steep
slope
harvesting

VOLKtrans-Canada
logging company
Ltd.

Fitting the machine to the site and the timber

Christian Volk

My background

I grew up in a family of foresters, my dad managed a community forest for 40 years. This forest was practicing silviculture guidelines as first described in the year 800 after Christ by monks

I spent most of my spare time in the forest helping my dad and always had a big interest in forestry and machinery.

After graduating from High school, I decided to first do a trade as a heavy duty mechanic at the Timberjack dealership.

Shortly after finishing my trade I went back to the forestry and worked as a forwarder operator for a German contractor in the private forest of the Fuerst of Fürstenberg.

In these years I learned a lot about thinning as this was the majority of the work in planted spruce stands from the 60th and 70th.

1998 at the age of 22 I started my own logging company, Volktrans in Switzerland.

At the beginning, I had a small harvester and a small forwarder and a chipper to grind the residue for heatplants

The forest owned by the government is managed by the community forester. He has the power to decide which contractor he wants to use. The competition in Switzerland is big, and you can only succeed with good quality of work.

Unlike in Canada the foresters were often present at the block, smallest damaged trees are a big issue asd well as destroyed regeneration

Over the years the company grew bigger and added bigger harvesters to the fleet to log mature wood.

Another addition was a big woodchipper to clean up residue piles and produce woodchips that were used for electricity and heat.

Volktrans also specialized in steep slope logging and bought the first tedder system with integrated winch in harvester and forwarder in 2008.

In 2015 the company had 3 harvesters, 4 forwarders, a woodchipper and a skidder, as well as several winch systems for steep slope logging.

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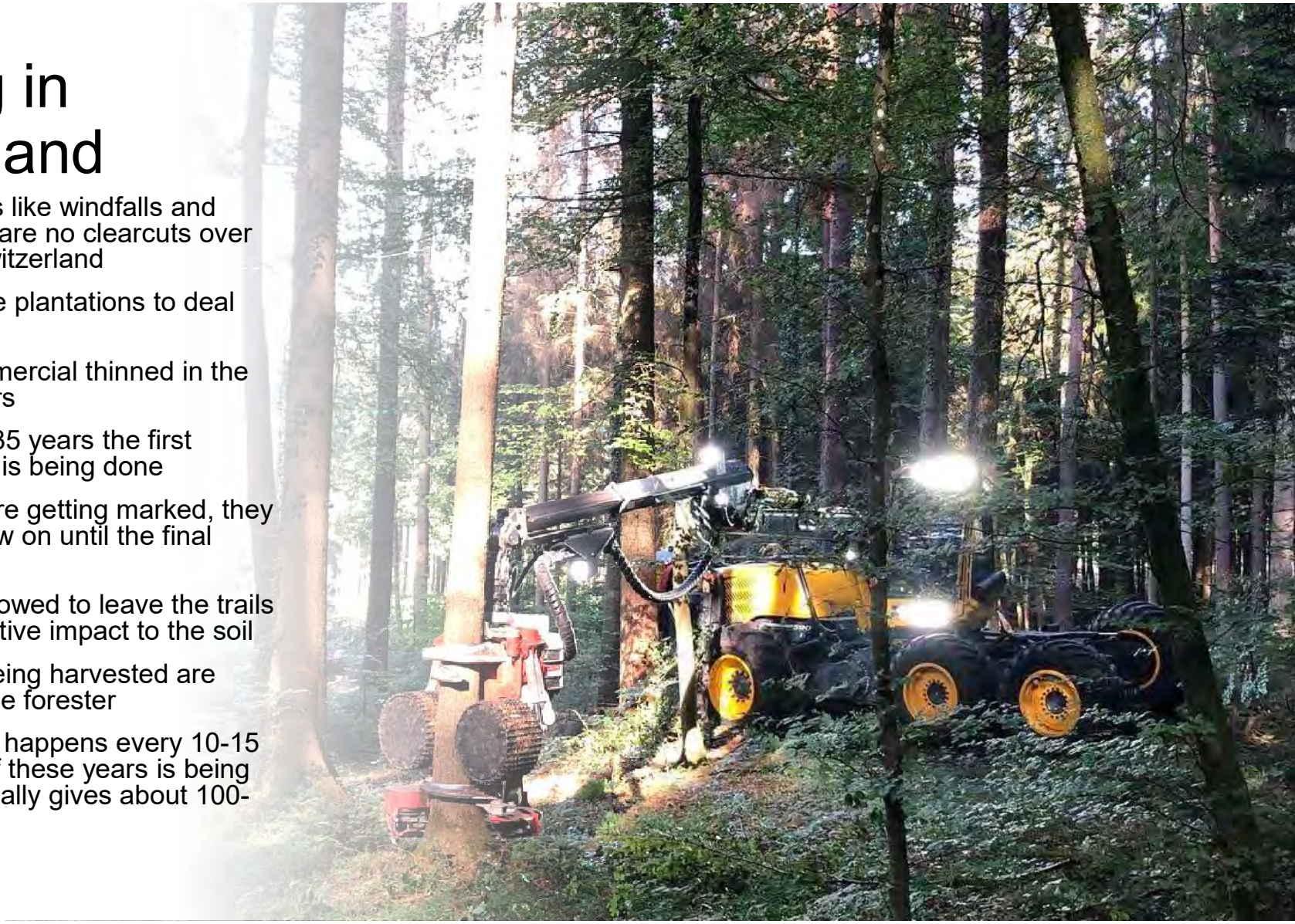
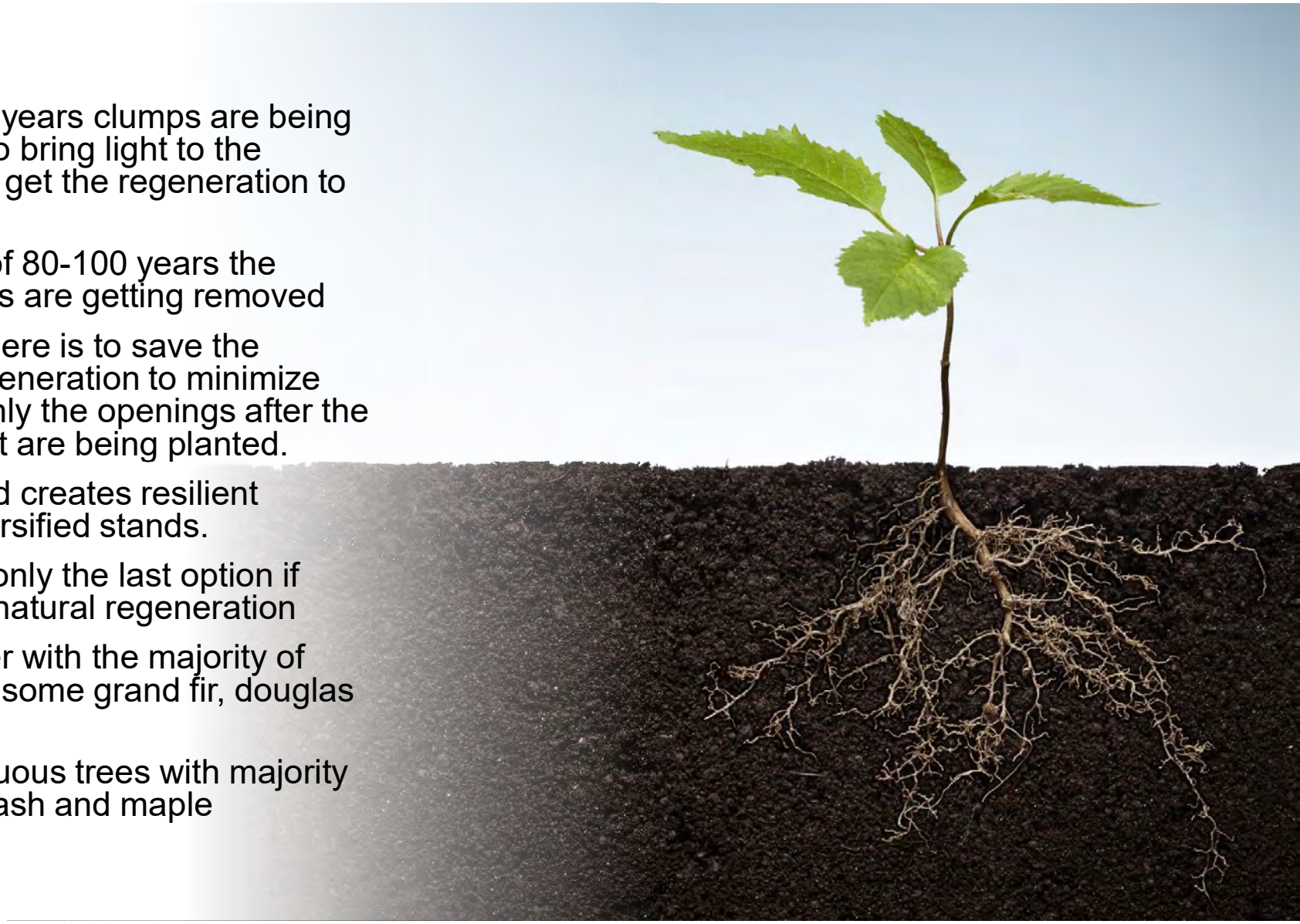
- Today, Volktrans-Canada Ltd is a diversified company. We are specialized in winch assist and tower logging and selective harvesting
- During the downturn in the industry we were forced to do more conventional logging most of the time
- At the moment commercial thinning and selective cut projects are about 10-20% of our volume

Logging in Switzerland

- Except for calamities like windfalls and beetle attacks there are no clearcuts over 0.5 ha allowed in Switzerland
- There are still spruce plantations to deal with
- Stands get pre-commercial thinned in the age of about 25 years
- At the age of about 35 years the first commercial thinning is being done
- In this stage, trails are getting marked, they will be used from now on until the final harvest.
- Machines are not allowed to leave the trails because of the negative impact to the soil
- The trees that are being harvested are always marked by the forester
- After that, a thinning happens every 10-15 years. The growth of these years is being harvested which usually gives about 100-150 m3 per hectare.



- After 50-60 years clumps are being harvested to bring light to the ground and get the regeneration to grow
- In the age of 80-100 years the mature trees are getting removed
- The focus here is to save the existing regeneration to minimize planting. Only the openings after the final harvest are being planted.
- This method creates resilient natural diversified stands.
- Planting is only the last option if there is no natural regeneration
- 70 % conifer with the majority of spruce and some grand fir, douglas fir and larch
- 30 % deciduous trees with majority beech,oak,ash and maple



Selective cut in uneven natural stand

Thinning in 30-35 year spruce plantation

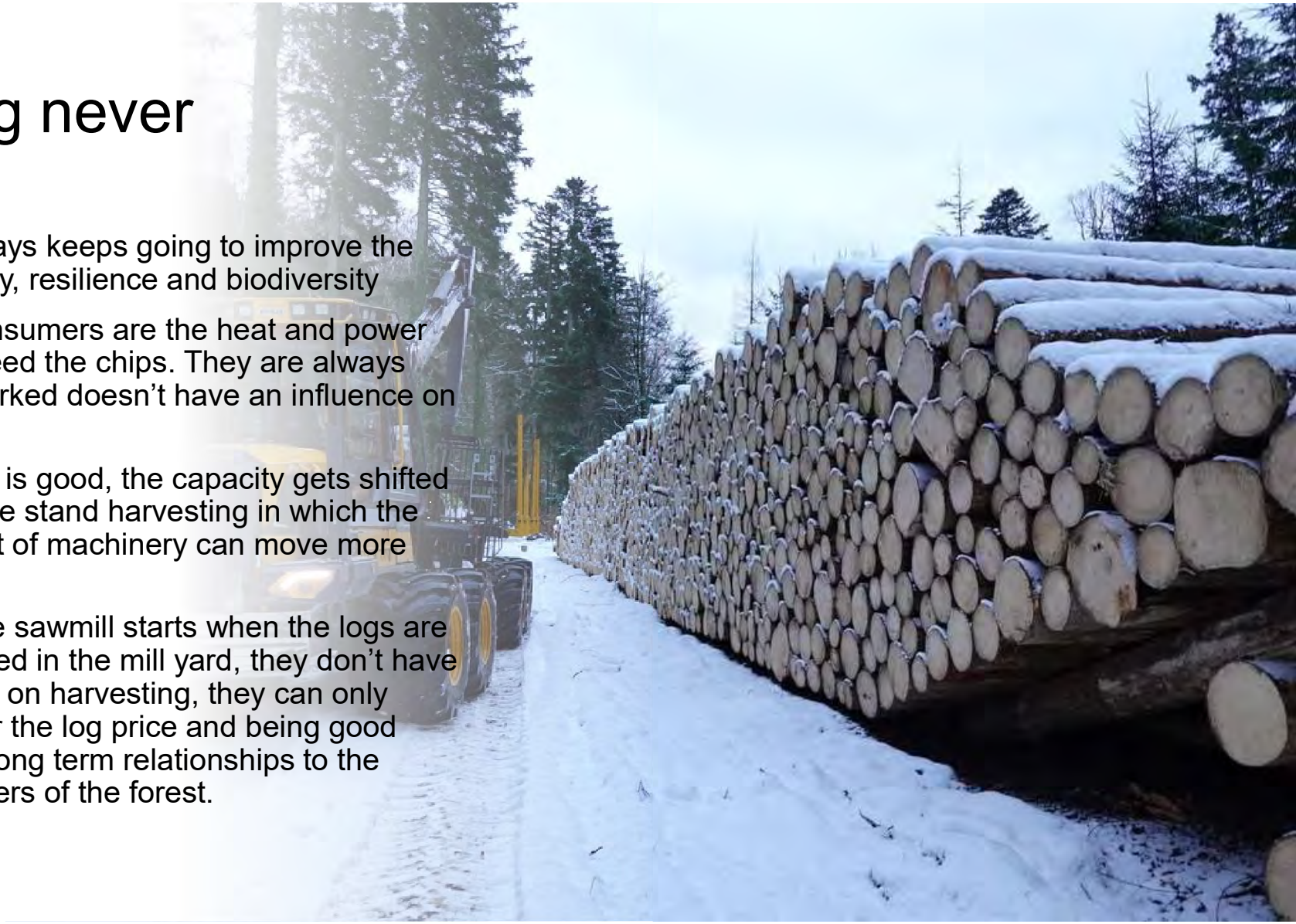
Logging methods/regulations

- In the younger stands 100% of the logging is cut to length
- In the mature stands there are some skidders in use to move long logs to the road, mostly big spruce and deciduous trees in single tree harvesting blocks
- Full tree logging is not allowed because research found out the negative effects that occur when all the nutrients are removed out of the forest.
- That even slowly comes in effect for cable logging operations

- Pile burning is not allowed
- The heavier residue gets chipped to be used in power and heat plants.
- The debris has to remain in the bush

Thinning never stops

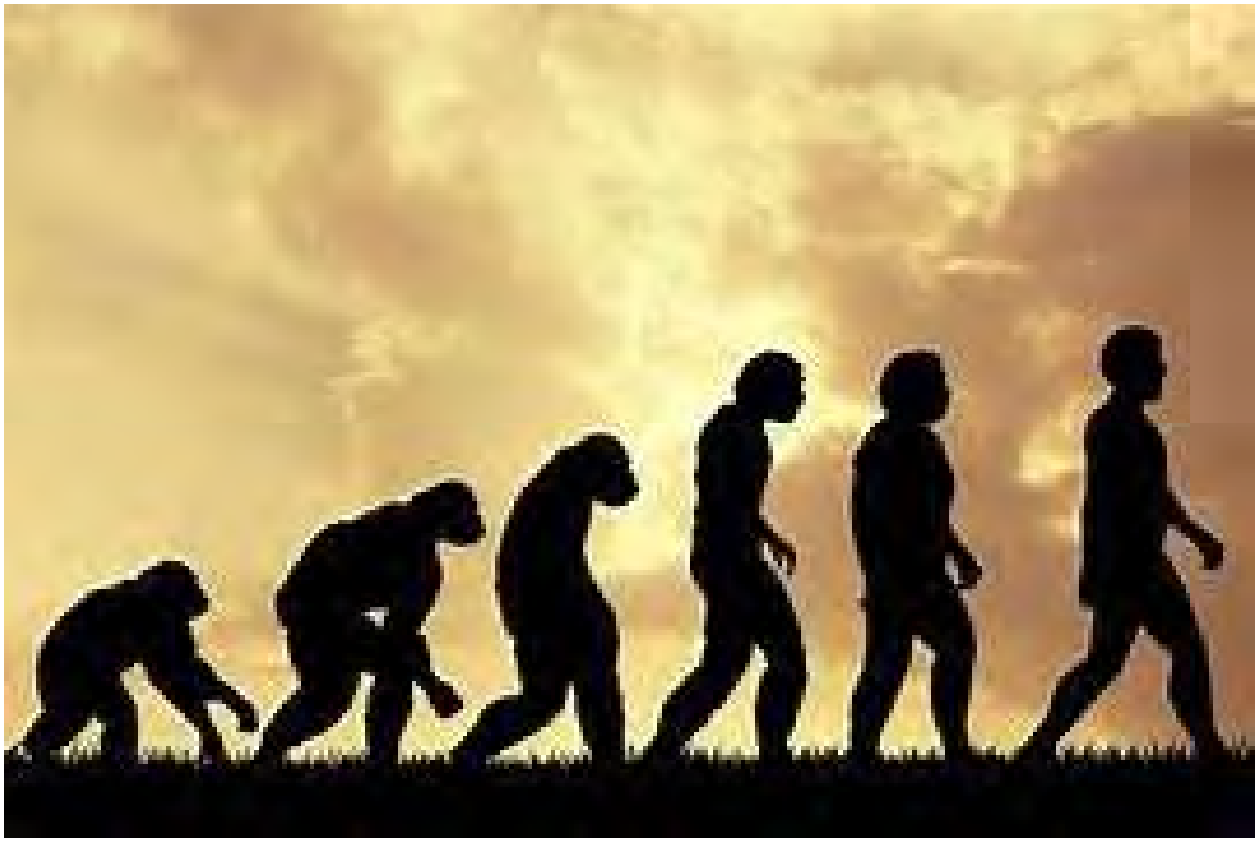
- Thinning always keeps going to improve the stands, quality, resilience and biodiversity
- The base consumers are the heat and power plants that need the chips. They are always there, the marked doesn’t have an influence on them
- If the marked is good, the capacity gets shifted over to mature stand harvesting in which the same amount of machinery can move more volume
- The job of the sawmill starts when the logs are being unloaded in the mill yard, they don’t have any influence on harvesting, they can only control it over the log price and being good partner with long term relationships to the different owners of the forest.



Remarkable Results

- In a comparable topographic area and Therefore, the quality and quantity that's being harvested is higher
- Switzerland has 1.3 mio ha of forest and has an annual cut of 5 mio m3 per year
- BC has 55 mio ha of forest with an annual cut of 40 mio m3 per year
- Therefore, the volume that's being harvested per ha is 8 times higher in Switzerland
- Similar numbers apply to Germany (80 mio m3 cut per year)

Evolution of commercial thinning and selective cut in BC



Our first projects in BC

- Because we always had forwarders and harvesters, we were asked to do some pilot projects in Revelstoke Community Forest as well as for Interfor Adamslake
- There are many differences
- Even with the experience from Europe, with European operators who had the experience, it was a completely different level to start with commercial thinning in BC

Challenges

- Main problem is that we have the opposite to Switzerland. Thinning is only being used if the marked is high and therefore the stumpage savings for the sawmill are high.
- Long hauling distances to the manufactures the average meter price for the product
- The positive effects of thinning (health stands, improved quality, increased biodiversity, decreased fire hazard) seem to be secondary and not the main reasons to do thinning in BC
- Problems are also caused by the government that gives out age regulations. Many stands would be perfect for thinning and economically doable but are classified out of the age range and can’t be treated

- Other challenges are simply given by the topography, the harsh weather conditions in BC, especially in our area North Thompson and Revelstoke
- The heavy underbrush in the stands that have never been pre-commercial thinned can slow down the production to 50%
- Because the stands are not pre-commercial thinned, it’s almost impossible to treat the economically in a younger age
- The stands are often so different, so it’s hard to do a production calculation
- It needs trained operators to run the specialized machinery like harvester and forwarder which is almost impossible to find in BC.
- The requirements for the operators are much higher, often there are no marked trails or trees
- The machines used for thinning are more vulnerable because they are more technical advanced that machinery used in conventional logging

- The dealer support is weak because most of the mechanics don’t have the experience with this new technology
- The travel distances are long, and the hourly costs of a dealership mechanic here is about 100.- 150.- CAD per hour more than in Europe
- The basic investment to get started with a forwarder and a harvester (usually you need 2 harvesters to feed one forwarder) are > 2.2 mio CAD

Challenges for the operator

- The requirements for the operators are very difficult,
- trails are not marked
- When trails are planned by layouters they often don’t really understand the system and therefore the trails do not make sense or don’t work out with the proper spacing
- An operator must cut about 50-60 trees an hour to make a break even for the company

- The operator must:
  - Cut the required number of trees (fulfill the basal area requirements)
  - Move the machine through the block and decide where to do a trail
  - Decide which tree to cut and which tree to support
  - He needs to decide which sort to cut
  - The operator must fulfill the high quality and length requirements for the BC sawmills
  - He must be able to do maintenance on his machine
  - If problems arise, he must be able to troubleshoot the complicated technology because he’s often working very remotely

Opportunities

- If in theory, we would pre-commercial thin every stand with potential
- We would commercial thin every stand with potential as well
- We would selectively cut any stand that has potential to grow and at the same time protect any regeneration and un-merchantable trees. **Wood grows on wood**
- This would increase the AAC because of the treatment
- We would probably have to build sawmills in 15-20 years to deal with all the available volume
- To be clear, the profit per m3 for the landowner (government) would be smaller, but the additional costs that this system creates would at the same time create more employment in all phases in rural communities
- It's also important to understand that with the right treatment you can increase growth and quality at the same time. Example: **by removing Hemlock in favor of Cedar in a Hemlock/Cedar stand you start growing Cedar poles instead of Hemlock sawlog!**

Possible solutions from a logger's point of view

- Workshops to train layouters.
- Stumpage adjustment where the piece size, underbrush and ground conditions are reflected in the stumpage rate. It should be possible to have a negative stumpage to blend it in with more expensive wood (similar to cable logging)
- Regeneration protection and high retention over 40% in mature stands with potential are reflected in the stumpage rate
- License holders can fully deduct pre-commercial thinning from their stumpage (similar to road building)
- A percentage of the AAC in a license has to be done with commercial thinning or selective cut to encourage the licensee to have a steady thinning program
- Before clearcutting a stand, an evaluation should be done if there is potential of further growth or not. In my perspective about 25-30% of the stands would have potential

Example what thinning could do

Any questions?