When ginkgo pollen lands on the ovule, this acid opens the pollen's layers to release thousands of tiny "flagella" that give the sperm the ability to swim, like the sperm in animals. The sperm then wiggle their way into the ovule where germination takes place and the tree produces a nut.

BOTANICAL NOTE: A Japanese botanist Sakugoro Hirase discovered ginkgo sperm in 1896. The same pollination technique has been found in a number of other species, including ferns, cycads, mosses and algae.

Now turn to your left and walk along the edge of the pond. Cross the small bridge and continue straight ahead until you notice a path running alongside the display of grasses to your right. Follow this path, keeping the grasses on your right, and follow the arrow until you arrive at our example of **#3 - Weeping giant sequoia (*Sequoiadendron giganteum* 'Pendulum')**. These trees, members of the Cypress Family (*Cupressaceae*), are a favourite of landscapers. Some neighbourhoods appear to have a weeping sequoia on virtually every lawn. Compare this odd spray of branches and needles with the large display of *Sequoiadendron giganteum* in the Giant Redwood grove. This tree is the same species, it just looks unrelated.

ODDBALLS: The nature of nature is to produce oddballs, a quirk that sparks evolutionary differences that the plant requires to survive changes in climate, food supply or predators. This particular oddball originated as a seedling at Lalande Nursery in Nantes, a seaport in France, in 1863. In 1867, a French botanist named Élie-Abel Carrière gave it the cultivar name 'Pendulum'. Unlike conventional giant

sequoias, which achieve their stately shape and height with quick growth, no two trees of 'Pendulum' have the same shape, but produce a narrow, twisting, upright tree with cascading branches.

Follow the path through the Black Garden. Arrows will direct you down across the zigzag bridge and up into the Southern Hemisphere Garden. Continue along this path to the stand of #4 - **Giant sequoias** (*Sequoiadendron giganteum*), which can grow over 300 feet tall, have trunks over 30 feet across and live 3500 years or more, while 'Pendulum' (which we just visited) grows to only about 25 feet in height. Prior to the last Ice Age, these giants were common all along the Pacific Coast, growing as far north as Alaska. Ten thousand years ago, the Ice Age pushed these trees deep into what we now call California, restricting their range to the California coast.

HUG ONE: Feel the bark. These trees evolved to survive fire. The bark can be as thick as 36 inches on the largest trees.

PICK UP A CONE: The dense cones (upwards of 20,000 on a single tree) need heat from forest fires to dry and crack them open before they can germinate. Sequoiadendrons are fast-growing trees; these specimens are only 50 years old and have already outgrown Douglas-firs planted at the same time.

HISTORY: Giant sequoias are at the root of conservation programs everywhere. When naturalist John Muir saw 3500-year-old trees being felled to make fence posts in California, he took his outrage to US President Teddy Roosevelt to ask that something be done to conserve possibly the greatest trees on earth. From that meeting some of the first national parks were created and natural features, plants and animal habitat were designated for protective status.

Now turn around. You will see a small path leading into a thicket of bamboo. As you enter the path you will pass a large redwood on your left the # 5 - **coast redwood** (*Sequoia sempervirens*), a relative of the giant sequoia that thrives on the rainy coast of northern California.

A few steps further on this path, to your right, is an example of #6 - **dawn redwood** (*Metasequoia glyptostroboides*). This tree is a "living fossil." In 1941, Japanese paleobotanist Shigeru Miki described *Metasequoia* from fossils dating back 150 million years. Fossil of these trees occur across the Northern Hemisphere, including Ellesmere Island in northern Canada and in the badlands of South Dakota. In 1943, Chinese forestry professor Zhan Wang encountered a living example of the tree, part of a shrine and known to locals as Shui-sa, or "water fir", in Lichuan County, Hubei Province. Eventually the tree was identified as *Metasequoia* and seeds were collected and shared by botanical gardens worldwide. At VanDusen, our largest collection of these trees are in the Meconopsis Dell of our Sino-Himalayan Garden.

This concludes our walk. VanDusen has a rich collection of trees, which are ready for you to admire and learn about. Enjoy exploring the Garden to see how these trees add to the design and botanical significance of VanDusen.