Synergistic Effects of Multiple Disturbances on Understorey Vegetation in Boreal Ecosystems

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CONTEXT

- Boreal forest ecosystems – rich in vascular and non-vascular plant communities
- Bryophytes - principal components of forest floor

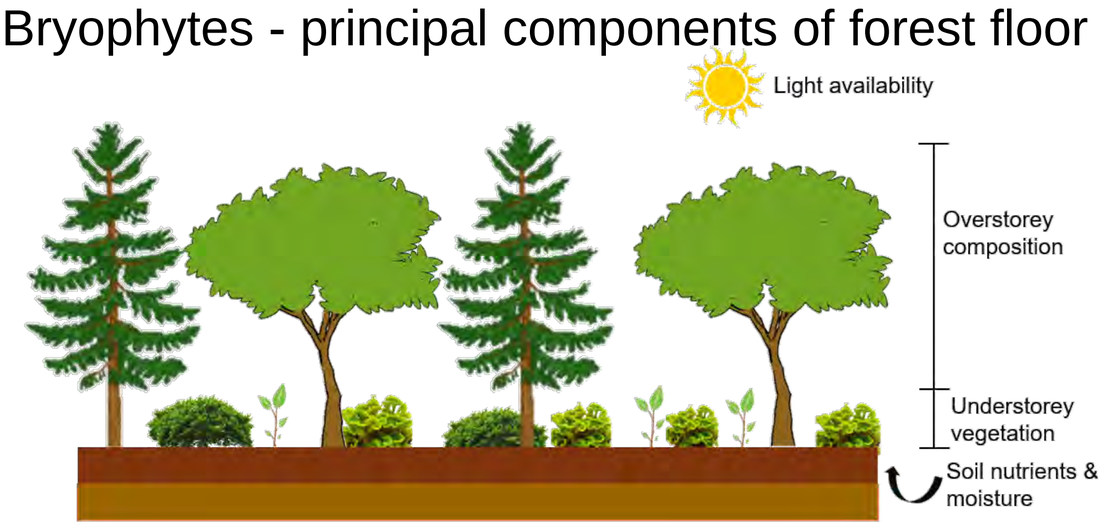


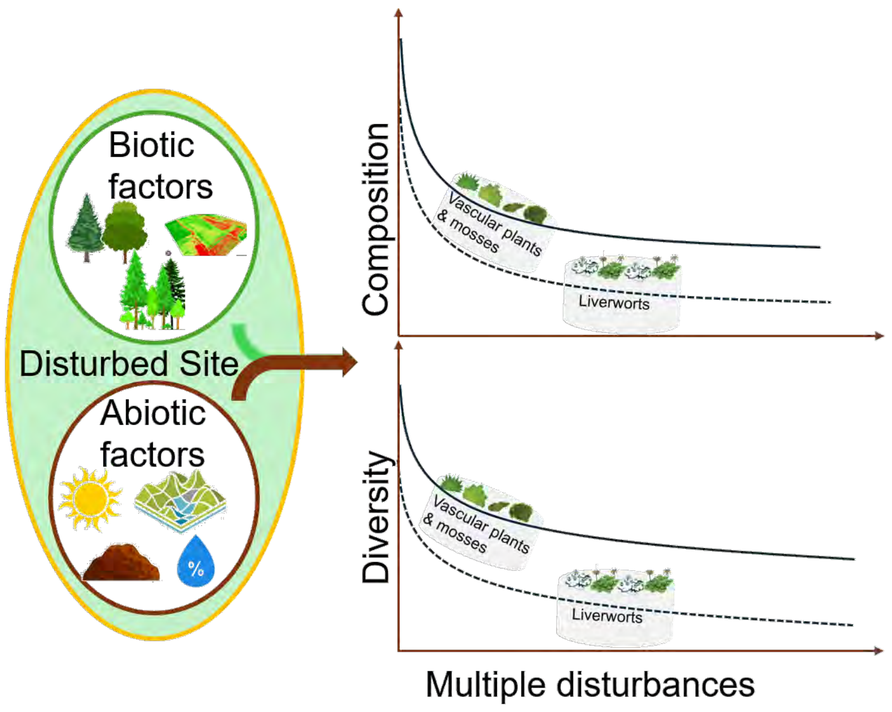
Fig: Factors influencing understorey vegetation in the boreal forest

- Exposed to **multiple co-occurring disturbances**
- Changes in resource availability and microhabitat condition
- Impact on diversity and composition

OBJECTIVES

- To identify how the diversity and composition of understorey plants change due to disturbances
- To detect the major factors that cause the change in understorey plant communities

HYPOTHESIS



METHODOLOGY

Disturbance map

- Extracted map for major disturbances (wildfire, insect outbreaks, harvesting, mine sites, road construction, and transmission lines)

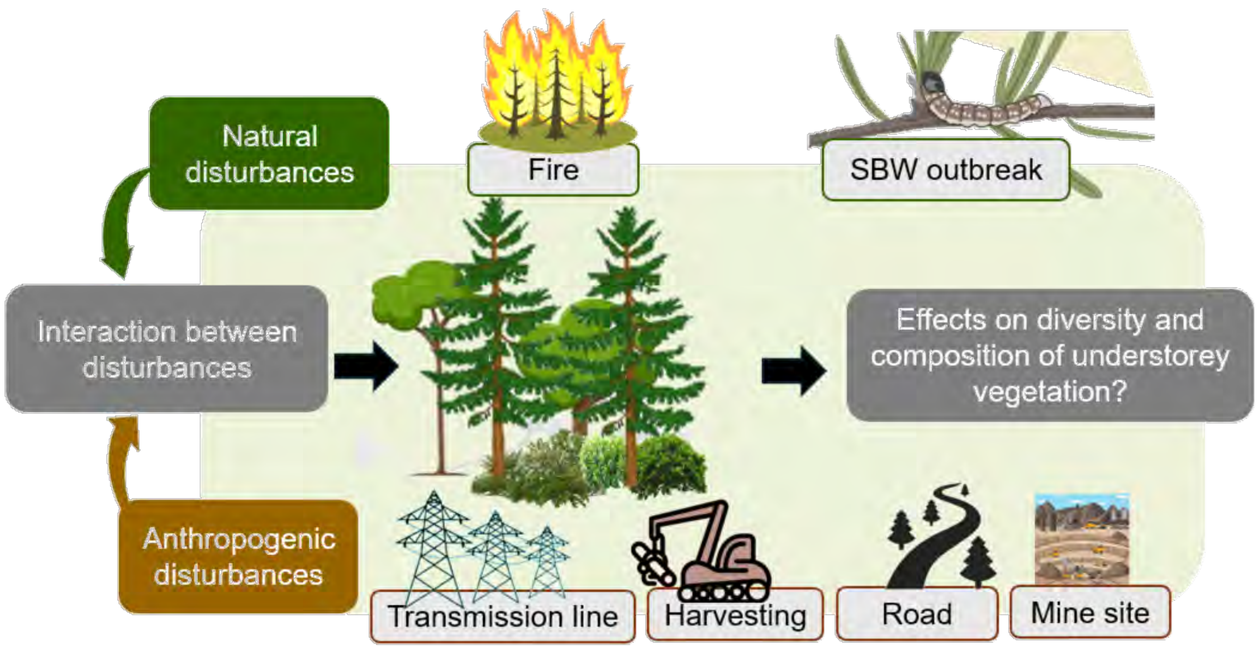


Fig: Effects of multiple disturbances in forest ecosystems

- Compiled data from pre-existing projects
- Applied disturbance-specific buffer distances

Sampling Design

- Allocated 25 additional sampling sites based on disturbance combinations, ecosystem types, and road accessibility

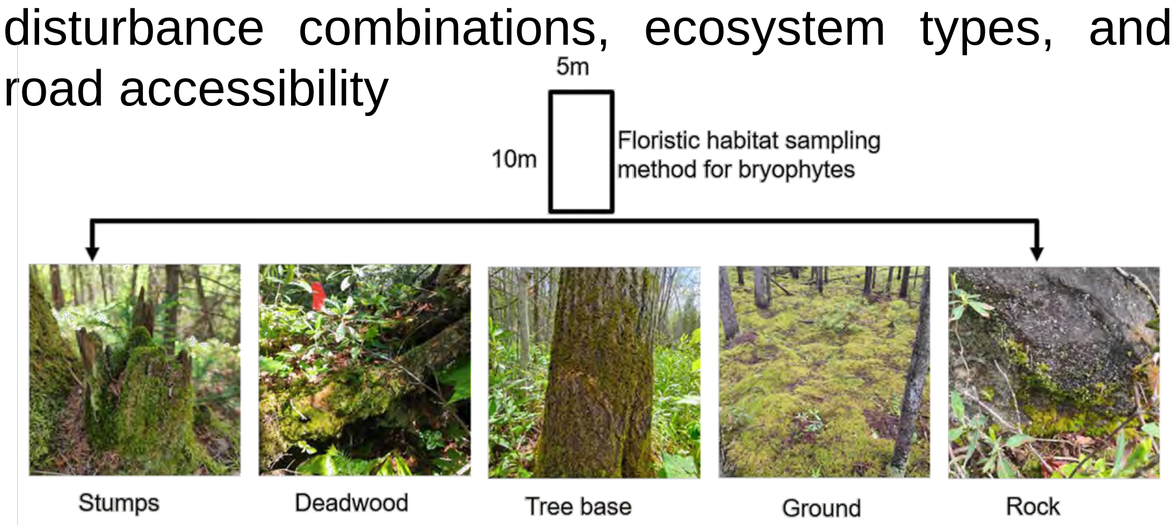


Fig: Bryophytes sample collection from different microhabitats

- Assessed the percentage cover of vascular plants
- Measurement of environmental factors such as dominant tree, canopy density, soil characteristics, and organic layer thickness
- Topographical factors (slope, elevation, aspect, topographic position index, water flow direction, & flow accumulation) will be extracted using DEM
- NDVI will be used for calculating additional vegetation factors

PRELIMINARY RESULTS

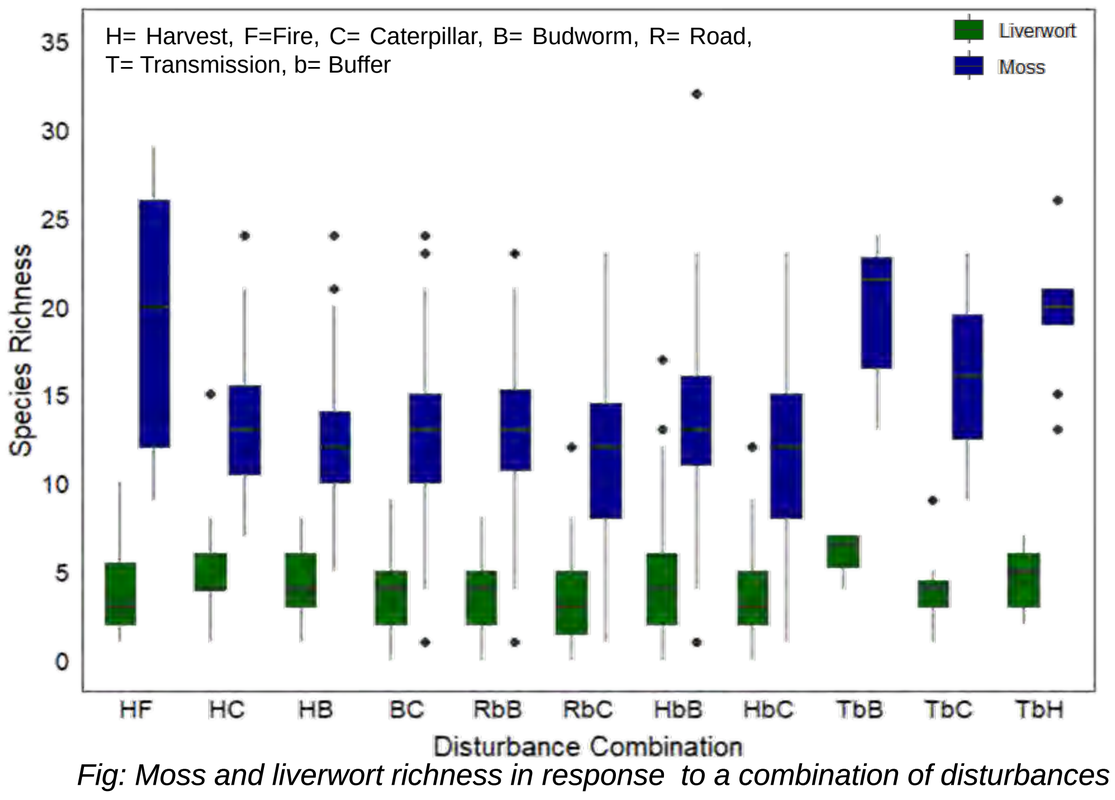


Fig: Moss and liverwort richness in response to a combination of disturbances

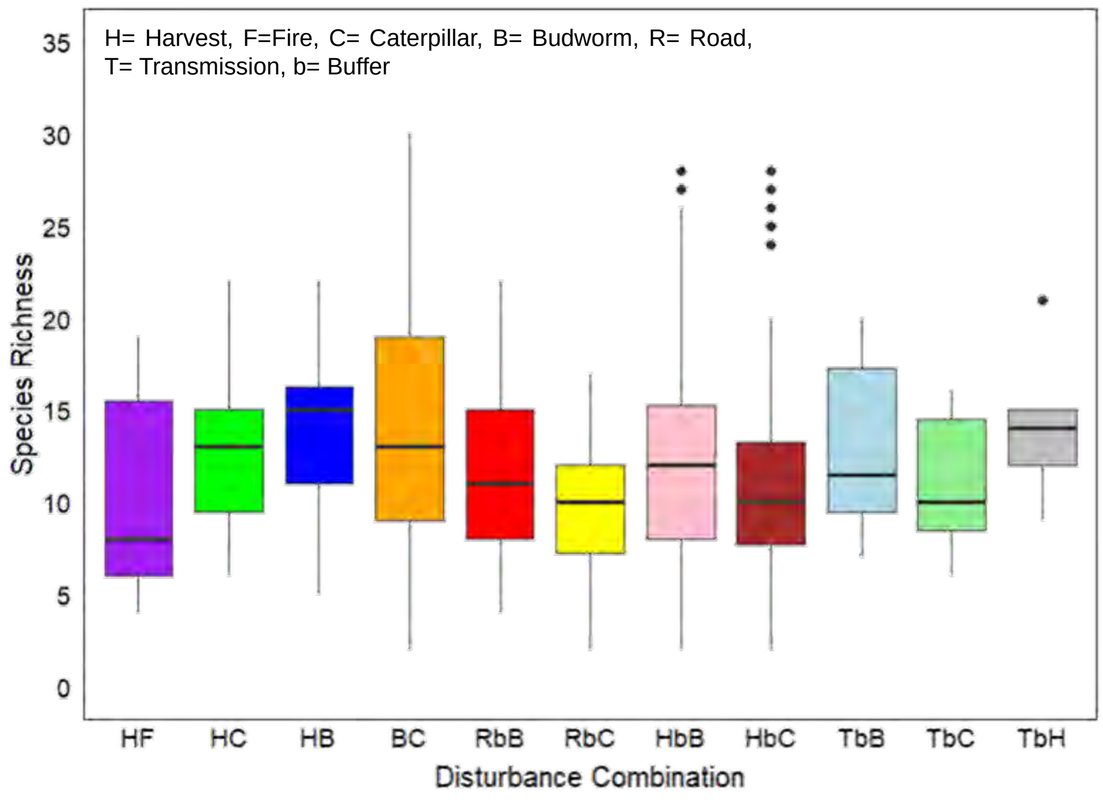


Fig: Vascular plant richness in response to a combination of disturbances

References

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