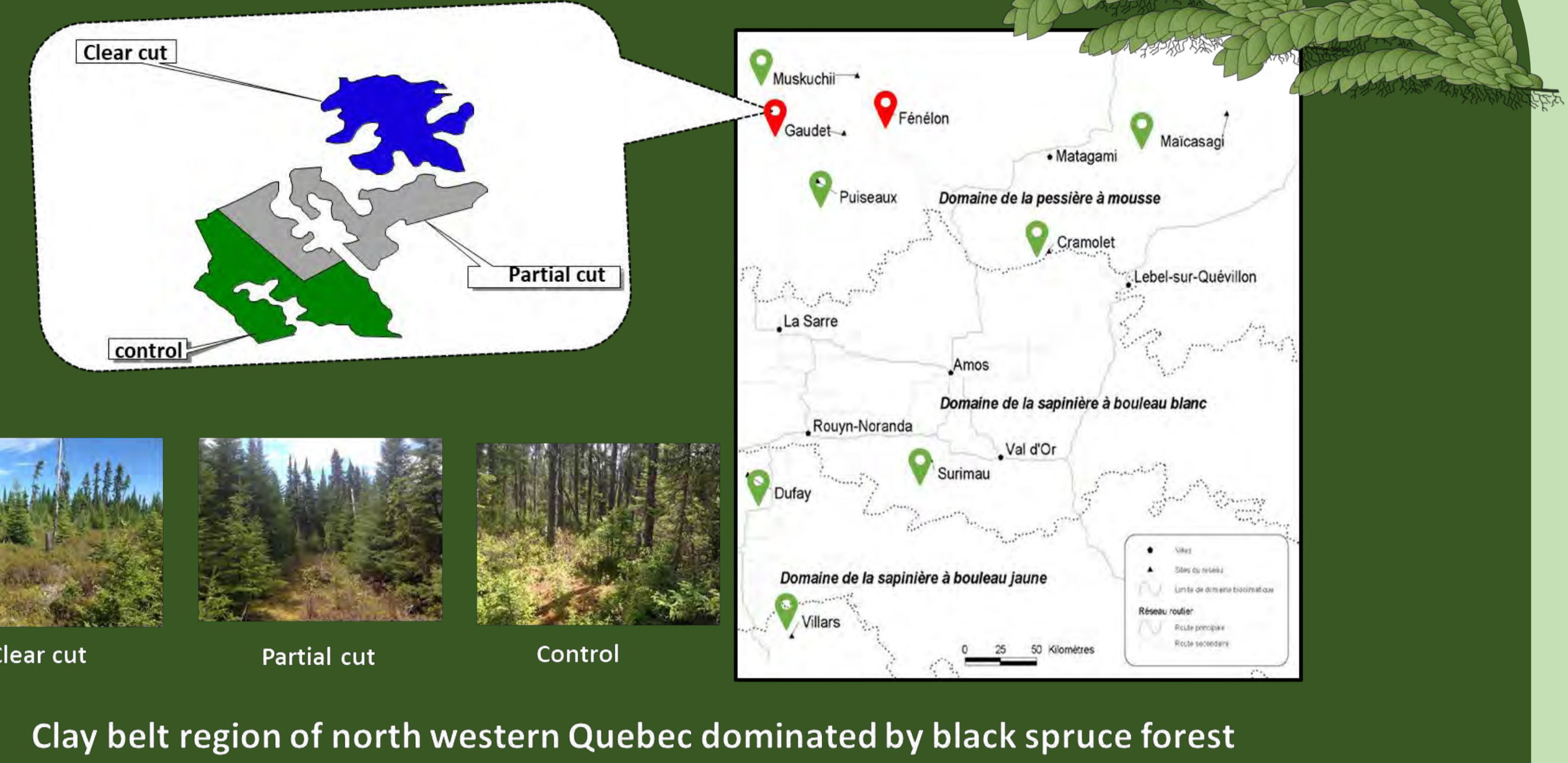


FOURTEEN-YEAR IMPACTS OF PARTIAL AND TOTAL FOREST HARVEST ON EPIXYLIC BRYOPHYTE SPECIES IN BOREAL BLACK SPRUCE –FEATHERMOSS FORESTS

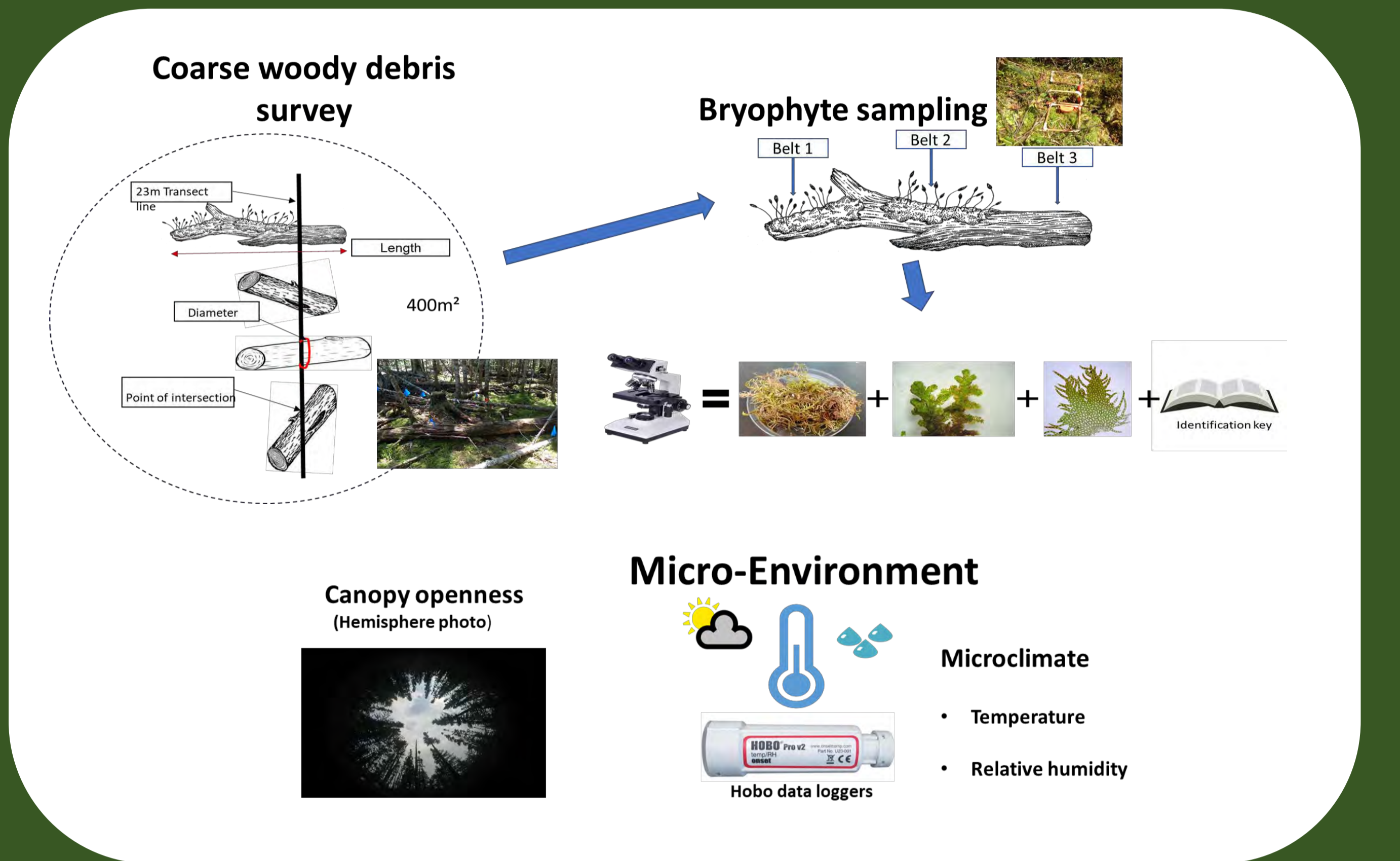
Introduction

Deadwood living bryophytes (epixylics) are an important component of boreal forest species diversity. Forest harvest alters the microclimate and the availability of deadwood consequently affecting epixylic bryophyte composition and richness. Partial cuts have been proposed to reduce these impacts associated with traditional harvest methods. Initial post harvest studies indicated the ability of partial harvest to attenuate harvest impacts on epixylic bryophytes and its micro habitat. However, long term studies are needed to determine actual effects. 14years after harvest, this study seeks to ;

- ❖ Examine changes in epixylic bryophyte composition and richness and micro habitat conditions along an unharvested , partial cut and clear cut harvest gradient.
- ❖ Compare results to initial post harvest studies.



Methodology



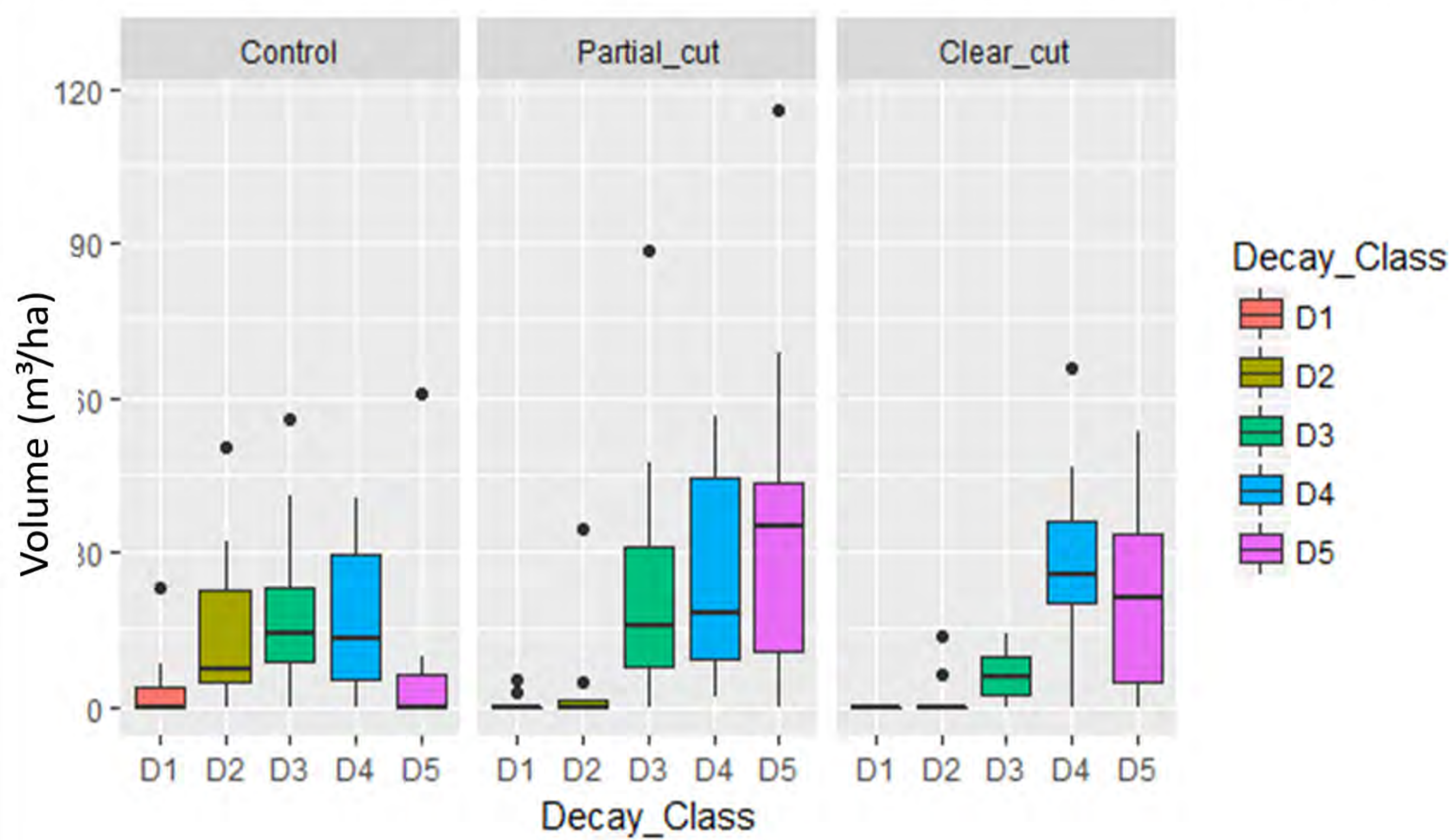
Preliminary results

Table 1. Coarse woody debris characteristics and canopy openness per harvest treatment

	5 years after harvest			14 years after harvest		
	Unharvested control	Partial cut	Clear cut	Unharvested control	Partial cut	Clear cut
Mean Canopy openness (%)	39.51±1.15a	56.64±2.7b	82.39±1.94c	28.78 ± 0.85a	32.98 ± 1.39a	62.17 ± 1.38b
Number of logs per plot	9.2±0.38a	10.34±0.49a	9.6±0.39a	8.2± 1.58a	8.9 ± 1.1a	8.6 ± 1.54a
Mean decomposition class	2.77±0.14a	2.93±0.12a	2.83±0.13a	3.06 ± 0.15a	3.77 ± 0.14a	3.98 ± 0.10a

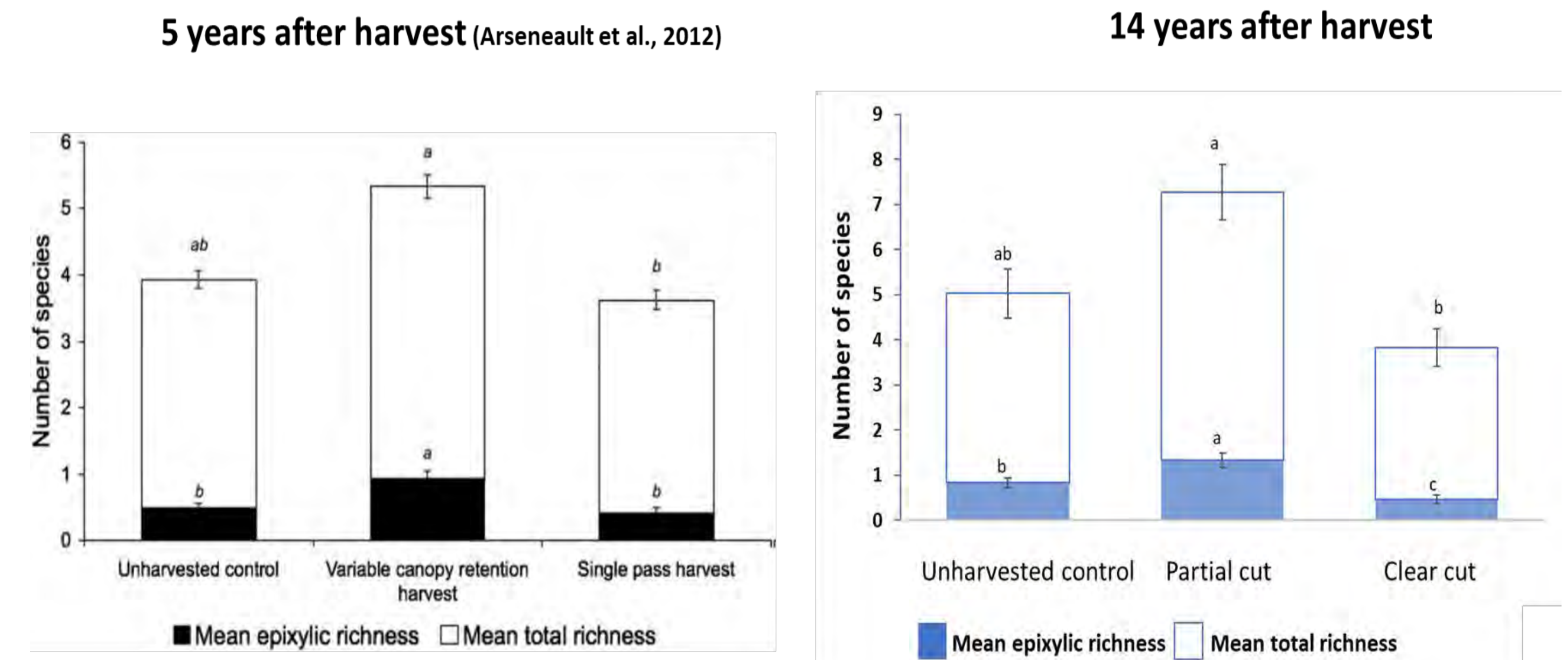
Mean canopy openness values and mean number of logs decreased compared to initial post harvest study. In contrast, mean decay class values of logs increased compared to initial post harvest study

Fig 1. Coase woody debris decay class volume per harvest treatment



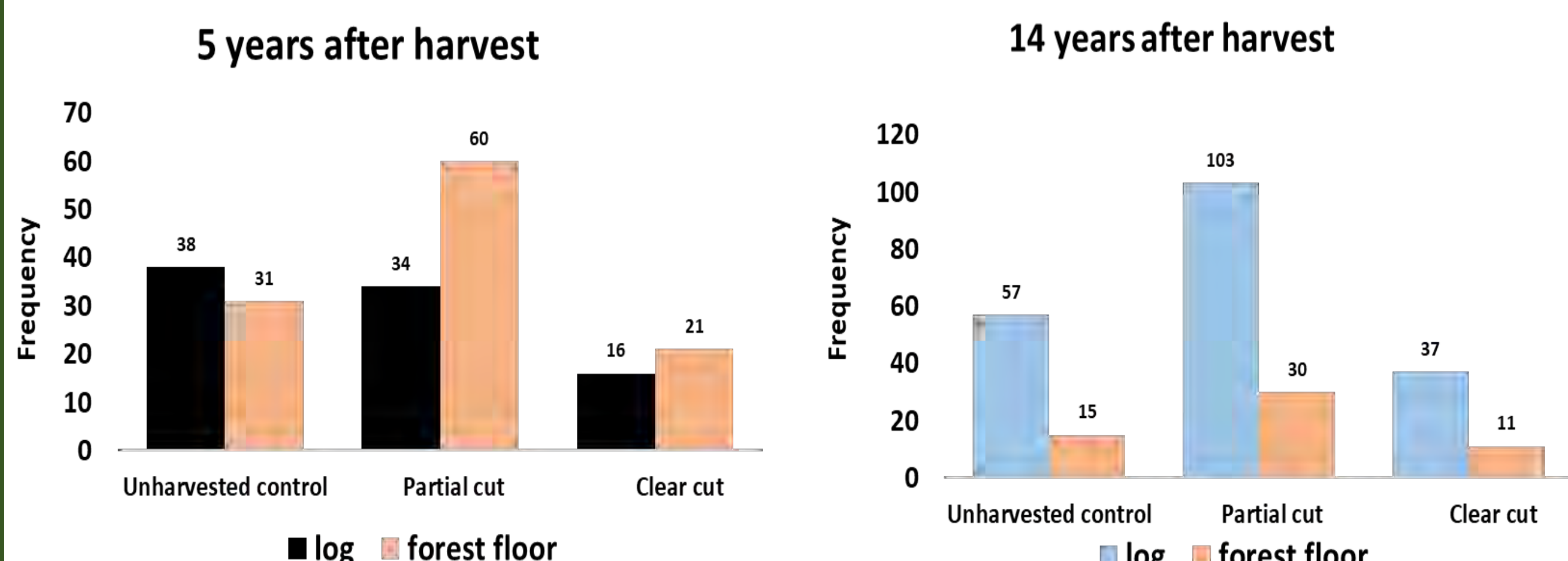
Volume of early decay stages were lower in partial cut and clear cut compared to unharvested control. Decay class one was totally absent in clear cut.

Fig 2. Mean bryophyte species richness per log



Significant differences in epixylic species richness were observed between treatments whereas significant differences existed only between partial cut and clear cut in the initial post harvest study. However, similar trends were observed at the total species richness level in both studies.

Fig 3. Epixylic species frequency of occurrence on logs and forest floor



Highest frequency of epixylic species was found in partial cuts in both studies. However epixylic species occurred mostly on logs in 2017 compared to the initial post harvest study where most epixylic species occurred on forest floor.

Conclusion

Partial cuts continued to maintain high epixylic species richness by providing deadwood of appropriate decay class as well as a favorable micro environment. This is therefore consistent with initial reports on partial cut ability to offer an effective strategy for biodiversity conservation compared to traditional clear cut in managed forest landscapes