QuickNotes
Science Summaries from fRI Research

Generation of Tree Level Fire Fuel Information Across MPB Infestation Mosaics – September 2022 Update

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This project aims to examine the effect of Mountain Pine Beetle (MPB) attack mosaics on wildfire fuels. By sampling areas different species stand characteristics, MPB attack stages and environmental characteristics, fuel look-up tables will be created to help resource and forest managers better understand the fuel characteristics of the corresponding forest area. RPAS (Remotely Piloted Aircraft Systems) and handheld based light image detection and ranging (LiDAR) acquisition has been used in the past to estimate and model available fuels and model fuel characteristics over a landscape or forest stand. To map large scale areas using a time effective method, as well as preserving high density LiDAR, this study will conduct RPAS LiDAR acquisitions across 3 main study areas.

Left: DJI M300 used for RPAS LiDAR data; right: GeoSLAM Horizon for MLS LiDAR. Once processing of the handheld LiDAR is complete, it will be merged with the RPAS LiDAR to create one high-density dataset. The tree data recorded at each plot will also be used to validate and help compare the two LiDAR datasets. Finally, the LiDAR and tree data will generate the fire fuel look up tables.

To capture different tree species and MPB attack mosaics, study areas were selected based off the Mountain Pine Beetle Heli-GPS survey collected by the Alberta Government. We then further selected sites based of percentage of Lodgepole Pine, and proximity to roads for ease of access. Within those 3 study areas, 8 RPAS sites and 20 plots were recorded.

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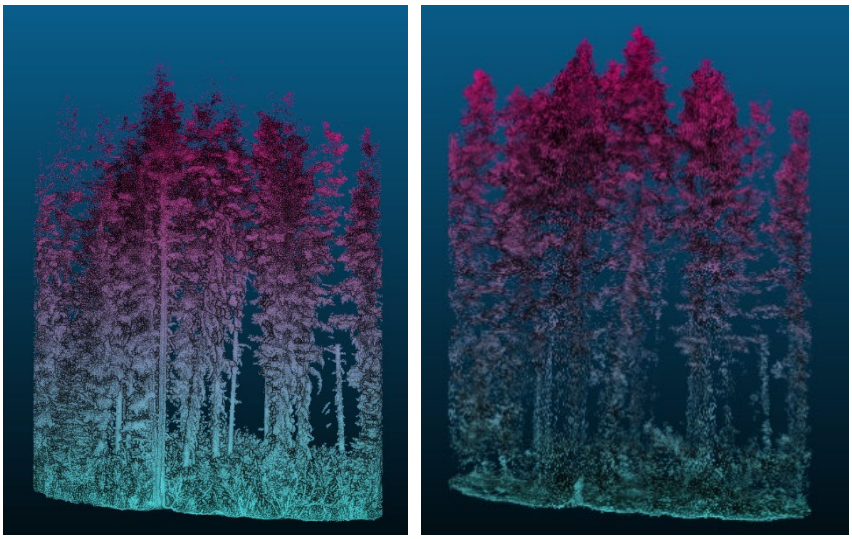
For information about the MPBEP, contact: kmcclain@friresearch.ca

Study Area	*Sites*	*Plots*	*Dates (May, 2022)*
Grande Cache	3 (200 ha)	8	15–18
Whitecourt	2 (90 ha)	5	20–21
Rocky Mountain House	3 (230 ha)	7	23–24

For the drone flights using the DJI M300, each flight was flown using a side and front overlap ranging from 70–80% depending on the terrain and geography of the site.



LiDAR point clouds from the GeoSLAM Horizon (left) and M300 RPAS (right)