**Supplementary material**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Explained variation by…  (in %) | All moth species | Small moth species (<25mm) | Host-plant specialists | Moss, lichen, detritus feeders | Macro-lep | Micro- lep | Incidence based | Random 50 | Random 100 | Random 200 |
| PsV | Mean basal area | 3.89 | 3.31 | 3.68 | 4.23 | 3.69 | 3.97 | 3.67 | 3.84 | 3.83 | 3.87 |
|  | Forest density | 4.23 | 2.99 | 3.54 | 6.05\*\* | 4.56 | 4.02 | 3.45 | 4.75 | 4.81 | 4.91 |
|  | Mean temperature | 6.27\*\* | 5.43\*\*\* | 5.98\*\* | 7.58\*\* | 6.39\*\* | 5.98\*\* | 6.69\*\*\* | 5.31 | 5.53 | 5.60 |
|  | Mean air humidity | 6.56\*\*\* | 5.43\*\* | 6.09\*\* | 7.19\*\*\* | 5.50\*\* | 7.10\*\* | 5.18\*\* | 5.76 | 6.14 | 6.32 |
|  | Year of sampling | 7.30 | 4.74 | 6.00 | 6.86 | 9.95\*\* | 5.72 | 7.67\* | 7.28 | 7.31 | 7.36 |
|  | PCoA1 plant species | 5.07\* | 4.31\* | 5.61\*\* | 3.89 | 3.72 | 5.94\*\* | 5.42\*\*\* | 4.63 | 4.78 | 4.84 |
|  | PCoA2 plant species | 4.25 | 3.98\* | 5.49\*\* | 2.92 | 3.91 | 4.50 | 4.76\* | 4.22 | 4.35 | 4.44 |
|  | **Explained Variation total:** | **37.57 (17.44)** | **30.19**  **(14.59)** | **36.39 (18.32)** | **38.72**  **(17.09)** | **37.72 (15.88)** | **37.23**  **(18.43)** | **36.86 (17.30)** | **38.80 (17.44)** | **36.75 (17.78)** | **37.35 (18.06)** |
| PdC | Mean basal area | 5.80\*\*\* | 6.24\*\*\* | 4.72\*\* | 4.35 | 5.42\*\* | 5.55\*\* | 4.91\* | 4.48 | 4.64 | 4.86 |
|  | Forest density | 4.62\* | 5.18\*\* | 5.36\*\* | 3.06 | 3.61 | 5.15\*\* | 3.82 | 4.59 | 4.80 | 4.97 |
|  | Mean temperature | 5.68\*\* | 4.75\* | 6.55\*\*\* | 8.30\*\*\* | 6.93\*\*\* | 4.51\* | 4.47\* | 4.65 | 4.98 | 5.09 |
|  | Mean air humidity | 9.81\*\*\* | 10.32\*\*\* | 9.66\*\*\* | 10.27\*\*\* | 8.65\*\*\* | 10.88\*\*\* | 8.91\*\*\* | 6.85 | 7.49 | 7.93 |
|  | Year of sampling | 10.06\*\*\* | 7.60\* | 5.88\*\* | 7.24 | 12.53\*\*\* | 7.22 | 7.60\* | 7.66 | 7.58 | 7.55 |
|  | PCoA1 plant species | 5.66\*\* | 5.88\*\* | 8.22\*\*\* | 5.62\*\* | 3.87 | 6.15\*\* | 5.71\*\* | 4.49 | 4.55 | 4.71 |
|  | PCoA2 plant species | 5.22\*\* | 7.50\*\*\* | 8.30\*\*\* | 4.14 | 5.43\*\* | 6.23\*\*\* | 7.09\*\*\* | 6.11 | 6.56 | 6.91 |
|  | **Explained Variation total:** | **46.85 (21.30)** | **52.86**  **(24.80)** | **48.69 (26.60)** | **42.98**  **(17.17)** | **46.44 (18.33)** | **45.69**  **(23.08)** | **42.52**  **(21.53)** | **38.84 (19.68)** | **40.61 (20.55)** | **42.03 (21.46)** |

Table A.1: Variation (in %) in moth assemblage composition explained by various predictors, following permutation tests (999 permutations) based on CAP-ordinations. The total explained variation is given for each group in bold. Furthermore, the total variation explained by vegetation characteristics is given within brackets. Statistical significance: \* p<0.05; \*\*: p<0.01; \*\*\*: p<0.001.