Is deadwood helping regeneration?
Natural regeneration dynamics in a stand replacing windthrow area

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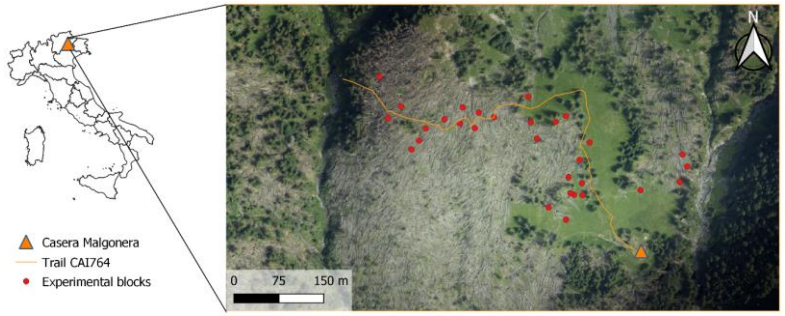


Background and justification

Wind is the most significant disturbance agent in European forests. Windthrows are becoming more frequent due to CC.

- Large amount of deadwood laying on the ground
- Need to restore forest cover in large areas

Objective

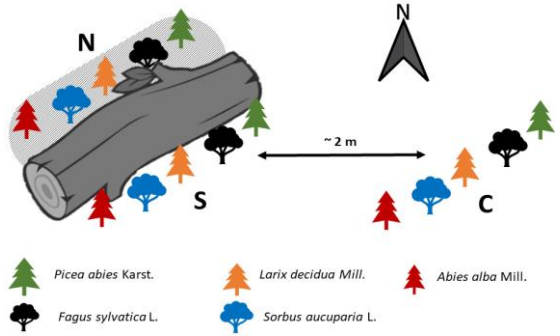
Deadwood is providing favorable microsite's conditions for regeneration establishment and survival?

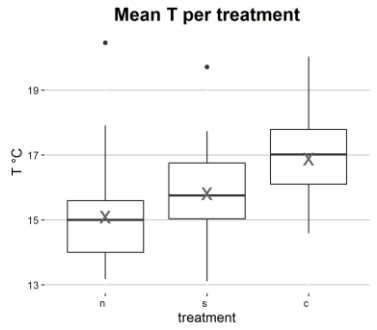
Methods

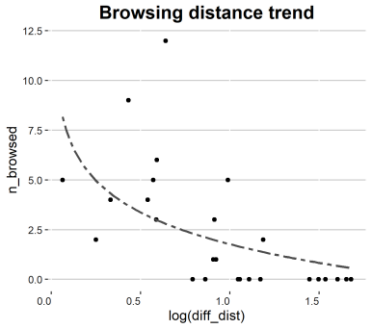
- Saplings (5 species) placed close to deadwood (N, S) and in open sites (C) (blocks n=30)
- During growing season, collection of two microsite parameters: temperature T (°C) and soil water content SWC ($\%/V_{soil}$)
- Distance between each block and the windthrow edge
- Obstruction of deadwood based on LiDAR derived DSM and DTM using the equation

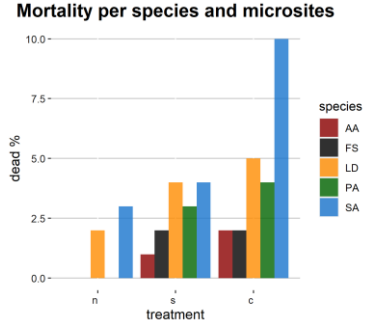
$$log(d_{cost} - d_{euclidean})$$

Planting protocol









Results and discussion

Deadwood has an **ameliorative function** on regeneration microsites:

- Mitigate T
- Anisotropic relationship between deadwood and saplings (shadow effect)

Deadwood has a **protection function** against browsing:

- Deadwood increase roughness and obstruction to browsers
- Larger the distance from windthrown edge, higher the protective effect of deadwood against browsers

These relations are **species specific**