

Vanishing Species: Endangered Plants and Ecosystems Winter 2009/10

Self-guided Tour by the Sunday Guides VanDusen Botanical Garden

Of about 270,000 plant species in the world, one in eight is threatened with extinction according to Botanic Gardens Conservation International (BGCI). Since 1948 a global inventory, the IUCN Red List of Threatened Species, has been kept by the International Union for the Conservation of Nature and Natural Resources (IUCN). Human-made threats to plants in the wild include habitat loss, overexploitation, diseases, and climate change.

To sample endangered species and ecosystems represented at VanDusen, follow the numbers and directional arrow signs, starting in the Western North America collection.

Leave the deck via the ramp and stop at 1- **ponderosa pine (*Pinus ponderosa*)**. In the interior of BC ponderosa pine ecosystems are under siege by exploding populations of native pine beetles due to warming winters. A resident of these forests, the non-migratory white-headed woodpecker, is listed as endangered in Canada under SARA (Species at Risk Act). Downslope just to the left, notice **Brewer's spruce (*Picea breweriana*)** whose rope-like weeping branchlets hang in a fringe-like curtain. This slow-growing conifer from the Siskiyou Mountains of California and Oregon is red listed as Near Threatened by IUCN.

Go down the paved walkway toward the lake. Turn right and cross the stone bridge to 2- **California wax myrtle (*Myrica californica*)** native from BC to California. This evergreen shrub grows in BC only between Tofino and Uclulet on Vancouver Island. Its status in BC is "blue" or "vulnerable" according to the **British Columbia Conservation Data Centre (CDC)**.



A bit further on the paved path go left on the gravel path to 3- **maidenhair tree (*Ginkgo biloba*)**, the last surviving species of an ancient genus of trees that dates back 200 million years to the Jurassic period. Fossils of ginkgo have been found in BC, Alberta and Washington. Commonly cultivated but rare in the wild, just in a small area of eastern China, it is red listed as Endangered.

Crossing the lawn take the path into the woods and turn right to 4- **coast redwood (*Sequoia sempervirens*)**. Feel its fibrous thick bark and look up to appreciate the height of this young tree. Given centuries or millennia it could tower to 115.5 M (379.1 ft) tall, its current world record. Valued for pest resistant wood and logged continuously since 1820, its IUCN Red List status is Vulnerable and its population is decreasing.

Follow the path to the paved walkway, turn left and take the right fork. Where the lawn starts, look right for 5- **butternut (*Juglans cinerea*)**, a member of the walnut family, native from New Brunswick to Arkansas. Endangered in Canada, it is declining and disappearing through much of its range due to butternut canker, a fungus disease.

Continue on the paved path. Just before the floating bridge turn right and take the path into the woods, being careful not to trip on the knobby roots of deciduous **bald cypress (*Taxodium distichum*)** whose amber foliage covers the ground in fall.

Go around the pond to **6- dawn redwood (*Metasequoia glyptostroboides*)**. An ancient species once widespread in the northern hemisphere, it was identified as a fossil in 1941 and found in China as a living tree in the early 1940s. Now propagated and planted throughout the world, it is red listed as Critically Endangered with only a few wild specimens on restricted sites in China. You can identify this deciduous conifer in winter by the opposite arrangement of the buds on the twigs.

Go around the pond and turn right onto the gravel walkway through the bamboos and redwoods. Emerging from this “tunnel of green” turn left and look left to **7- Japanese cedar (*Cryptomeria japonica*)**, a tree listed as Near Threatened in south China and Japan but with many cultivars in gardens, including the leaning tree nearer the path. Across the pavement is a grove of tall (but young) **giant sequoias (*Sequoiadendron gigantea*)**, status Vulnerable, members of a group formerly called the redwood family (Taxodiaceae), now classified in the cypress family (Cupressaceae).

Further up ahead is **8- Cyprus cedar (*Cedrus libani* ssp. *brevifolia* ‘Trevoron’)**, a cultivar of a subspecies of cedar of Lebanon only found on Mt. Triphlos on Cyprus. The green cedar of Lebanon (*Cedrus libani*) behind it toward the lake is the tree on the flag of Lebanon where conservation of old growth trees has begun.

Continue along the paved path to the Southern Hemisphere garden to see two species of the monkey puzzle family (Araucariaceae). Over 70% of the species of this family of conifers are endangered. Few would be hardy in our winters but the strange and prickly **9- monkey puzzle tree (*Araucaria araucana*)** has long been popular in Vancouver gardens. Illegal logging is a continuing threat in its native Chile and SW Argentina. Perhaps under winter shelter by now is a **10- Wollemi pine (*Wollemia nobilis*)** endemic to remote, isolated valleys in the Blue Mountains of Australia. Discovered in 1994, its propagation and worldwide distribution for research and garden display is part of its conservation strategy.

Head downhill and cross the zig-zag bridge to **11- Umbrella pine (*Sciadopitys verticillata*)**, an ancient and unique conifer endemic to Japan, used as timber for centuries, listed as Vulnerable, and the sole species of the family Sciadopityaceae. Conifers are globally under threat. According to IUCN about 45% of conifers are of conservation concern and nearly 34% are threatened with extinction in the wild.

Continue up to the left and turn right to go through the grotto to the Heather Garden. Look up on the hill to see **12- Bishop pine (*Pinus muricata*)** with many old cones encircling its branches. This pine is limited to the coast and offshore islands of California and N. Baja and is under attack by a fungal disease. You may go around and up the hill for a closer look.

Go on through the Heather Garden, cross the bridge, turn right and proceed to **13- Chihuahuan spruce (*Picea chihuahuana*)**. Poor regeneration and small numbers on about 25 sites in its native Mexico (Chihuahua and Durango) give it Endangered status.

Continue to the next intersection to **14- western red cedar (*Thuja plicata*)**. This vital BC forest tree is being stressed by our warmer drier summers, especially on BC’s west coast.

At this junction go left to enter the Sino Himalayan Garden. On your left, just before the next crossroads is **15- gutta-percha tree (*Eucommia ulmoides*)**, also the sole species in its family. Red listed as Near Threatened and ranging widely over China in scattered populations, its wild range is difficult to pinpoint because of long-time cultivation for its medicinal bark and the latex in its leaves and bark that yield a type of rubber.

Go right at the crossroads, uphill and left at the corner to **16- coffin tree (*Taiwania cryptomerioides*)**, Asia's largest tree and one of the Cypress family. Listed as Vulnerable, it is slow growing and regenerates poorly with only two seeds per cone. Its small populations, protected in some areas, are scattered from Taiwan to Vietnam (where it was discovered in 2001). It is also grown on plantations in Taiwan. This specimen, grown from wild seed collected in Taiwan, came to VanDusen from the UBC Botanical Garden in 2009. This is an example of *ex situ* conservation, or propagation away from native habitat. Propagation from seed collected in the wild helps conserve genetic diversity.

Turn around, pass the weeping ginkgo and, keeping the stream on your left, look on the right for **17- Zen's magnolia (*Magnolia zenii*)**, one of several magnolias listed as Critically Endangered in China and recorded in 1998 as a single population of 18 trees on Mt. Baohua, Jiangsua, with no natural regeneration observed. **IUCN Red List of Magnoliaeae** notes that over half the species in the magnolia family are threatened with extinction in the wild.

Retrace your steps back to the crossroads and go straight ahead to the bench on the right. Look right for **19- Wilson's magnolia (*Magnolia wilsonii*)** with its fuzzy flower buds. Its scattered wild populations in western China are threatened by forest clearing and harvesting of bark for medicinal use.

To the left of the bench is **20- Dove tree (*Davidia involucreta* var. *vilmoriniana*)** and *Davidia involucreta* is just behind it. Dove tree's popularity for gardens has contributed to its decline in the wild as the seeds have been overcollected. BCGI in partnership with a Chinese university is working to conserve *Davidia*.

Global efforts to conserve species and ecosystems are ongoing but our tour ends here. To return to the garden entrance go left at the intersection and head downhill. To learn more about vanishing species visit the VanDusen Library or look at the websites below.

Websites: IUCN Redlist: www.iucn.org/ Canada's SARA registry: www.sararegistry.gc.ca.
BC's CDC: www.env.gov.bc.ca/atrisk/ BCGI: www.bgci.org