



Photos: Dennis Farquharson, RPF

Mother Nature Suffers Fools Poorly: Early Stand Development in the South-Central Interior

A YOUNG FOREST STAND, THRIVING AND IN STEP WITH ITS ECOLOGICAL community. It's diverse, resilient and growing well. What a beautiful thing! So, if we all know what this looks like, why is it that our well-trained eye is able to see so many warts on the plantations we visit daily, weekly, monthly? I believe that many of the 'warts' are due to the operational challenges. These come in two forms: forest policy and environmental. (Forest policy—we do it to ourselves. Environmental—it gets done to us.)

The operational challenges that arise from the realm of forest policy fit into two categories: cost and obligation management. The initiative for cost management is created by both the Ministry of Forests, Lands and Natural Resource Operations (MFLNRO) and the forest licensees. The MFLNRO does so by creating an aggressive silviculture cost

estimate through the log cost survey information incorporated into the stumpage system. The forest licensees do so by trying to meet their free growing obligations at the least possible cost—hopefully less than the silviculture cost estimate. As a result, the frequency and/or intensity of most silviculture activities have been cut back more and more with notable reductions in:

- The amount and intensity of site preparation, with an emphasis on none at all
- Planting densities, frequently from 1,400 or 1,600 sph (stems per hectare) to 1,200 and occasionally 1,000 sph
- Smaller seedling stock sizes, with lower per seedling costs

The second policy related to operational challenges is the forest licensees' goal to meet their free growing obligation. In some



Viewpoint

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biogeoclimatic (BEC) subzones several different regeneration regimes will all allow the forest licensee to successfully meet its obligation. In many south-central interior BGC subzones, this can be achieved more quickly, with less risk and often at a lesser cost, when lodgepole pine is the leading regeneration species. Unfortunately, the long term health of lodgepole pine is often not as good as the spruce or Douglas-fir as the young forests grow beyond free growing. Several recent studies are proving this. Further, most of the local climate change studies are suggesting that Douglas-fir will be much more resilient to the future environment than lodgepole pine. With this information, some forest managers are bumping up their percentage of Douglas-fir regeneration, but most are retaining a high enough percentage of lodgepole pine to meet the minimum free growing stocking.

The forest policy related operational challenges to early stand establishment and development have led to reduced plantation density and growth performance as well as reduced natural ingress along with lower forest stand volume, value and resiliency as it matures. While some changes to forest policy are being discussed in conjunction with climate change and lodgepole pine mortality studies, the progress is slow. There is, however, no forest legislation keeping silviculture managers from creating a stronger more resilient forest stand for the future—only cost. But the question is, how much ‘extra’ money should a forest licensee spend compared with their competitors in order to provide stronger forests for 30, 50 and 70 years from now?

The operational challenges associated with the environment are many, and occasionally are built upon each other. In addition, environmental challenges can manifest themselves or be made worse because of previous forest management decisions implemented on a particular forest site. While there are some environmental challenges that are not reasonably within our ability to manage, many others are, with appropriate recognition and thoughtful assessment of the regeneration site.

For example, one environmental challenge that cannot be reasonably overcome is very droughty or wet soils. Droughty areas are generally dominated by shallow soil over bedrock, high coarse fragment content, are flat or sloped often with south and west aspects, and a low density of small sized stumps. While seedling establishment may be possible, as the tree grows its moisture demand increases and when a relatively drier year occurs, it will succumb. The trees that grew here previously established after the adjacent trees, on better soil, grew large enough to shade this area. In contrast, seedling establishment on very wet soils is possible if naturally raised, often organic, planting microsites exist. However, if these areas are already fully occupied by competing vegetation such as twin flowering blackberry or alder, move on. It is not worth the effort and we do not have a mandate to change established riparian vegetation.

Then there are the places where there is only one chance to regenerate properly. For me this is the upper North Thompson Valley

(ICHvk1, ICHvk1c, ICHwk1, ESSFwc2, ESSFwcp2) with its cold wet soils, very productive growing sites, aggressive vegetation, deep and heavy snow, and moderate to steep slopes. In these situations, full and complete execution of the regeneration plan is essential with at least PSB412 2+0 seedlings, tea bag fertilizer, likely a herbicide treatment two years after planting and site preparation if at all possible. Do it right the first time, as the opportunity to fix a mistake is very difficult, very expensive and not very successful.

Then there are the environmental challenges that manifest themselves when forest management decisions do not align with the biology of the area. Silviculture managers will do well to remember that Mother Nature suffers fools poorly and she works 24/7/52 forever, to show us our mistakes. So that broken and snaky lodgepole pine planted a bit too far into the ESSF on a north or east aspect—what were you thinking? Or, how about the north or east aspect ICH or moist IDF area planted to lodgepole pine leading that is getting hammered by needle rusts as it grows past free growing? I hope you are not surprised. And what about mid and lower elevation warmer ICH BGC subzones planted to straight spruce—how is the terminal weevil?

Over the last decade we have seen/proven that we cannot protect the forests. The only reasonable approach is to create forest stands which emulate Mother Nature’s work, so that they will have the built-in environmental resiliency of natural stands to keep them safe over time. In order to do this we need to look for what is and not for what we think should be (Albert Einstein). I believe that the degree of site disturbance, amount of residual retention and species selection are three of the key factors to manage when establishing a new forest stand. 🌱

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Glossary of Terms

Biogeoclimatic Ecosystem Classification System

ICHvk1: Interior Cedar—Hemlock, Mica Very Wet Cool

ICHvk1c: Interior Cedar—Hemlock, Mica Very Wet Cool – Cold Air Phase

ICHwk1: Interior Cedar—Hemlock, Murray Wet Cool

ESSFwc2: Engelmann Spruce—Subalpine Fir, Northern Monashee Wet Cold

ESSFwcp2: Engelmann Spruce—Subalpine Fir, Wet Cold Parkland

IDF: Interior Douglas-fir

Tree Seedling Description

PSB412 2+0: Plug styro block—4 cm wide by 12 cm long—two years in the nursery and zero years in a transplant bed.