2020 Project Summaries
Boreal Ecosystem Recovery & Assessment
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# *Remote Sensing Team: The Forest Line Mapper: An Open-Source Tool for Mapping Linear Disturbances*

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**Project Summary**
Forest land-use planning and restoration requires effective tools for mapping and attributing linear disturbances such as roads, trails, and seismic lines. To address this need, we developed the Forest Line Mapper (FLM): a semi-automated software tool for mapping and attributing linear features using LiDAR-derived canopy height models. Accuracy assessments show that the FLM reliably predicts both the center line (polyline) and extent (polygons) of various types of linear features compared to field surveys. FLM outputs were consistently more accurate than those produced by human photointerpreters, and can be reliably applied across extensive application areas. In addition to delineating linear features, the FLM uses input canopy height layers to generate a variety of structural attributes associated with the lines and the surrounding vegetation. The FLM is open-source and freely available and should assist researchers and land managers working in many types of forested environments.

**Management Implications and Lessons Learned**
The FLM is operational and available as free open source software at slm.beraproject.org. FLM is presented as a series of script tools with integrated GUI; with the main inputs being a canopy height model raster and regional-scale digitized seismic lines (~1:20,000). The main outputs are detailed (~1:500) line footprint polygons and center lines including a series of spatial attributes.

**Publication(s)**
Lopes Queiroz, G., G.J. McDermid, J. Linke, and M.M. Rahman. The Forest Line Mapper: A Semi-automated Tool for Mapping Linear Disturbances in Forests. Manuscript in preparation for spring 2020 submission.