Gene Conservation in British Columbia

Background

There are 44 native tree species found in BC, the majority of which are well protected in parks, protected areas, and reserves. (***In situ* conservation.)** Approximately 16% are in parks and protected areas. The Forest Genetics Council of BC's conservation goal is to adequately maintain the genetic diversity of BC's indigenous tree species. Conservation status for each species is determined by estimating the number and size of representative populations found within protected areas for each Biogeoclimatic zone for **non-commercial species**. Funding and support for all of this work has been provided by the Ministry of Forests with support from the Genetic Conservation Technical Advisory Committee of BC. (Subcommittee of the Forest Genetics Council)

Species

The list of species of concern was originally established in 2008, (as shown in the attached matrix) by the Genetic Conservation Technical Advisory Committee (GCTAC) included 28 "non-commercial" tree species, and tree species in need of protection. This list is a subset of the 44 recognized tree species.).

- In the early part of the program, the goal was to collect seed ***ex situ*** conservation from a minimum of 10 trees per population and 1,000 seeds per parent.
- In 2014 the standards were changed to try to collect from 20 individuals and 2000 seeds per individuals. (Not always possible.)
- By Species and Biogeoclimatic (BEC) zone.
- Three populations of parents for each BEC zone in which the species occurs.

Since 2008, we have accomplished the following:

- **3,832 individual tree seed collections.**
- **25 species.**
- **254 populations from 12 Biogeoclimatic zones.**

Gene Conservation Technical Advisory Committee Priorities 2008 -

Table 3. BEC Zones in which Priority Species for Genetic Conservation are Present.

SPECIES	AT	BG	BWBS	CDF	CWH	ESSF	ICH	IDF	MH	MS	PP	SBPS	SBS	SWB
Abies grandis				■	■		■	■						
Abies lasiocarpa					■				■					
Acer circinatum				■	■			■		■				
Acer glabrum		■				■	■						■	
Acer macrophyllum				■	■			■						
Alnus incana ssp. tenuifolia		■					■	■		■	■			
Arbutus menziesii				■	■									
Betula neoalaskana			■											
Betula occidentalis		■	■		■	■	■	■		■	■			■
Betula papyrifera				■	■			■						
Cornus nuttalli				■	■			■						
Juniperus maritima				■	■									
Juniperus scopulorum		■	■				■	■		■	■		■	
Larix laricina			■			■								
Larix lyalli	■					■	■							
Malus fusca				■	■									
Pinus albicaulis	■					■						■		
Pinus banksiana			■											
Pinus flexilis						■		■		■				
Populus balsamifera			■											
Populus tremuloides			■	■		■	■	■		■		■	■	■
Populus trichocarpa		■		■	■	■	■	■		■	■	■	■	
Prunus emarginata				■	■		■	■			■			
Quercus garryana				■	■									
Rhamnus (or Frangula) purshiana				■	■		■	■						
Taxus brevifolia				■	■		■		■					
Salix lucida		■	■		■	■	■	■					■	
Salix scouleriana	■		■		■	■	■	■	■				■	■

Cascara

Frangula purshiana or (formerly Rhamnus purshiana)

A small tree or shrub with greyish bark that grows to 19 metres tall. (39cm dia, 19.0 m tall- Horne Lk.) It is the only deciduous tree in the province whose buds are not covered by bud scales in the winter. Flowers Non-descript, greenish flowers, clustered near ends of branches. Fruit Purplish-black berries. Bark Thin, dark greyish-brown; smooth when young, becomes scaly with age. A cut in the bark reveals a bright yellow inner bark that turns dark brown on exposure to air and light. It occurs from Northern California to Prince Rupert on the coast, and in the Shuswap, and both West and East Kootenay's. Cascara grows under conifers on rich, well-drained soils with plentiful summer moisture. . Uses: The Nuu-chah-nulth people used the wood to make chisel handles, and the Skagit people produced a green dye from the bark. Coastal people also knew it as a tonic and as a laxative.

1887 Cascara bark introduced into medicine,

Cascara was harvested throughout its range for use as a laxative. Bitter cascara extract has been used in liquors and a debittered extract as flavouring for drinks and ice cream. Honey from cascara flowers is also reported to have a mild laxative effect. Originally, people collected only the fresh bark by stripping it from standing live trees, ultimately killing the tree.

John Davidson. He was a lab assistant at the University of Aberdeen, Scotland with no formal botany education. I(1892-1911.) In 1911 he immigrated to British Columbia for better opportunities. In 1912 he became BC's Provincial Botanist. He established the first herbarium on Pender, St, and botanical gardens in New Westminster at Colony Farms and Riverview. In 1916 they were moved to the newly established UBC campus to become the UBC Botanical Gardens.

John was concerned about the overcutting and wrote a manual for cascara harvest and conservation in **1922,** then revised it in **1942** for Regulations.

These included cutting down the trees, leaving a one foot high stump, and allowing the trees to coppice, which they readily did

1921. The price paid to the harvester 10 cents/lb. for the dried bark. The average was about 10 lbs per tree for the bark. There were news reports of a shipment from the Salmon Arm area of five tons, another of three tons from Jervis Inlet, two tons from the Nanaimo area, and a ton and a-half from Squamish. Those were just four shipments that were reported. How many other shipments were there over several years' span? How many trees?

As in Washington and Oregon, the number of surviving trees were considered all but extinct, the prices of bark rose from $.02 to $.10 per lb.

1930. A farmer in Salmon Arm planted 4 acres with 5000 trees. There were reportedly other plantations as well.

1933 Paldi. The Depression. Joan Mayo who lived in the sawmill community of Mayo in the Cowichan Valley in that time wrote that with the depression and poor lumber markets, many loggers, saw millers, and their families would harvest cascara bark and huckleberries to survive these hard times.

By 1940

It was estimated 90% of the mature trees in BC had been stripped by the 1940's Legislation regulated cutting to prevent overharvesting. Harvesting of bark continued well into the early 60's

(1942) Cutting Regulations Order in Council #224.

1942 -1970. Cutting of bark continued but at a significantly reduced rate due to synthetic alternatives and overcutting.