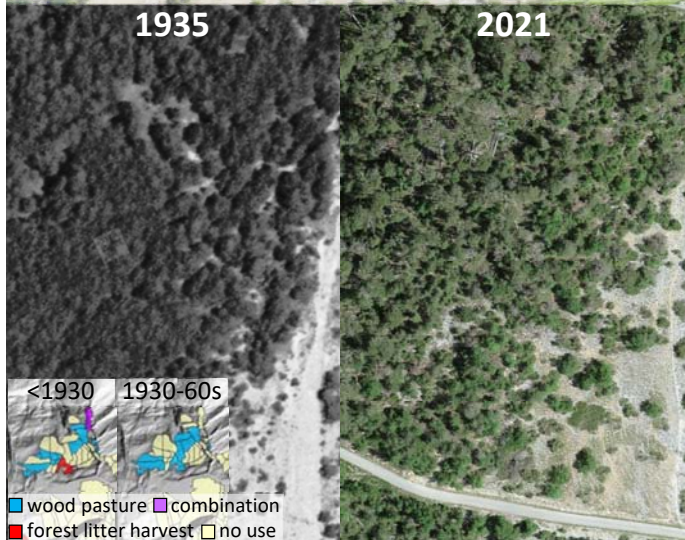


10-year monitoring of ecosystem responses to understory removal in a dry oak-pine forest of Central Valais, Switzerland

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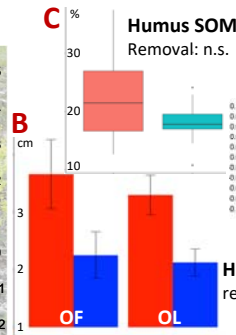
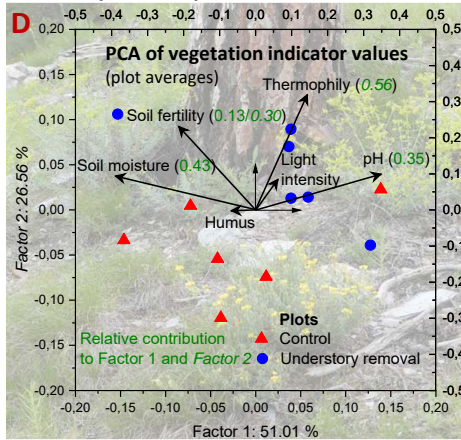


Main objective: Understanding the effects of reclaiming understory vegetation on tree health and ecosystem functioning within dry forests.
The experiment: Since 2010, removal of understory trees in circular plots centered on 1 *Pinus sylvestris* tree 120-160 year-old in a former wood pasture. Assessment of soil properties, ground vegetation, tree ecophysiology, stem growth, foliage condition and morpho-anatomy.

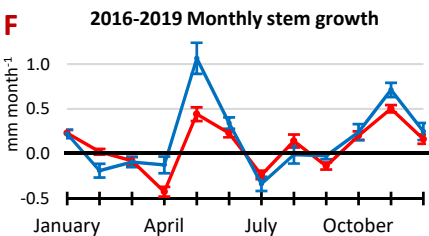
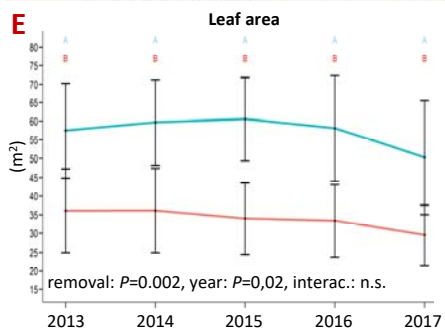
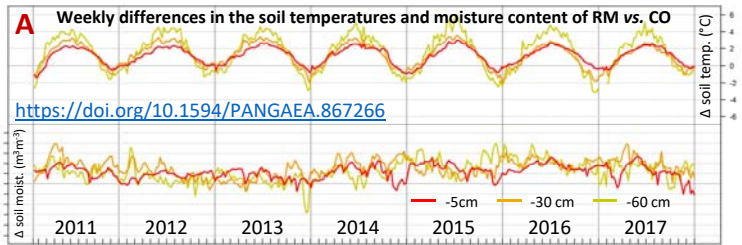


The context: The low elevation forests of Central Alps, with understory reclamation by mixed forest regeneration since abandon of non-timber use in the 1960s, have been increasingly showing decline of older pines, worsened by the steadily rising temperatures.

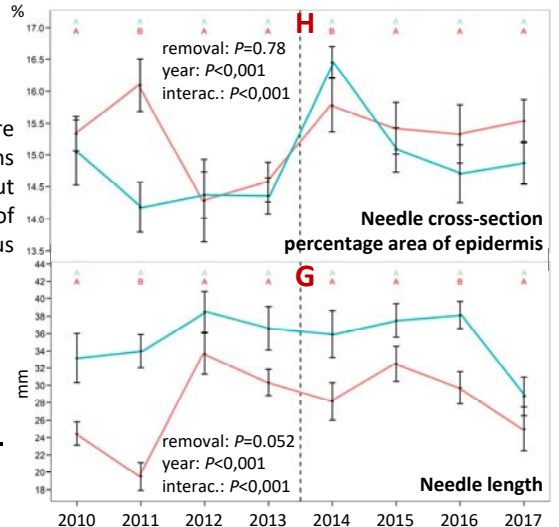
The ecosystem responses to RM treatment:



Soil & vegetation: Higher soil temperature and volumetric water content at all depths (A). Thinner humus horizons (B) but unchanged SOM-content (C), indicative of lower biological activity. More xerophilous (D) (and xeromorphic) ground vegetation.



Dominant pines: Higher foliage density (E), consequent stem growth release, with higher spring and autumn peak values (F) and longer needles (G), less xeromorphic v.s. CO during dry years (H).



Conclusions: In the RM treatment with higher soil moisture and temperatures, the ecosystem compartments have shown different response trajectories, with a reduction in the biological activity (soil), increased xerophily and xeromorphy (ground vegetation), thus contrasting with improved growth and vitality (pines), indicative of interactions between understory competition and climatic conditions in former wood pastures.



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Acknowledgments

Former master students Thomas Stuber, Yann Wittwer, Johan Ancey, Valérie Collaud

