



H.E. Hart Arboretum

Tree Trail

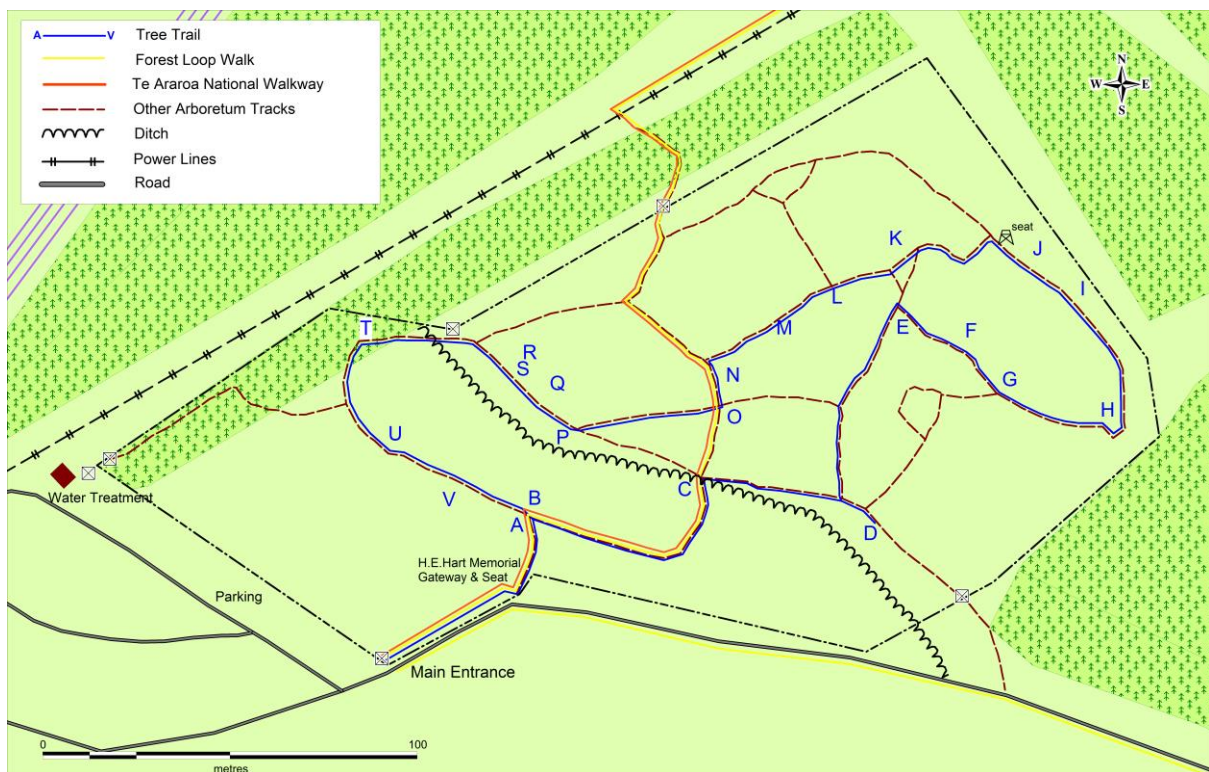
Follow the blue arrows ► to learn about some of the trees in this arboretum (tree collection). It was planted to learn about species that might do well in New Zealand. Most of the trees are conifers (cone-bearing).

The 'Tree Trail' takes about 1 hour.

Watch your step - there are some steep and uneven sections of track.

The steep areas of the trail are between Trees H & K.

Please beware of falling cones and branches, especially in windy weather.



Western Hemlock, *Tsuga heterophylla*

Native range: West coast of North America from California to Alaska

Conservation status in native range: Lower Risk - Least Concern

- 🌲 Lacy foliage and droopy branches.
- 🌲 Known to live up to 1,200 years.
- 🌲 American Indian people used parts for medicine, food and as a dye.

- 🌲 Used to manufacture paper and plastics.
- 🌲 Named hemlock because its crushed foliage smells like poison hemlock.



Distinctive droopy branches.

Photo by: Timothy D. Ives



Radiata/Monterey/Insignis Pine, *Pinus radiata*

Native range: Three small areas in California & two islands off the west coast of Mexico

Conservation status in native range: Threatened – Endangered

- ❊ Radiata is the most planted pine in the world and makes up 89% of NZ plantation forest.
- ❊ It grows fast, up to 60m tall, and the timber is versatile.
- ❊ The wild ancestor has knotty wood and only grows 15-30m.
- ❊ Threatened by fungus in native range.
- ❊ Monarch butterflies spend winter in one native grove in California.



Radiata Pine needles grow in groups of three.

Photo by: Tony Willis



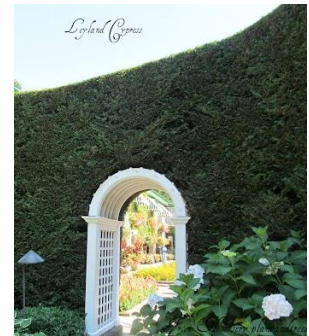
Leyland Cypress, *×Hesperotropsis leylandii*

Native range: Hybrid – not found in the wild

Conservation status in native range: Hybrid - not relevant

Tree Map # 81

- ❊ Leyland Cypress is the offspring of two different trees - the Macrocarpa (Tree 'J') from California and the Nootka Cypress from Alaska - planted together at Leighton Hall in Wales.
- ❊ The trees first naturally cross-pollinated in 1888 and have again about 20 times since.
- ❊ The '×' in the scientific name indicates the plant is a hybrid.
- ❊ The hybrid has been promoted in England for hedging from 1925, but grows so large a 2003 UK law now allows local authorities to require hedges to be trimmed.



Leyland Cypress hedge. Trees purchased from nurseries are cuttings from the original hybrids.

Photo by: Frost Plant Nursery, Vancouver



Japanese Red Pine, *Pinus densiflora*

Native range: Japan, Korea, north eastern China and southeast Russia

Conservation status in native range: Lower Risk - Least Concern

Tree Map # 68

- ❊ Valued ornamental and bonsai tree.
- ❊ Has red bark (particularly new bark towards the top) and some specimens have a unique multi-trunked form.
- ❊ Strong, light, rot-resistant wood used to build Japanese temples and bridges in the past.
- ❊ Still valued as a hot-burning fuel for pottery kilns.



Young bark is red.

Photo by: Lisa on lh2treeid.blogspot.co.nz/2010_03_01



Western/Pacific/Giant Redcedar, *Thuja plicata*

Native range: Western North America

Conservation status in native range: Lower Risk - Least Concern

Tree Map # 27

- ❊ One tree has been calculated at 1,460 years old.
- ❊ Often forms multiple trunks and buttressed roots (flares at the base for support).
- ❊ American Indians used the tree extensively, e.g. roots for baskets, bark for clothing and parts for medicine.
- ❊ Natural oils and aroma discourages insect larvae so the wood is popular for closets and chests.
- ❊ Readily reproduces in dense shade (many young seedlings grow in this area and elsewhere in the arboretum).
- ❊ Resists rotting up to 100 years after being felled.



The largest living specimen: the Quinalt Lake Redcedar in Washing USA (55m tall with 6m trunk diameter).

Photo by: Wasegmund



Tree Map # 19

Korean Stone Pine, *Pinus koraiensis*

Native range: Korea, Manchuria, Mongolia, far east Russia, Japan

Conservation status in native range: Lower Risk - Least Concern

- Provides the most widely traded edible pine nut in the world. Seeds (nuts) are relatively easy to extract, although the cones are sticky.
- An Italian Stone Pine (*Pinus pinea*), also widely cultivated for its edible nuts, can be seen on the right hand side of the trail between Trees 'G' and 'H'.
- Korean Pine is hardy to -50°C and also valued for its decay-resistant timber.
- Korean Pine forest logging was banned in Russia in 2010 because the forests are the habitat of the endangered Siberian tiger.
- Used in afforestation in China, but total area of occupancy is still falling.



Photo by: www.hardfruitrees.ca



Photo by: Wikipedia (GFDL)

Extracting seeds (nuts) from a cone. Shelled and unshelled nuts.



Tree Map # 29

Coulter/Big Cone Pine, *Pinus coulteri*

Native range: Coastal mountains of Southern California and northern Baja California (Mexico), isolated groves north around San Francisco

Conservation status in native range: Near Threatened

- Produces the largest, heaviest cones of any pine tree. Similar to a pineapple, they weigh 2-5kg when green.
- Cones can hang on the trees for several years, then open on the tree and eject seeds explosively over several weeks.
- Decreasing in number in its native habitat with drought and bark beetle cited as two threats.
- Named after Thomas Coulter, an Irish botanist and explorer, who collected plants in Mexico in the early 1800s.



Photo by: TheRealDeJourTour

Coulter Pine produces the largest of all pine cones.



Tree Map # 12

Aleppo Pine, *Pinus halepensis*

Native range: Mediterranean from Portugal to Asia

Conservation status in native range: Lower Risk – Least Concern

- Widely planted internationally for wartime commemorative plantings because it is closely related to the Turkish Pine (*Pinus brutia*), of which a solitary specimen was a prominent landmark during the 1915 battle on the Gallipoli Peninsular known as the Battle of Lone Pine. ANZAC soldiers took cones and planted them back home as living memorials.
- The tree's common name comes from the city of Aleppo in Syria.
- Some Mediterranean cultures use parts in food – its resin to flavour the Greek wine Retsina and the pine nuts are used in a pudding in Tunisia.
- Paul Cézanne depicted an Aleppo Pine growing in his garden in his painting *The Big Trees*.



Photo by: Gary Blakeley

Lone Pine Cemetery, Gallipoli



Tree Map # 5

Lodgepole Pine, *Pinus contorta* var. *latifolia*

Native range: Western North America

Conservation status in native range: Lower Risk – Least Concern

- Named for its use as structural poles in Native American tipis. Nomadic cultures transported the long, straight and light-weight trunks by horse.
- The scientific name *contorta* comes from a shrubby coastal sub-species that has twisted needles and a twisted form.
- Forest fires are needed for a healthy young population, with the heat opening cones to release the seeds. Without fire, stands become dense and trees that can't compete die standing.
- Pinus contorta* is a serious invasive species in New Zealand so can no longer be sold.



Photo by: www.col.orst.edu

Dense stands of Lodgepole Pine.



Tree Map # 4

Macrocarpa/Monterey Cypress, *Hesperocyparis (Cupressus) macrocarpa*

Native range: Two small populations on the central coast of California
Conservation status in native range: Threatened – Vulnerable

- Macrocarpa is threatened in its native range (two very limited, protected coastal areas in California), but has been widely planted in other countries.
- Their natural habitat has cool, moist summers with regular sea fog.
- In good conditions trees can grow to 40m tall with 3m trunk diameters.
- Widely planted on New Zealand farms, usually as a shelterbelt, but the foliage is slightly toxic to livestock and can cause miscarriages in cattle.
- The species has many ornamental forms and is a minor timber species in New Zealand, but most well-known for providing quick-drying, easy to split, clean-burning firewood.

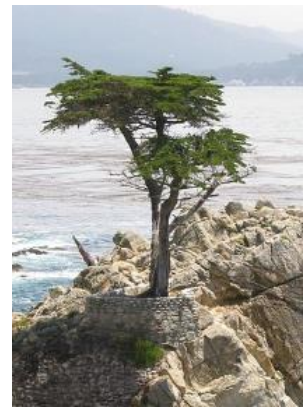


Photo by: Richard Wang

Macrocarpa in its coastal Californian native habitat.



Tree Map # 17

European Silver Fir, *Abies alba*

Native range: Mountains from northern France to southern Italy and into the Balkans

Conservation status in native range: Lower Risk – Least Concern

- Named 'alba' for its white wood.
- Used for pulpwood and construction in Europe. In addition, like many pine species, extracted resin is used to make turpentine and varnishes, plus medicinal and cosmetic products like perfume, air freshener, bath oils and cough remedies.
- The species grows up to 60m tall with a 1.5m trunk diameter. It occurs on mountains mainly over 500m.
- A popular Christmas tree in the past (probably the tree in Hans Christian Anderson's fairy tale *The Little Fir Tree*).
- Note the patterns on the trunks from shedding its lower branches.



Photo by: conifersaroundtheworld.com

New cones forming.



Tree Map # 26

Douglas-fir, Oregon Pine, Douglas Spruce, *Pseudotsuga menziesii* var. *menziesii*

Native range: Western North America from northern Mexico up to southern Canada, with coast and interior varieties

Conservation status in native range: Lower Risk – Least Concern

- Douglas-firs are not true firs (genus *Abies*), which is indicated by hyphenating the name.
- Their scientific name *Pseudotsuga* means 'false hemlock' referring to similarities with the western hemlock (Tree 'A').
- Seedlings need sunlight, so benefit from logging and wildfire to compete with the shade-tolerant western hemlock (Tree 'A') and western redcedar (Tree 'E').
- 'Tree L' is the coastal variety. It is the second-tallest conifer in the world after coast redwood (Tree 'S'), reaching 100–120m and living 500-1000+ years.
- You can see examples of the variety found in inland North America, known as the Blue or Rocky Mountain Douglas-fir (*Pseudotsuga menziesii* var. *glauca*) opposite Tree 'N'.
- Douglas-fir is the most common plantation timber in North America because of its quick growth and useful wood that withstands high loads.
- It has naturalised in some countries where it has been introduced, including in New Zealand, where along with *Pinus contorta* (Tree 'I') and *Pinus radiata* (Tree 'B'), it is considered invasive (a wilding pine).



Photo by: Wikipedia (MPT)

Coast Douglas-fir cone.



Tree Map # 34

Giant Sequoia/Redwood, Sierra Redwood, Wellingtonia, *Sequoiadendron giganteum*

Native range: Inland California in western Sierra Nevada mountains

Conservation status in native range: Threatened – Endangered



Photo by: www.redwoodhikes.com

The largest living specimen: nicknamed 'General Sherman' growing in Sequoia National Park, California (1,225 tonnes, stands 95m tall, 30m around its base). The oldest on ring count is 3,500 years.

- Can grow to be the largest living organisms on earth. There are taller trees: Douglas-fir (Tree 'L') and Coast redwood (Tree 'S' - which is closely related, note the bark); and trees with thicker trunks. But giant sequoias are famed for their total trunk volume.
- Mature trees lose their lower branches and form a rounded crown towards the top. These specimens are still young. When you return to the car park, note the even younger specimen on the corner opposite the entrance gate with its very symmetrical form with branches to the ground.
- In their native habitat there are just 68 groves on 144 km² of land. There are too few young trees to maintain the current number of old ones.
- Seeds only grow in full sun, mineral-rich soils, free from competing vegetation, so wildfires are needed, but fires have been suppressed since European settlement.
- Wood from mature giant redwoods is highly resistant to decay, but is fibrous and brittle, so no good for construction. From the 1880s to 1920s many groves were logged, but trees would shatter on hitting the ground and any wood that made it to the mill usually ended up as small items like fence posts or even matchsticks!
- The tree's scientific name honours Sequoyah (c.1770–1843), who developed a written language for the Cherokee becoming a cultural hero.



Tree Map # 54

Red/Silvertip Fir, *Abies magnifica*

Native range: Mountains of southwest Oregon and California, Western North America

Conservation status in native range: Lower Risk – Least Concern



Photo by: xeranthemum @ Flickr

Abies magnifica grow at high altitudes in the mountains. Old trees have red bark.

- The name red fir derives from the dark reddish-brown bark colour of old trees. Young trees have smooth grey bark.
- Records reveal the trees live to 500 years and more.
- Discovered by English plant collector William Lobb in 1849-53, having been overlooked by the plant collector David Douglas (after which the Douglas-fir is named).
- The wood is used for general structural purposes and paper. Young plants make popular Christmas trees.
- It typically grows 40-60m tall with a trunk diameter up to 2m. In its native range it grows at high elevations (1,400–2,700m).
- A young, perfectly formed specimen in this Arboretum is planted along the fence line up from the water shed.



Serbian Spruce, *Picea omorika*

Native range: Four distinct locations in western Serbia and eastern Bosnia & Herzegovina

Conservation status in native range: Threatened – Endangered



Photo by: Wikipedia (Goldfinger)

The slender form of the Serbian Spruce.

- Has a total natural range of only about 60 ha at 800–1,600m altitude, which is continuing to decline due to forest clearing, wildfires and its own struggle to compete with other trees.
- Its downward sweeping branches give the tree its elegant, slender form.
- The word 'omorika' once meant slenderness in Bosnian and Serbian languages, but now simply means 'Serbian Spruce'.
- Outside its native range it is valued as an ornamental and for its ability to grow in a wide range of soil types.



Tree Map #123

European/Beech, *Fagus sylvatica*

Native range: Throughout western Europe from northwest Turkey to southern England

Conservation status in native range: Not on IUCN Red List of Threatened Species

- In contrast to most trees in this Arboretum, the European beech is not a conifer, but instead a broadleaf tree.
- It is deciduous (loses its leaves in winter). It grows up to 50m tall with a 3m trunk diameter, often living 150-200 years and sometimes up to 300.
- They like a humid atmosphere with rain throughout the year. A beech forest is dark so few other plants can grow there.
- Beech wood is used for many objects and furniture, but not heavy structural support and it rots easily if left outdoors untreated. It makes good firewood.
- The nuts are food for birds and rodents and in the past humans, although they are slightly toxic if eaten in quantity. Parts of the tree have medicinal uses, eg. to manage symptoms related to varicose veins (inflammation, pain, dryness).
- New Zealand has five beech varieties and all are evergreen (not deciduous). In 1850 they were given the scientific name *Nothofagus*, meaning false beech. Two examples are planted to the right of the gate on the trail ahead. The Mountain beech (closest to the gate), is the smallest variety (up to 15m tall) and often forms the treeline at high altitudes. The Red beech is the largest variety (up to 30m tall) and prefers fertile soils in foothills and valleys.



Photo by: Malene Thyssen

Beech forests are dark.



Tree Map # 70

Patula/Spreading-leaved/Mexican Weeping Pine, *Pinus patula*

Native range: Inland highlands of eastern Mexico

Conservation status in native range: Lower Risk – Least Concern

- Naturally grows 1,800–2,700m above sea level, usually 12-20m high and with a trunk diameter up to 1.2m. Where the conditions are favourable it can grow up to 50m.
- Needles are grey-green to yellow-green, 15-25cm long. If space allows the tree forms a spreading crown.
- Young bark is red-orange while mature bark is grey-brown. The timber is pale-pink to salmon and smells of aniseed when freshly cut.
- It has been introduced in many countries for its timber, to provide shade, shelter or erosion control and as an ornamental.
- Reproduces rapidly in grass and scrublands and has become invasive in Africa and considered naturalised-invasive in New Zealand. It does not tolerate long periods of temperatures below zero and frost damage can result in multiple trunks.



Photo by: Haldan @ Flickr

Long drooping needles and male pollen cones.



Tree Map # 69

Caucasian/Nordmann Fir, *Abies nordmanniana*

Native range: Caucasus Mountains between the Black and Caspian Seas, with specimens in Georgia, Russia, Armenia, Turkey and Iran

Conservation status in native range: Lower Risk – Least Concern

- A very common Christmas tree because its needles are soft and do not drop readily when the tree dries out.
- Occurs naturally on mountains (900–2,200m altitude), growing up to 60m tall and with a 2m trunk diameter.
- Discovered by Alexander von Nordmann, a Finnish botanist.
- The tree tolerates shade, but does not like atmospheric pollution.



Photo by: Hinrich

Caucasian fir grown as Christmas trees.



Tree Map #119

Coast/California Redwood, *Sequoia sempervirens*

Native range: A narrow strip of land along the Pacific coast of North America from California up to southwest Oregon

Conservation status in native range: Threatened – Endangered



US 199 Redwood Highway.

Photo by: Acroterion

- 🌲 *Sempervirens* means everlasting, referring to this tree's long lifespan. The oldest tree calculated is about 2,200 years old.
- 🌲 Closely related to the Giant Sequoia (Tree 'M'). The name redwood comes from the colour of its bark.
- 🌲 Can grow to be the tallest tree on earth. The three current tallest are in California, named after mythological Greek characters linked to the Sun – Hyperion, Helios and Icarus. Hyperion was 115.61m (without roots) with a 7.9m trunk diameter in 2006.
- 🌲 Redwoods can coppice (make new shoots from stumps and fallen stems).
- 🌲 Redwoods survive fire to attain their great heights and ages. Their bark is thick (up to 30cm), soft and fibrous, tannin-rich and lacking resin, and foliage grows high above ground.
- 🌲 They grow best in valleys and gullies where ground water and fog are prevalent. They like New Zealand's even rainfall year-round.
- 🌲 Before commercial logging from the 1850s, the trees were common in their native habitat, but an estimated 95% have been cut down. Their wood is valued for its fire and decay-resistance and appearance.



Silver/Silverleaf/White Poplar, *Populus alba*

Native range: Throughout central Europe to central Asia and north west Africa

Conservation status in native range: Not on IUCN Red List of Threatened Species



Diamond patterns on trunks.

Photo by: Wikipedia

- 🌲 This is another example of a broadleaf tree (i.e. not a conifer).
- 🌲 The white poplar grows in damp sites with plenty of light. It is deciduous, growing 16-27m tall with a trunk diameter up to 2m.
- 🌲 The bark is smooth, greenish-white to greyish-white with diamond-shaped dark marks, especially noticeable on young trees.
- 🌲 The flowers are catkins - small flowers clustered along long drooping stems (up to 8cm long), with male and female catkins on separate trees.
- 🌲 As well as multiplying by pollination, it also propagates by root suckers, which can appear 20-30m away from the original tree, forming extensive clonal colonies and becoming invasive in the right conditions.
- 🌲 The white poplar was often referred to in Greek mythology and said to be used as a crown by Hercules, becoming a symbol of victory after battle.
- 🌲 It is closely related to the Aspen, of which you can see one variety on the 'Aspen Walk' located opposite the Fire Station in the village.



Dahurian Larch, *Larix gmelinii*

Native range: In the boreal forests of Russia, Canada and Scandinavia

Conservation status in native range: Not on IUCN Red List of Threatened Species



Photo by: Anatoly V. Lozhkin (Russian Academy of Sciences)

Dahurian larch forest (northeast Siberia) in early autumn.

Larches are conifers, but they are different to other conifers in that they are deciduous (lose their leaves). If you are visiting the arboretum in autumn or winter you will notice many trees that either have yellow or no leaves (needles). They can look dead, but in fact they are larches that lose their leaves.

There are several varieties of larch in this arboretum. The most common is the larger European Larch (*Larix decidua*) – e.g. opposite Trees ‘A’ & ‘B’ ahead and by the main entrance.

The timber is used for construction and wood fibre.

Larix gmelinii is unique in that it is the northern-most tree in the world and the most cold-hardy, surviving temperatures below -70°C. It can be long-lived with one tree in Russia recorded as 919 years old.

Larix gmelinii form enormous forests in the eastern Siberian taiga, growing at 50-1,200m altitude on both boggy and well-drained soils, including on the shallow soils above permafrost. It doesn't grow easily in areas with mild winters because it has adapted to a long period of winter rest. In its native region, daily minimum temperatures above freezing do not occur until summer, which is brief.



Mexican White Pine, *Pinus ayacahuite*

Native range: Mountains of southern Mexico and in western Central America

Conservation status in native range: Lower Risk – Least Concern



Photo by: Petr Voboril

The Mexican White Pine has some of the longest cones.

Around the world, Mexican White Pine is grown as an ornamental tree in parks for its attractive foliage and very long cones - among the longest that grow in temperate areas (you might see some on the tree and on the ground).

Pinus ayacahuite can survive temperatures down to -30°C.

The wood is also used for making paper and general indoor construction.

The generic use of the name ‘White Pine’ is given to pines that have particular cone, seed and leaf characteristics. The species is also referred to as a ‘soft-cone pine’ - you can understand why when you pick up a cone.

We hope you enjoyed your walk.

If you explore the other paths in the arboretum you will see many more interesting trees.

**Free copies of this brochure can be downloaded from
www.lakecoleridgelodge.co.nz/activities/walking-hikes**

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This ‘Tree Trail’ was developed in 2014 thanks to funding from the Selwyn Heritage Fund and Trustpower, and voluntary contributions from Horticulturalist Jan Newby, Lake Coleridge Lodge, members of the Central Canterbury Farm Forestry Association (CCFFA) Arboretum Trust and others. Lake Coleridge Lodge holds more detailed information about the arboretum.