

TWELVE-YEAR IMPACTS OF PARTIAL AND TOTAL FOREST HARVEST ON EPIXYLIC BRYOPHYTE SPECIES IN BOREAL BLACK SPRUCE –FEATHERMOSS FORESTS

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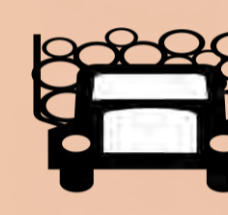
Introduction



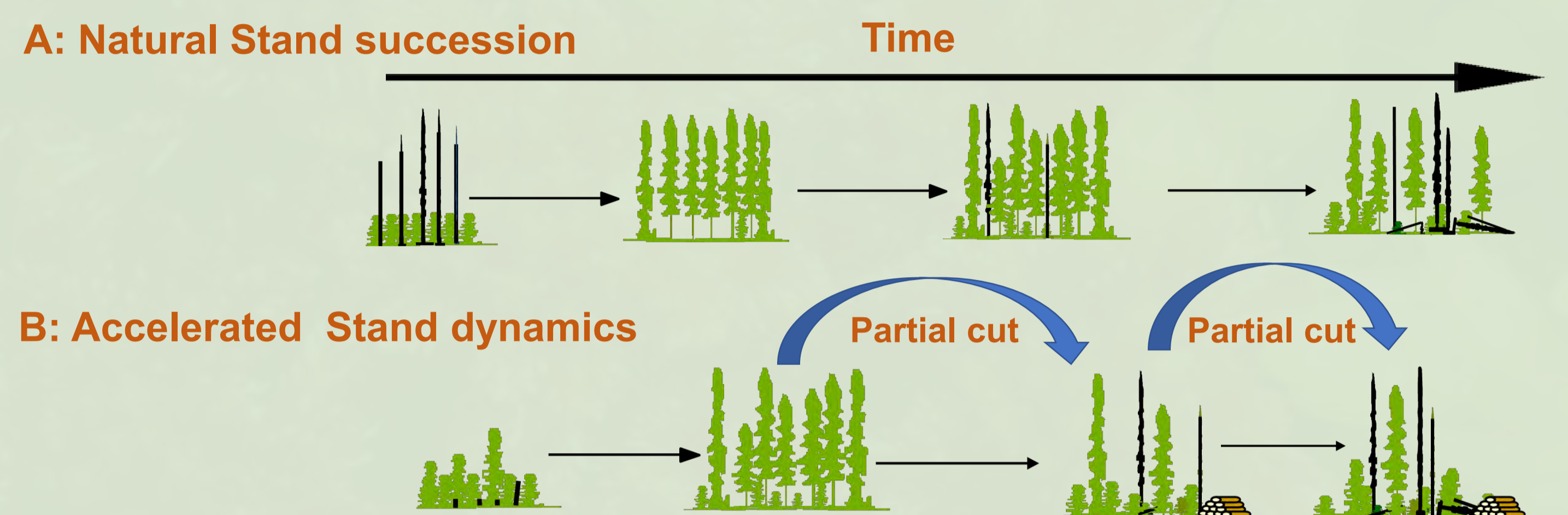
Harvesting disturbances have resulted in changes in the composition and structure of the boreal forest



PARTIAL CUT: Proposed as an alternative harvesting technique under this management regime

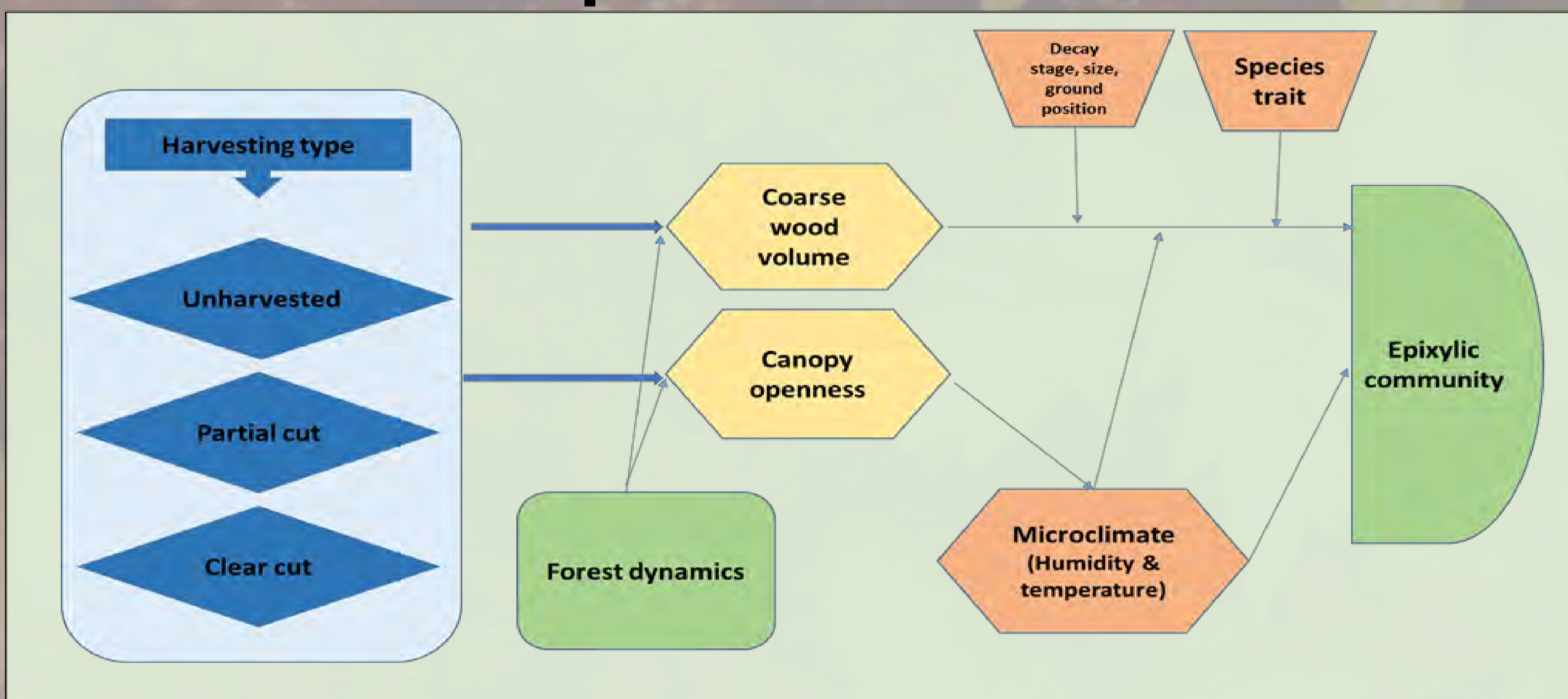


Partial cut ability to create old growth habitat conditions and accelerate community succession remains uncertain.



After 12 years of harvesting disturbance, this study seeks to investigate the impacts of partial cut on the forest microclimate and species composition using **epixylic bryophytes** as indicator species.

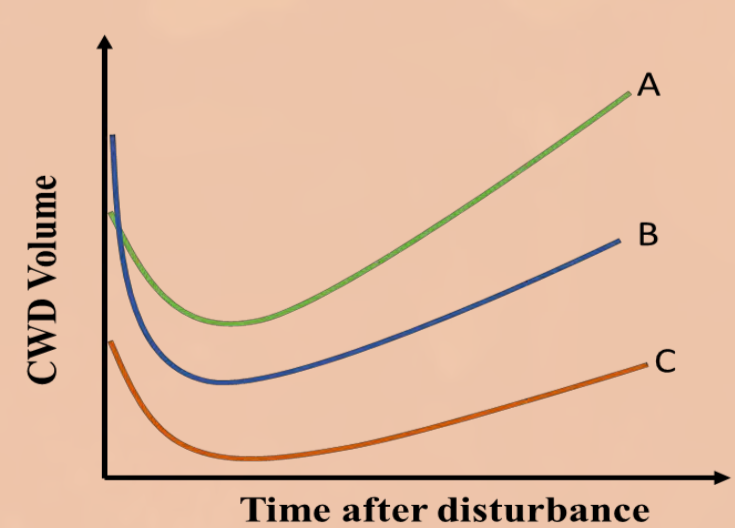
Conceptual Framework



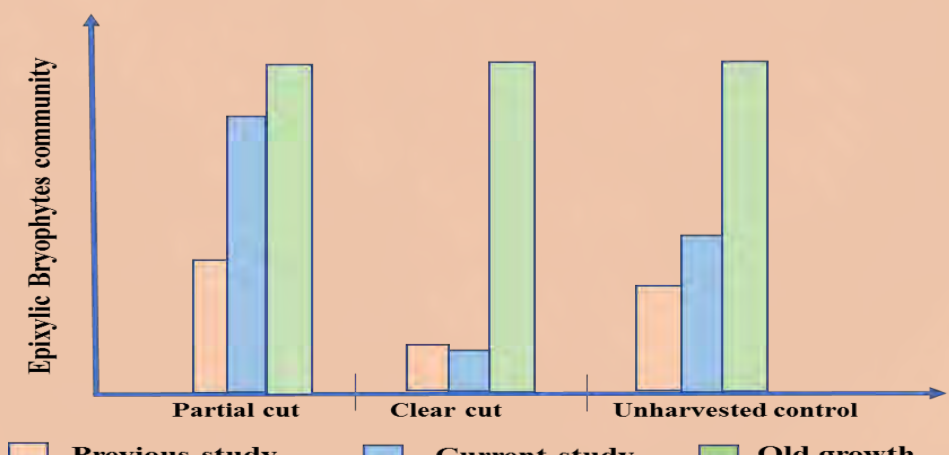
Objectives

1. To examine habitat condition changes (substrate availability and microclimate) along unharvested, partial cut and clear cut gradient with increasing time after harvesting disturbance.
2. To assess the changes in epixylic bryophyte species composition, richness and traits resulting from habitat condition variations along the different harvesting gradient.
3. Compare the results of each harvesting treatment to a chronosequence of old growth forest and preliminary post disturbance study

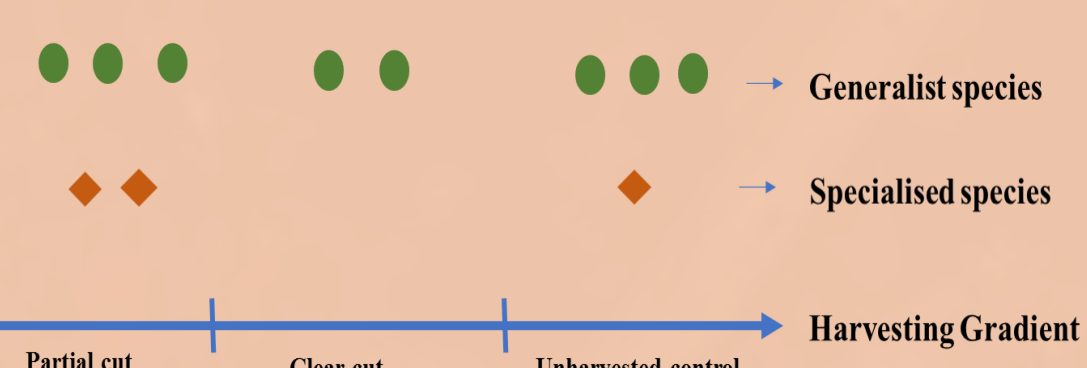
Hypotheses



Increased coarse woody debris volume in Partial cut (highest) and control but not in clear cut.



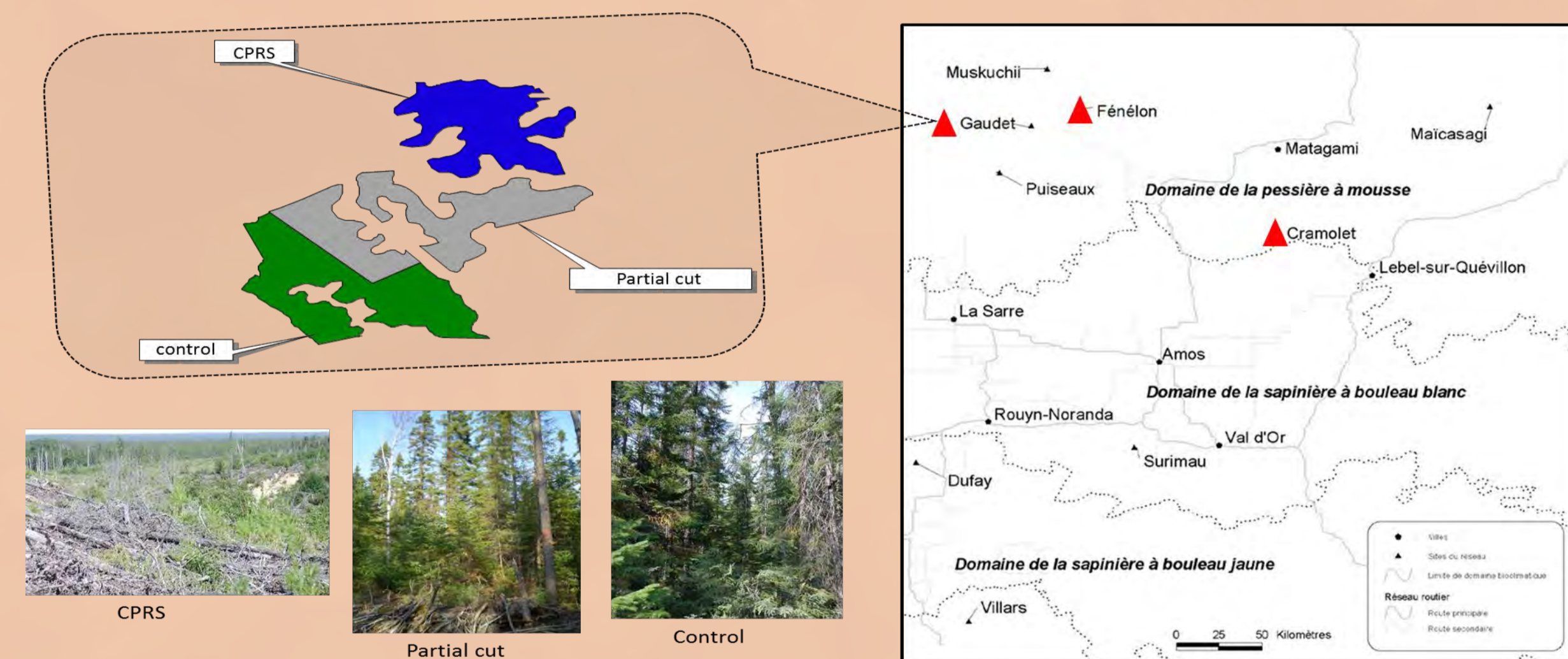
Epixylic bryophyte community in partial cut will resemble old growth communities compared to unharvested control and clear cut.



Specialised species will be higher in partial cut and unharvested control whereas generalist species will be common along all the harvesting gradients.



Study Area



The field work for this study will be conducted in the **Clay Belt region of northwestern Quebec**, which is dominated by **black spruce forest**. The study area forms part of an experimental network of plots of the **Réseau d'expérimentation des coupes partielles en Abitibi (RECPA)**.

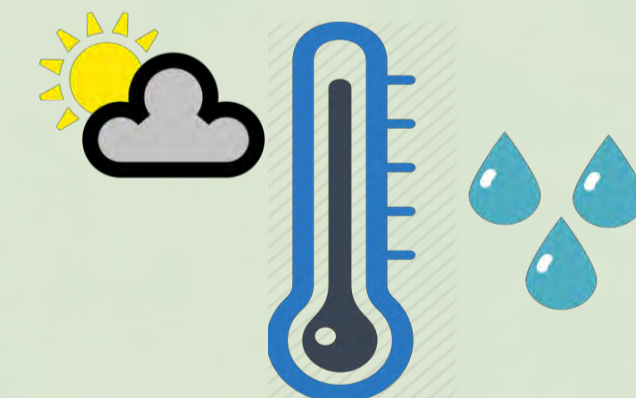
Methodological Approach

Coarse Woody Debris (CWD) Survey



Coarse woody debris-CWD will be surveyed in each plot. At each coarse woody debris, the length, maximum and minimum diameter and stage of decay will be measured.

Micro-Environment Measurement



The canopy openness, temperature and relative humidity will be measured for micro climate conditions

Bryophyte Community Sampling



On each sampled CWD, epixylic species composition, richness and species traits will be evaluated.

Laboratory identification of Bryophytes



Bryophyte species impossible to identify in the field will be brought to the laboratory for identification

Expected Outcomes

At the end of the study, it is anticipated that the mid-term impact of different harvesting types on epixylic bryophytes will be understood in terms of substrate availability, changes in micro climate, epixylic species richness, composition and traits.

REFERENCES

- Arseneault, J., et al. (2012). "Effects of variable canopy retention harvest on epixylic bryophytes in boreal black spruce-feathermoss forests 1.1 This article is one of a selection of papers from the International Symposium on Dynamics and Ecological Services of Deadwood in Forest Ecosystems." *Canadian Journal of Forest Research* 42(8): 1467-1476
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