Density and distribution of advance regeneration in pine stands under attack by the MPB in the MS Zone

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Introduction

The MPB infestation is so extensive that forest managers must devise regeneration strategies not only for salvaged stands, but also for attacked stands that are not harvested. Some stands will probably not require treatment because they will successfully regenerate in a reasonable timeframe without any intervention. Therefore, the question becomes "Which stands do we treat (and how do we treat them), and which stands can be left to regenerate on their own?" Many factors have to be taken into consideration, such as access, but a key factor is whether the stand will successfully regenerate on its own, through seeding in or from advance regeneration. This project addresses the question of which stands can be left alone to regenerate by advance regeneration.

Methods

The research was focused on the MS zone in the Merritt TSA, where lodgepole pine occupies two-thirds of the productive land base and the MPB outbreak is just becoming established. We located 28`pine-dominated stands undergoing MPB-attack in three moisture regimes: wet, mesic and dry. Forty 5 x 5m subplots were established in each stand (1120 in total). Overstorey tree height and diameter at breast height (DBH) were measured and advance regeneration was tallied in six height classes

Preliminary results

The Overstorey

Overstorey Composition (sph) by moisture category

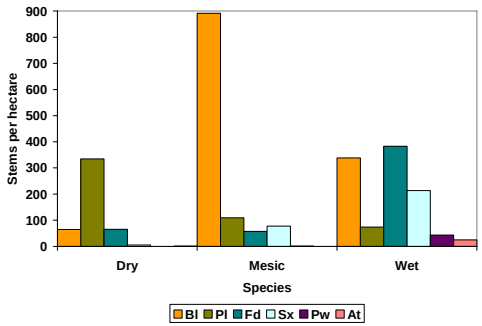
	Dry	Mesic	Wet
Lodgepole pine	860	1013	558
Douglas-fir	13	9	20
Subalpine fir	9	11	8
Spruce	1	34	99

Percent of lodgepole pine attacked in all stands

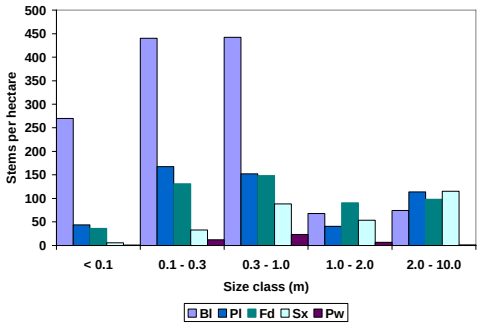
Height class	<2	2-10	10-15	15-20	20-25	25-30	30+
Percentage	0	0.2	6.3	25.5	33.2	38.6	50.0

The Understorey

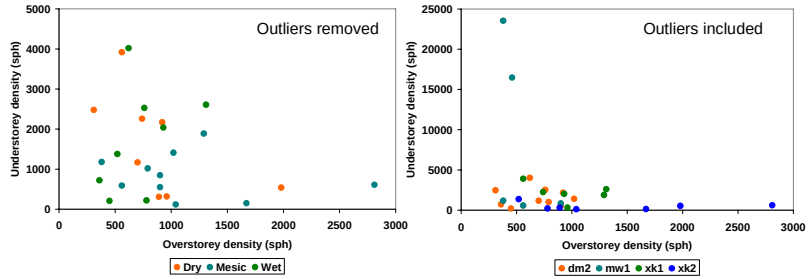
What species form the advanced regeneration in the stands?



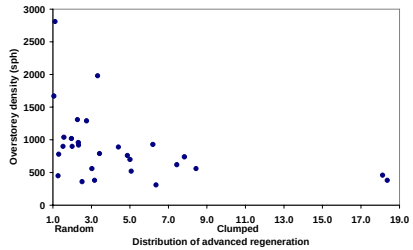
How large are advanced regeneration?



Did the density of overstorey trees influence the amount of advanced regeneration?



How are advanced regeneration distributed?
Almost three-quarters of the 5 x 5 m subplots contained advanced regeneration, but number per subplot varied greatly, from 0 to over 100 advanced regeneration in a few subplots in some wet and moist stands



Conclusions

Of the 28 stands surveyed in the MS zone, almost two thirds have abundant, well distributed advanced regeneration. The main problem that could arise for some of these stands might be over-stocking, especially if ingress from seed occurs after overstory pine mortality. A second concern may arise from the predominance of subalpine fir in the understorey in mesic stands. Stocking is inadequate (< 700 sph) in one third of the stands. These stands are predominately, though not exclusively, in the MSdk2. Abundance of advanced regeneration had no consistent relationship with moisture regime or overstorey density and distribution. Even the relationship with subzone is tenuous because some stands in the MSdk2 have abundant regeneration whereas some stands in the MSdm2 or MSmw1 do not.
All the non-pine species in the overstorey and many individuals in the understorey have the potential to contribute to mid-term timber supply goals as well as water and wildlife objectives. Stands will need to be assessed on an individual basis, and infill planting or spacing may be required in some cases.