

Cowichan Lake Research Station

Stop 8: The lesser of two weevils

Each row of spruce trees is from one region, showing natural differences in populations. The white pine weevil attacks the leader, causing it to curl and die. Trees develop a shrubby form with poor wood quality after many weevil attacks. Some areas have naturally resistant Sitka spruce - some rows have much less attack with taller and straighter trees. Research done here and around BC has yielded seed from weevil-resistant trees that is available for reforestation.

Continue along the road, bear right after the cedar hedges, then walk along the road between the beds of seedlings. Sign is on your left.

Stop 9: Oh deer

Because of widespread reforestation problems caused by deer browse, there has been a research program established to select naturally occurring western redcedar with leaf chemicals that deter browsing. Young trees with high levels of these chemicals have the same height growth as other redcedar trees. By testing and breeding these trees, foresters will soon have the opportunity to plant western redcedar without expensive protection and fill planting.

Next sign is 10 m further along.

Stop 10: Hedging our bets

In the wild, yellow-cedar tends to have very low seed production. Most reforestation of this species in BC uses rooted cuttings, which are produced from these hedges. They are regularly pruned to keep foliage juvenile and vigorous to make the best cuttings. About 5000 individuals are in this hedge orchard.

Go back out the gate, close it behind you. Return to the kiosk, which is the end of the tour.

We hope you enjoyed your visit.

For more information on forestry research in BC, please visit our web pages.

Climate

The Cowichan Lake Research Station has a mild coastal climate. It is substantially wetter than the east coast of Vancouver Island around Duncan, but drier and warmer in the summer than the west coast near Tofino. It is in the Coastal Western Hemlock zone, which means that, over the long term, forests tend to naturally develop into hemlock-dominated stands. This reflects the moist climate of the temperate rainforest where fires are uncommon and most disturbance is caused by windstorms or disease that affect small patches or single trees.

Forest

The forest at the station is a mixture of broadleaf and conifer trees. The most common is Douglas-fir. Others include red alder, bigleaf maple, western hemlock, grand fir, and western redcedar. The forest was harvested in 1899 using a clearcut, and burnt after. A dense mixture of red alder and Douglas-fir sprang up, and the forest development has been studied in research trials ever since.

Wildlife

Many animal species live here: blacktail deer, black bear, cougar, Pacific tree frogs, several species of woodpeckers, at least two types of salamanders, newts, squirrels, and banana slugs - and there are plenty of species below ground: worms, beetles, mites, and centipedes, to name a few.



Tour 2:

Clone banks and archives

**Please obtain permission from the office
before going on this tour.**

**Check at the office what time the gate
will be closed if you plan to stay after 3:30.**

**We need to keep our nursery facilities
and the study materials disease-free.
Everyone must disinfect their shoes at
the information kiosk, stop 1 on the tour.**

History

The Cowichan Lake Research Station was established in 1929 by the Canadian Forest Service. It was also a fisheries station and a forestry camp for unemployed men during the Depression. Since the 1930s it has been operated by the BC Forest Service. It is a valuable resource for scientists who study aspects of forest ecology, biology, productivity, management, and adaptation. The research station is a hub of research trials, archives of trees selected from forests around the province, and seed production for coastal species, including Douglas-fir, western redcedar, western hemlock, Sitka spruce, western white pine, yellow-cedar, true firs, red alder, bigleaf maple, and black cottonwood.



Stop 1: It all starts here

The tour begins and ends here, to the left of the gate across from the office. **Everybody must pour some disinfectant on the mat and walk on it.** Maps show our facility and how BC is divided into biogeoclimatic zones using terrain, soils, vegetation, climate, and disturbance to classify and manage BC's resources. There is also information on seeds of native BC trees. *Walk uphill to the weather station.*

Stop 2: Hot or cold?

Staff collect data on temperature, precipitation, and sunshine twice every day. Ian Cairns, our long-time weatherman, won a prestigious award from Environment Canada when he retired for his long-term accurate record keeping, which is used in international, national, and provincial climate studies.

Walk back down to the service road, and head left. The next sign is 75m on your left.

Stop 3: Hold it!

These are holding beds, where seedlings that are specially bred or grafted for experiments, seed orchards, or other unique uses are held temporarily. Many species are in these beds.

Walk along the service road about 250 m. Pass a mature plantation on your left, and a gate on your right, following the lake shore until you see the interpretive sign.

Stop 4: Matching tops and bottoms

Research done here helped us understand that cut shoots of Douglas-fir need special roots for a graft to heal properly. Only a few special trees produce rootstock that is compatible with cuttings of shoots from any tree. These trees were grafted onto rootstock that was not a good match, causing the mismatched bottoms. Now all grafting is done with compatible rootstock.

Continue 400 m down the service road to the sign on your left.

Stop 5: I'm in love with myself

These bizarre trees are not pruned - they have a growth mutation that is only apparent when each parent tree was fertilized by its own pollen. The grandparents of these trees were also self-fertilized, representing three generations of inbreeding caused by self-fertilization. In nature, most conifers have evolved ways to avoid pollinating themselves because this causes harmful genetic effects to appear that you won't often see in the wild since those trees typically die. Cross-breeding with unrelated trees ensures seedlings have better traits and improves their vigour.

Return to the intersection you just passed. Turn right, walk 200 m uphill to the main corner.

Stop 6: Too darn far

These Douglas-fir trees are from seed collected in Arizona and New Mexico. Their poor growth and survival shows what happens when trees are moved too far from the climate they are adapted to. Over many thousands of years of evolution, species undergo natural selection to grow best in their native habitat. How far we can move seed of each species for reforestation is determined by long-term field tests all around BC.

Turn right and walk up the road 175 m to the next main corner - mature Douglas-fir have blue lines painted on.

Stop 7: Yew who?

In the 1990s, Pacific yew trees around the northwest were being unsustainably harvested to supply taxol, a drug which helps fight cancer, that occurs naturally in yew bark. Now it can be made in a laboratory. These yew seedlings - that deer love to browse - represent a range-wide collection of populations from all over BC. Studies on these trees provided important information about yew conservation and management.

Turn left, walk up the road 50 m to the sign on your right.