

## Electronic Supplementary Material to Bergauer et al. (2022)

Bergauer, M., Dembicz, I., Boch, S., Willner, W., Babbi, M., Blank-Pachlatko, J., Catalano, C., Cykowska-Marzencka, B., Gehler, J., Guarino, R., Keller, S., Moysiyyenko, I., Vynokurov, D., Widmer, S. & Dengler, J. 2022. Scale-dependent patterns and drivers of vascular plant, bryophyte and lichen diversity in dry grasslands of the Swiss inneralpine valleys. *Alpine Botany*.

Correspondence: juergen.dengler@zhaw.ch

**Online Resource 4.** Descriptive statistics (number of sites and plots; 10-m<sup>2</sup> richness values and environmental variables) in comparison of the three studied river catchments.

| Category                                   | Environmental variable [unit]   | Rhône |      |             | Rhine |      |            | Inn  |      |             |
|--------------------------------------------|---------------------------------|-------|------|-------------|-------|------|------------|------|------|-------------|
|                                            |                                 | Min   | Max  | Mean ± SD   | Min   | Max  | Mean ± SD  | Min  | Max  | Mean ± SD   |
| <b>Replicates</b>                          |                                 |       |      |             |       |      |            |      |      |             |
|                                            | Sites                           | 14    |      |             | 5     |      |            | 8    |      |             |
|                                            | Nested-plot series              | 22    |      |             | 6     |      |            | 6    |      |             |
|                                            | 10-m <sup>2</sup> plots         | 107   |      |             | 23    |      |            | 31   |      |             |
| <b>Species richness (10 m<sup>2</sup>)</b> |                                 |       |      |             |       |      |            |      |      |             |
|                                            | Total species richness          | 9     | 56   | 34.0 ± 9.4  | 24    | 53   | 38.8 ± 7.8 | 17   | 59   | 36.0 ± 9.5  |
|                                            | Vascular plants                 | 7     | 55   | 28.8 ± 9.3  | 17    | 46   | 33.6 ± 7.9 | 15   | 44   | 27.7 ± 7.6  |
|                                            | Bryophytes                      | 0     | 15   | 3.5 ± 3.3   | 1     | 9    | 4.1 ± 2.5  | 0    | 14   | 5.2 ± 3.9   |
|                                            | Lichens                         | 0     | 11   | 1.7 ± 2.4   | 0     | 5    | 1.1 ± 1.6  | 0    | 23   | 3.2 ± 5.4   |
| <b>Productivity / stress</b>               |                                 |       |      |             |       |      |            |      |      |             |
|                                            | Elevation [m a.s.l.]            | 512   | 1489 | 894 ± 295   | 713   | 1516 | 1059 ± 256 | 1153 | 1575 | 1388 ± 146  |
|                                            | Mean annual temperature [°C]    | 5.2   | 10.2 | 8.3 ± 1.6   | 4.3   | 8.6  | 6.8 ± 1.3  | 4.0  | 6.3  | 5.1 ± 0.8   |
|                                            | Mean annual precipitation [mm]  | 671   | 1258 | 810 ± 102   | 707   | 1344 | 1055 ± 161 | 704  | 874  | 791 ± 61    |
|                                            | Southing                        | -1    | 1    | 0.4 ± 0.7   | -1    | 1    | 0.8 ± 0.4  | -1   | 1    | 0.4 ± 0.7   |
|                                            | Soil pH (H <sub>2</sub> O)      | 5.1   | 8.6  | 6.9 ± 0.7   | 5.3   | 8.0  | 7.0 ± 0.7  | 5.9  | 7.6  | 6.9 ± 0.4   |
|                                            | Electrical conductivity [µS/cm] | 53    | 718  | 225 ± 108   | 134   | 611  | 284 ± 117  | 100  | 992  | 377 ± 234   |
|                                            | Mean soil depth [cm]            | 3.3   | 65   | 18.4 ± 11.8 | 7.8   | 41.2 | 20.2 ± 9.7 | 0.3  | 45.2 | 13.4 ± 11.1 |

|                      |                               | Rhône                                 |      |             | Rhine                                |      |             | Inn                                   |     |             |
|----------------------|-------------------------------|---------------------------------------|------|-------------|--------------------------------------|------|-------------|---------------------------------------|-----|-------------|
| Category             | Environmental variable [unit] | Min                                   | Max  | Mean ± SD   | Min                                  | Max  | Mean ± SD   | Min                                   | Max | Mean ± SD   |
|                      | Soil depth CV [%]             | 0.05                                  | 1.83 | 0.5 ± 0.3   | 0.06                                 | 1.06 | 0.5 ± 0.2   | 0.04                                  | 2   | 0.7 ± 0.5   |
|                      | Mean herb layer height [cm]   | 1.0                                   | 21.9 | 8.3 ± 4.4   | 1.5                                  | 14.6 | 5.0 ± 3.0   | 0.6                                   | 9.1 | 4.6 ± 2.5   |
|                      | Litter cover [%]              | 0                                     | 90   | 39.2 ± 24.2 | 10                                   | 90   | 34.7 ± 23.3 | 0.5                                   | 80  | 31.6 ± 21.3 |
|                      | Herb layer cover [%]          | 0                                     | 100  | 65.9 ± 23.0 | 35                                   | 95   | 71.7 ± 14.6 | 23                                    | 100 | 61.8 ± 20.7 |
| <b>Disturbance</b>   |                               |                                       |      |             |                                      |      |             |                                       |     |             |
|                      | Inclination [°]               | 0                                     | 65   | 23.9 ± 14.4 | 16                                   | 45   | 32.5 ± 7.7  | 0                                     | 77  | 29.5 ± 13.8 |
|                      | Grazing                       | grazing (1) - 38; no grazing (0) - 69 |      |             | grazing (1) - 16; no grazing (0) - 7 |      |             | grazing (1) - 20; no grazing (0) - 11 |     |             |
|                      | Mowing                        | mowing (1) - 18; no mowing (0) - 89   |      |             | mowing (1) - 4; no mowing (0) - 19   |      |             | mowing (1) - 1; no mowing (0) - 30    |     |             |
| <b>Heterogeneity</b> |                               |                                       |      |             |                                      |      |             |                                       |     |             |
|                      | Maximum microrelief [cm]      | 2                                     | 70   | 10.2 ± 8.3  | 2.5                                  | 60   | 13.5 ± 11.4 | 2.5                                   | 92  | 14.3 ± 17.4 |
|                      | Stone cover [%]               | 0                                     | 85   | 11.1 ± 18.8 | 0                                    | 25   | 4.1 ± 6.5   | 0                                     | 80  | 19.0 ± 25.6 |
|                      | Gravel cover [%]              | 0                                     | 70   | 7.4 ± 15.4  | 0                                    | 50   | 5.0 ± 11.5  | 0                                     | 40  | 6.7 ± 9.4   |
|                      | Fine soil cover [%]           | 7                                     | 100  | 81.9 ± 26.9 | 30                                   | 100  | 91.0 ± 16.8 | 15                                    | 100 | 74.4 ± 27.5 |