

Moss litter decomposition in peatlands: Rates of mass loss

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The moss layer may be a significant source of litter inputs even decades after persistent water-level drawdown (Fig. 1). Further, contrary to what was suggested by early research on vegetation changes following (forestry) drain-age, *Sphagnum* mosses may remain a considerable component in the moss layer. The species composition will have changed, however, as species adapted to wet conditions disappear following drainage and hummock species, together with feather mosses, gain dominance. The moss layer may have a significant role in the carbon balance of not only pristine, but also drained peatlands. In the studies on drained peatlands, mosses have been largely neglected, however.

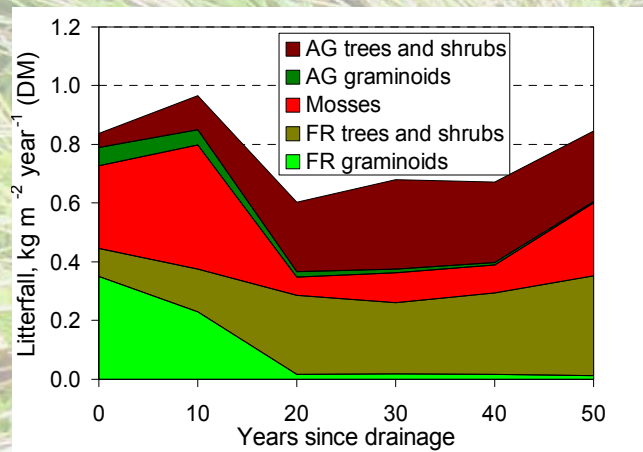


Fig. 1. Evolution of annual litter inputs following ditching of sedge pine fens. From the chronosequence study of Laiho et al. 2003. AG = above ground, FR = fine roots.

We have started a pilot-study on moss decomposition in drained (meso-) oligotrophic sedge pine fens. We have study sites in southern and northern Finland. For comparison, we measure moss decomposition in pristine sites representing the same original site type.

Recently dead or dying parts of moss shoots were harvested from patches of the dominant moss species (1-3) at each site. Litter-bags were prepared with air-dry moss litter, and incubated in patches of the corresponding species.

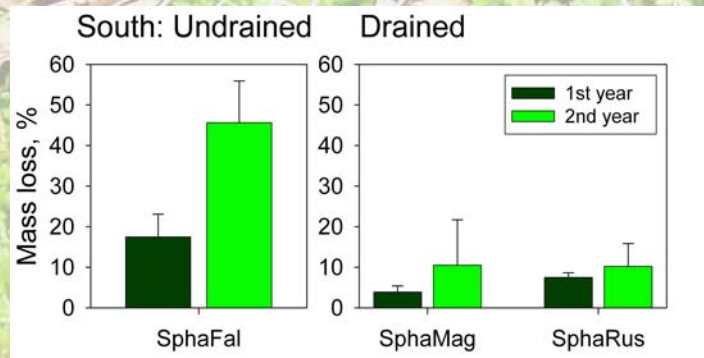


Fig. 2. First- and second-year mass losses \pm s.e. from moss litter in the southern study sites.

Moss litter decomposition was slower in drained than in pristine peatlands (Figs 2 and 3). Further, the slower decomposition rates were not caused by differences in species composition only (Fig. 3).

Based on these preliminary results, we postulate that litter quality and moisture deficiency limit decomposition in the surface layers of drained peatlands.

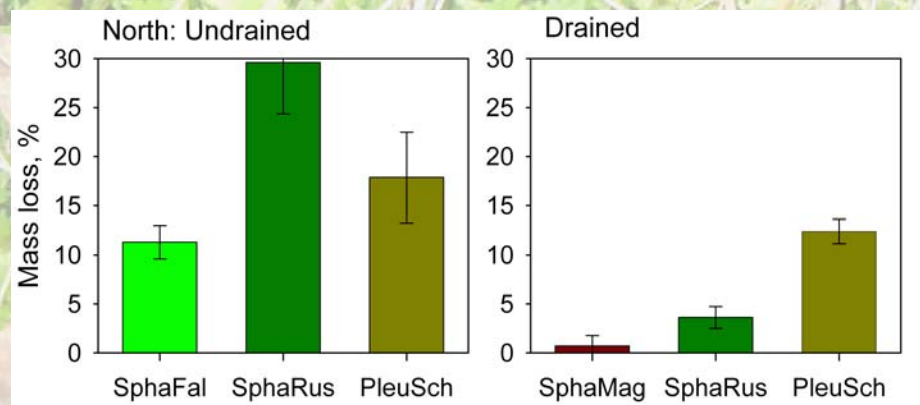


Fig. 3. First-year mass losses \pm s.e. from moss litter in the northern study sites. SphaFal = *Sphagnum fallax*, SphaMag = *S. magellanicum*, SphaRus = *S. russowii*, PleuSch = *Pleurozium schreberi*.

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