

Electronic Appendix 1. - Frequency change and *frequency*cover change* for extended list of species (including less frequent species) and median biomass concentrations for individual species used in the analyses (taken from Hájek et al. 2014).

| species name | Abbrev. | subset of poor-fens (pH ≤ 5) | | | | | | subset of rich-fens (pH > 5) | | | | | | nutrient concentrations in biomass | | |
|-----------------------------------|----------------|------------------------------|----------------|------------------|----------------------|------------------|----------------------|------------------------------|----------------|------------------|----------------------|------------------|----------------------|------------------------------------|----------|----------|
| | | absolute frequency | | large data set | | precise data set | | absolute frequency | | large data set | | precise data set | | | | |
| | | n ₀ | n ₁ | freq. change (%) | freq.*c change (phi) | freq. change (%) | freq.*c change (phi) | n ₀ | n ₁ | freq. change (%) | freq.*c change (phi) | freq. change (%) | freq.*c change (phi) | N (mg/g) | P (mg/g) | K (mg/g) |
| <i>Aneura pinguis</i> | <i>Ane.pin</i> | - | - | n. a. | n. a. | n. a. | n. a. | 19 (8) | 30 (2) | -14.09 * | -0.067 | -12.91 * | -0.134 | n. a. | n. a. | n. a. |
| <i>Aulacomnium palustre</i> | <i>Aul.pal</i> | 6 (3) | 36 (2) | 9.70 | 0.007 | -4.14 | -0.023 | 24 (6) | 95 (11) | 11.27 | 0.046 | -4.35 | 0.023 | 9.41 | 0.92 | 8.50 |
| <i>Bryum pseudotriquetrum</i> | <i>Bry.pse</i> | 5 (4) | 1 (-) | -8.21 *** | -0.132 | -7.02 | -0.156 | 15 (7) | 50 (7) | 1.77 | 0.030 | -8.35 | 0.000 | 13.43 | 1.51 | 12.66 |
| <i>Calliergonella cuspidata</i> | <i>Cal.cus</i> | - | 8 (3) | 4.49 | 0.068 | 1.69 | 0.161 | 11 (2) | 92 (12) | 32.39 *** | 0.169 | 3.23 ** | 0.226 | 12.42 | 1.17 | 12.72 |
| <i>Campylium stellatum</i> agg. | <i>Cam.ste</i> | 5 (3) | 2 (-) | -7.65 *** | -0.162 | -5.26 | -0.178 | 24 (11) | 53 (12) | -12.33 | -0.172 | -12.56 | -0.201 | 11.45 | 0.49 | 6.73 |
| <i>Climacium dendroides</i> | <i>Cli.den</i> | - | 3 (1) | 1.69 | 0.040 | 0.56 | 0.089 | 13 (4) | 38 (3) | -1.46 | -0.007 | -5.33 | 0.002 | 12.47 | 0.93 | 10.94 |
| <i>Hamatocaulis vernicosus</i> | <i>Ham.ver</i> | 3 (1) | 2 (-) | -4.14 | -0.089 | -1.75 | -0.080 | 11 (6) | 21 (3) | -7.50 | -0.047 | -8.84 | -0.111 | 9.34 | 1.18 | 11.69 |
| <i>Plagiomnium affine</i> agg. | <i>Pla.aff</i> | - | - | n. a. | n. a. | n. a. | n. a. | 6 (3) | 67 (7) | 27.11 *** | 0.120 | -1.33 | 0.087 | 17.84 | 1.46 | 27.32 |
| <i>Polytrichum commune</i> | <i>Pol.com</i> | 4 (4) | 74 (4) | 34.56 ** | 0.157 | -4.77 | 0.091 | 1 (-) | 27 (3) | 13.41 ** | 0.116 | 1.69 | 0.144 | 16.77 | 1.31 | 12.13 |
| <i>Polytrichum strictum</i> | <i>Pol.str</i> | 7 (2) | 12 (-) | -5.54 | -0.095 | -3.51 | -0.114 | 23 (7) | 14 (1) | -32.49 *** | -0.157 | -11.72 * | -0.204 | 9.36 | 0.85 | 7.23 |
| <i>Sarmentypnum exannulatum</i> | <i>Sar.exa</i> | 4 (2) | 20 (2) | 4.22 | 0.005 | -2.39 | 0.065 | 7 (1) | 31 (1) | 5.14 | 0.060 | -1.19 | -0.004 | 18.04 | 1.48 | 10.36 |
| <i>Scorpidium revolvens</i> agg. | <i>Sco.rev</i> | - | - | n. a. | n. a. | n. a. | n. a. | 22 (12) | 20 (3) | -27.36 *** | -0.120 | -19.37 ** | -0.168 | 10.52 | 0.39 | 7.26 |
| <i>Sphagnum contortum</i> | <i>Sph.con</i> | 4 (2) | 4 (-) | -4.77 ** | -0.204 | -3.51 | -0.279 | 28 (12) | 36 (10) | -28.90 *** | -0.093 | -15.43 | 0.017 | 7.98 | 0.55 | 8.05 |
| <i>Sphagnum fallax</i> | <i>Sph.fal</i> | 3 (3) | 72 (4) | 35.19 ** | 0.372 | -3.02 | 0.230 | 2 (2) | 25 (3) | 10.54 * | 0.081 | -1.82 | -0.011 | 10.69 | 0.44 | 6.72 |
| <i>Sphagnum flexuosum</i> | <i>Sph.fle</i> | 1 (1) | 41 (2) | 21.28 * | 0.245 | -0.63 | 0.183 | 26 (9) | 66 (6) | -8.54 | -0.055 | -12.42 | 0.017 | 8.18 | 0.61 | 6.84 |
| <i>Sphagnum palustre</i> agg. | <i>Sph.pal</i> | 3 (2) | 45 (1) | 20.02 | 0.112 | -2.95 | -0.088 | 8 (4) | 63 (8) | 21.36 ** | 0.182 | -2.52 | 0.143 | 9.80 | 0.60 | 11.98 |
| <i>Sphagnum teres</i> | <i>Sph.ter</i> | 5 (3) | 14 (2) | -0.91 | -0.047 | -4.14 | 0.077 | 19 (5) | 81 (10) | 12.17 | 0.091 | -3.15 | 0.191 | 11.69 | 0.82 | 11.40 |
| <i>Sphagnum warnstorffii</i> | <i>Sph.war</i> | - | 3 (1) | 1.69 | 0.059 | 0.56 | 0.099 | 22 (7) | 49 (8) | -11.07 | -0.030 | -7.79 | -0.001 | 8.92 | 0.60 | 6.80 |
| <i>Straminergon stramineum</i> | <i>Str.str</i> | 3 (2) | 71 (3) | 34.62 ** | 0.134 | -1.82 | 0.072 | 13 (2) | 96 (11) | 31.13 *** | 0.101 | 2.67 ** | 0.145 | 12.93 | 1.51 | 16.32 |
| <i>Tomentypnum nitens</i> | <i>Tom.nit</i> | - | 1 (1) | 0.56 | 0.025 | 0.56 | 0.099 | 22 (7) | 41 (5) | -15.56 * | -0.059 | -9.47 | -0.046 | 10.59 | 0.77 | 6.74 |
| <i>Brachythecium rivulare</i> | | - | - | n. a. | n. a. | n. a. | n. a. | - | 31 (3) | 17.42 ** | 0.119 | 1.69 | 0.099 | n. a. | n. a. | n. a. |
| <i>Breidleria pratensis</i> | | - | - | n. a. | n. a. | n. a. | n. a. | 4 (1) | 31 (2) | 10.40 * | 0.067 | -0.63 | 0.034 | n. a. | n. a. | n. a. |
| <i>Meesia triquetra</i> | | 1 (1) | - | -1.75 | -0.063 | -1.75 | -0.08 | 7 (-) | 1 (1) | -11.72 *** | -0.096 | 0.56 | 0.057 | n. a. | n. a. | n. a. |
| <i>Paludella squarrosa</i> | | - | - | n. a. | n. a. | n. a. | n. a. | 9 (3) | 6 (-) | -12.42 ** | -0.09 | -5.26 | -0.107 | n. a. | n. a. | n. a. |
| <i>Rhytidiadelphus squarrosus</i> | | - | 6 (1) | 3.37 | 0.057 | 0.56 | 0.089 | - | 19 (-) | 10.67 ** | 0.095 | n. a. | n. a. | 18.68 | 1.14 | 11.57 |
| <i>Sphagnum denticulatum</i> | | - | 18 (1) | 10.11 | 0.26 | 0.56 | 0.126 | - | 18 (1) | 10.11 | 0.128 | 0.56 | 0.057 | 9.67 | 0.56 | 9.79 |
| <i>Sphagnum inundatum</i> | | 2 (2) | 10 (-) | 2.11 | -0.079 | -3.51 | -0.262 | 1 (1) | 17 (1) | 7.80 | 0.073 | -1.19 | -0.045 | 10.22 | 0.64 | 7.79 |
| <i>Sphagnum magellanicum</i> | | 4 (1) | 1 (-) | -6.46 *** | -0.131 | -1.75 | -0.08 | - | 1 (-) | 0.56 | 0.042 | n. a. | n. a. | 12.66 | 0.94 | 5.29 |
| <i>Sphagnum papillosum</i> | | 5 (4) | 19 (2) | 1.90 | -0.021 | -5.89 | 0.169 | 1 (1) | 6 (2) | 1.62 | 0.056 | -0.63 | 0.035 | 10.53 | 0.34 | 6.30 |
| <i>Sphagnum subsecundum</i> | | 3 (2) | 4 (2) | -3.02 * | -0.198 | -2.39 | -0.029 | 4 (2) | 15 (-) | 1.41 | -0.013 | -3.51 | -0.145 | 9.06 | 0.52 | 8.14 |

Frequency change (freq. change) and *frequency*cover change* (freq*c change) in the two pH-classes. n = number of plots in which the species occurred in the historical (n₀) and recent (n₁) data set, either large (the first value) or precise (value in parenthesis). While freq. change refers simply to a change in percentage frequency tested by the Fisher's exact test (*** = p < 0.001; ** = p < 0.01; * = p < 0.05), the freq*c change refers to the frequency change weighted by square-root of species' percentage cover.

Biomass of *Sarmentypnum exannulatum*, *Hamatocaulis vernicosus* and *Straminergon stramineum* were not sampled in the study region by Hájek et al. (2014; Patterns in moss element concentrations in fens across species, habitats, and regions. Perspectives in Plant Ecology, Evolution and Systematics 16: 203–218.). The concentrations of nutrients comes from the Western Bohemian Springs (in the case of *Sarmentypnum exannulatum*) and from the Western Carpathians (in the cases of *Hamatocaulis vernicosus* and *Straminergon stramineum*).