



## Healthy Landscapes Program Quicknote #49

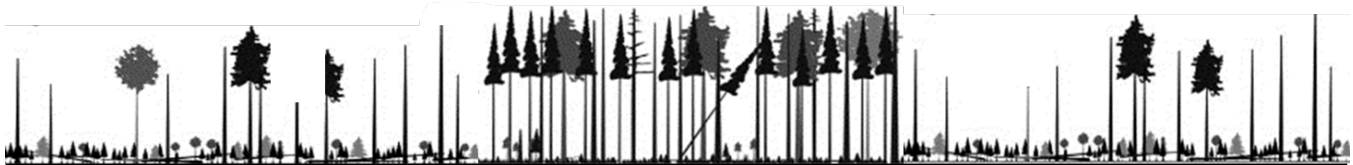
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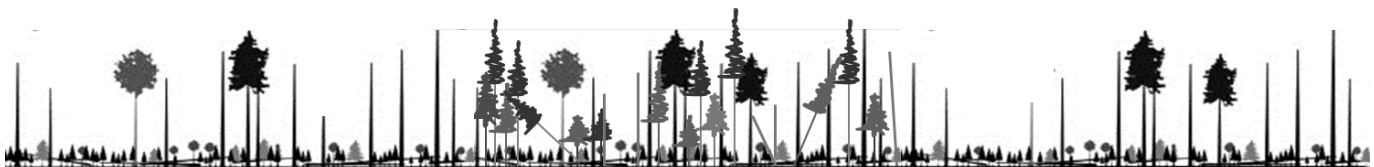
# Why Wildfire Severity is Important

When used in the context of forest management, the term “severity” usually refers to tree mortality levels within a disturbance event, often manifested as a percentage of an event area in undisturbed remnants. On average, HLP research suggests that remnant patches account for 43% of the area of natural wildfire events in the western boreal. However, our research also suggests that a) that figure varies significantly over time and space, b) up to half of all remnant area has partial tree mortality, and c) of the remnants with partial mortality, most are high-survival (i.e., >50%).

*Undisturbed residual*



*Partially disturbed residual*



Partial mortality is not an attribute we tend to associate with the boreal forest. However, it offers some new and valuable insights into how the boreal functions. Consider the immediate impact of the structural diversity generated by partial mortality. Partial mortality creates structural and compositional diversity at fine scales to which many species have co-evolved. A conservative back-of-the-envelope calculation suggests that an estimated 15-20% of the western boreal landscape that was technically multi-aged at any given point in time historically.

Consider the potential biological implications of this.

- 1) Definitions of “old growth” in the boreal may need to be reconsidered. “Old growth” is not the same thing as “old forest”, which is defined simply by the number of years since the last disturbance.
- 2) Associated habitat research and modelling must account for multi-aged stands going forward. For example, the inclusion of partial mortality in research and modelling of woodland caribou is likely to reveal new lessons.
- 3) Habitat models that assume single, simple age structure (e.g. woodland caribou) may need to be reconsidered. Without including partial mortality, some habitat types will become rare, landscapes simplified, and the ecosystem less sustainable and resilient.

In the end, this seemingly subtle change in our understanding of how the boreal ecosystem works from a fire regime perspective is fundamental to our understanding of the sustainable delivery of ecosystem health and resilience in general, and that of many critical values more specifically.