Supporting information

**Appendix S1.** Average biomass of plant functional types, vascular plant leaf area indices, and bryophytes production and length growth in study sites. Average values are brought with ± SE, statistical significance was tested with Kruskal-Wallis test, and pairwise comparison was conducted using Mann-Whitney tests with Bonferroni correction.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | KõrsaR | HaraRN | HaraRS | HaraP | KõrsaP | χ2 | p |
| Biomass (g dm–2) |
| Sphagnum | 8.5 ± 2.0ab | 6.6 ± 0.6abc | –c | 8.2 ± 1.0b | 7.2 ± 0.8ab | 9.6 | < 0.05 |
| True moss | 0.7 ± 0.4a | 1.0 ± 1.0a | –a | –a | –a | 9.6 | < 0.05 |
| Evergreen shrub | 0.4 ± 0.3a | –abc | –b | 3.8 ± 1.4c | 4.3 ± 1.4c | 15.0 | < 0.01 |
| Ombrotrophic forb | –a | –a | –a | 0.0 ± 0.0a | 0.0 ± 0.0a | 5.5 | > 0.05 |
| Ombrotrophic sedges | 2.0 ± 0.8a | 3.4 ± 2.7a | 4.1 ± 2.2a | 0.1 ± 0.1a | 2.4 ± 0.7a | 8.4 | > 0.05 |
| Trees | 0.1 ± 0.1a | –a | –a | 0.0 ± 0.0a | –a | 9.5 | > 0.05 |
| Vascular plant (total) | 2.6 ± 0.7a | 3.4 ± 2.7a | 4.1 ± 2.2a | 4.0 ± 1.4a | 6.7 ± 1.6a | 3.5 | > 0.05 |
| Plant (total) | 11.7 ± 1.7a | 11.0 ± 3.0a | 4.1 ± 2.2a | 12.1 ± 2.0a | 14.0 ± 2.3a | 6.7 | > 0.05 |
| Sphagnum increment (mm year–1) |
| Lawn | 15.0 ± 2.8a | 11.6 ± 0.7ab | –b | 11.1 ± 2.4a | 11.2 ± 1.2a | 9.6 | < 0.05 |
| Hummock | –a | – ab | –a | 15.4 ± 5.8ab | 13.2 ± 3.3b | 12.5 | < 0.05 |
| Production (g dm–2 year–1) |
| Sphagnum | 2.2 ± 0.9a | 2.4 ± 0.3ab | –b | 3.2 ± 1.0a | 1.9 ± 0.3a | 9.8 | < 0.05 |
| Lawn | 2.2 ± 0.9a | 2.4 ± 0.3ab | –b | 0.9 ± 0.3a | 0.9 ± 0.2a | 12.5 | < 0.05 |
| Hummock | –a | – ab | –a | 2.3 ± 0.9ab | 1.1 ± 0.5b | 12.5 | < 0.05 |
| True moss | 0.1 ± 0.1a | 0.4 ± 0.4a | –a | –a | –a | 9.6 | < 0.05 |
| Vascular plant LAI | 0.2 ± 0.1a | 0.4 ± 0.0a | 0.2 ± 0.1a | 0.1 ± 0.1a | 0.3 ± 0.1a | 6.6 | > 0.05 |

– PFT is absent from the site.

**Appendix S2.** Measured NEE, RECO and PAR on Kõrsa and Hara rewetted and pristine sites. NEE is shown on light measurements (PAR > 0) and RECO is measured in dark conditions (PAR = 0).



**Appendix S3.** Average photosynthesis (Pmax (mg CO2 m–2 h–1), k (μmol m–2 s–1), s(m2 m–2)) and respiration (r0 (mg CO2 m–2 h–1), b (1/ oC)) model parameter values in rewetted and pristine sites of each site (±SE). Different small case letters indicate statistically significant (p < 0.05) difference between the site and it’s state. Statistical significance was tested with Kruskal-Wallis test and pair-wise comparison was done with Mann-Whitney test and Bonferroni correction was used.



**Appendix S4.** Spearman correlation coefficient between vegetation variables and CO2 fluxes in pooled samples, rewetted and pristine plots.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Pooled | Rewetted | Pristine |
|  | NEE | Pg | RECO | NEE | Pg | RECO | NEE | Pg | RECO |
| LAIvasc | –0.05 | 0.16 | 0.20 | 0.30 | 0.06 | –0.33 | –0.19 | 0.24 | 0.86\* |
| BIObry | 0.52\* | 0.43 | –0.17 | 0.59 | 0.77\*\* | 0.29 | 0.24 | 0.14 | –0.26 |
| COVbry | 0.61\*\* | 0.33 | –0.47\* | 0.80\*\* | 0.77\*\* | –0.11 | 0.11 | 0.08 | –0.36 |
| COVvasc | 0.13 | 0.03 | 0.08 | –0.07 | –0.15 | –0.07 | 0.43 | 0.57 | 0.60 |
| BIOvasc | –0.14 | 0.05 | 0.18 | 0.07 | 0.10 | 0.27 | –0.24 | 0.12 | 0.83\* |
| BIOplant | 0.28 | 0.36 | 0.12 | 0.53 | 0.73\* | 0.53 | 0.05 | 0.24 | 0.29 |
| COVplant | 0.50\* | 0.26 | –0.36 | 0.60 | 0.50 | –0.23 | 0.07 | 0.12 | 0.19 |
| COVhumSph | 0.04 | –0.26 | –0.44 | – | – | – | –0.05 | 0.08 | 0.37 |
| COVlawnSph | 0.57\* | 0.52\* | –0.23 | 0.72\* | 0.70\* | –0.15 | 0.07 | –0.12 | –0.68 |
| COVtruemoss | 0.21 | 0.60\*: | 0.62\*\* | 0.40 | 0.60 | 0.57 | – | – | – |
| COVshrub | 0.05 | –0.22 | –0.38 | 0.14 | 0.45 | 0.43 | –0.25 | –0.42 | 0.11 |
| COVombforb | –0.12 | –0.31 | –0.29 | – | – | – | –0.35 | –0.20 | 0.18 |
| COVminforb | 0.48\* | 0.54\* | 0.47\* | 0.53 | 0.68\* | 0.49 | – | – | – |
| COVombsedg | 0.14 | 0.28 | 0.34 | –0.08 | –0.16 | –0.08 | 0.58 | 0.83\* | 0.40 |
| COVtree | –0.12 | –0.38 | –0.26 | –0.13 | –0.13 | –0.42 | –0.38 | –0.76\* | –0.46 |
| BIOtree | 0.30 | 0.44 | 0.19 | 0.23 | 0.50 | 0.35 | 0.27 | 0.19 | –0.45 |
| BIOshrub | 0.12 | –0.10 | –0.32 | 0.30 | 0.60 | 0.46 | –0.29 | 0.07 | 0.69 |
| BIOombforb | –0.15 | –0.23 | –0.14 | – | – | – | –0.35 | –0.20 | 0.18 |
| BIOombsedg | 0.02 | 0.39 | 0.51\* | –0.01 | –0.02 | 0.31 | 0.58 | 0.83\* | 0.40 |
| PROhumSph | 0.02 | –0.26 | –0.43 | – | – | – | 0.31 | –0.17 | 0.05 |
| PROlawnSph | 0.59\*\* | 0.66\*\* | –0.06 | 0.68\* | 0.76\* | 0.19 | 0.62 | 0.33 | –0.41 |
| PROtruemoss | 0.16 | 0.57\* | 0.59\* | 0.34 | 0.46 | 0.44 | – | – | – |
| PROSph | 0.34 | 0.29 | –0.19 | 0.70\* | 0.81\*\* | 0.18 | –0.14 | –0.10 | 0.12 |
| INChumSph | –0.03 | –0.33 | –0.42 | – | – | – | –0.57 | –0.36 | 0.45 |
| INClawnSph | 0.40 | 0.46 | 0.00 | 0.65\* | 0.81\*\* | 0.31 | –0.14 | –0.17 | 0.26 |
| INCSph | 0.22 | 0.07 | –0.26 | 0.65\* | 0.81\*\* | 0.31 | –0.57 | –0.36 | 0.45 |