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Shelf Life Indicators of Timber Impacted by the Spruce Beetle in the Prince George Region

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Project Summary and Preliminary Findings

INTRODUCTION: The degradation of wood quality post spruce beetle attack is a valuable criterion required when assessing the economic value of a forest impacted by this native bark beetle. The College of New Caledonia's Applied Research & Innovation Department, is studying spruce wood quality, in partnership with the Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD), Canfor Corporation, Conifex Timber and Sinclair Forest Products. Funding for this project was contributed by the aforementioned partners and from the Natural Sciences and Engineering Research Council (NSERC).

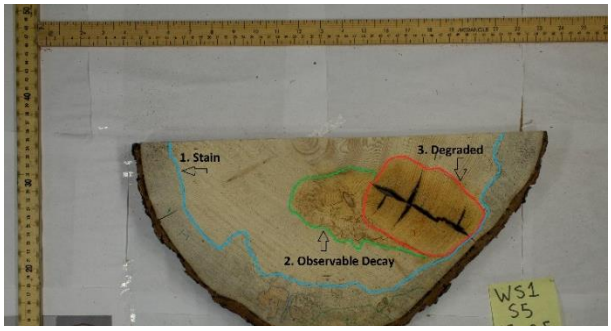
OBJECTIVES: This project was developed to identify "reliable indicators of wood quality in beetle killed spruce without the use of extensive laboratory procedures" (Kaytor et al, 2020).

METHODS: Wood quality indicators examined throughout this project include moisture content (sapwood, heartwood), specific gravity, checks/cracks, along with areas encompassed by blue stain and decay. In total, 203 trees were sampled, each classified within one of 5 categories: live, 1 year since death, 3 years since death, 5 years since death or 5+years since death, as derived from visual observation at the time of collection. At each tree, wood samples were obtained at 0.5m, 1.3m, 4m and 6m heights, for a total of 812 samples.

RESULTS: Findings obtained from this project indicate:

- Visual time since death estimates did not correspond with actual time since death, with most trees sampled dying in 2017.
- In live trees, sapwood moisture content was highest in samples obtained at 6m (90%). Trees samples in the 5+years since death saw the lowest moisture content among both sapwood (60% lower than live) and in heartwood. In dead trees, samples obtained at 0.5m had the highest amount of moisture relative to the other samples taken higher up the tree.
- The reliability of specific gravity as a indicator of wood quality (sapwood, heartwood) was inconclusive
- Checking in samples obtained from each of the trees increased as the time since death categories increased, with checking present in approx. 70% of samples within the 5+year since death class. Those classified as live had lowest (approx. 21%). Severity in checking was also noted to increase with time since death.
- Visible decay/degradation areas increased with time since death. Decay/degradation was present in >60% of samples obtained in the 5 and 5+ years since death classes, with severity increasing with time since death.

From left to right: Melissa Mjolsness (Research Forest), Sorin Pasca (Applied Research & Innovation) and Jeanne Robert (FLNRORD) examining a beetle-killed spruce sample. Dutton, 2018)



Beetle-killed spruce sample with blue stain and decay/degradation, taken from 0.5m, with mortality estimated in 2015 (Mjolsness 2018)

Citation: Kaytor, B., Klynsoon, K., and S. Pasca. 2020. Evaluation of shelf life indicators in hybrid spruce following attack by spruce bark beetle in the Prince George Region. College of New Caledonia.