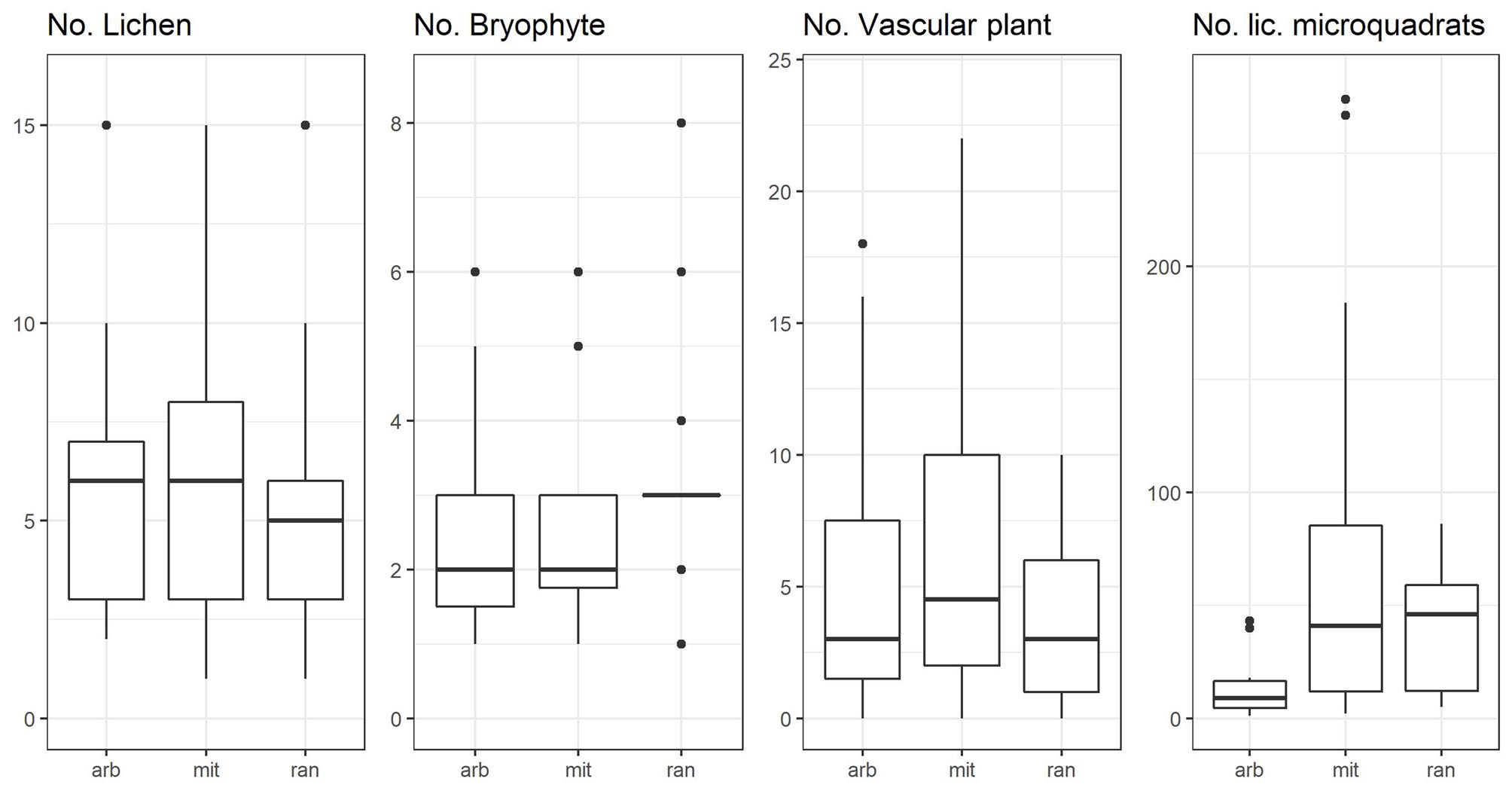
**Supplementary Material.**

**Supplementary Material Table S1.** Species list characterized by group of taxa, number of relevés and pH values. B = bryophyte, L = lichen, V = vascular plant.

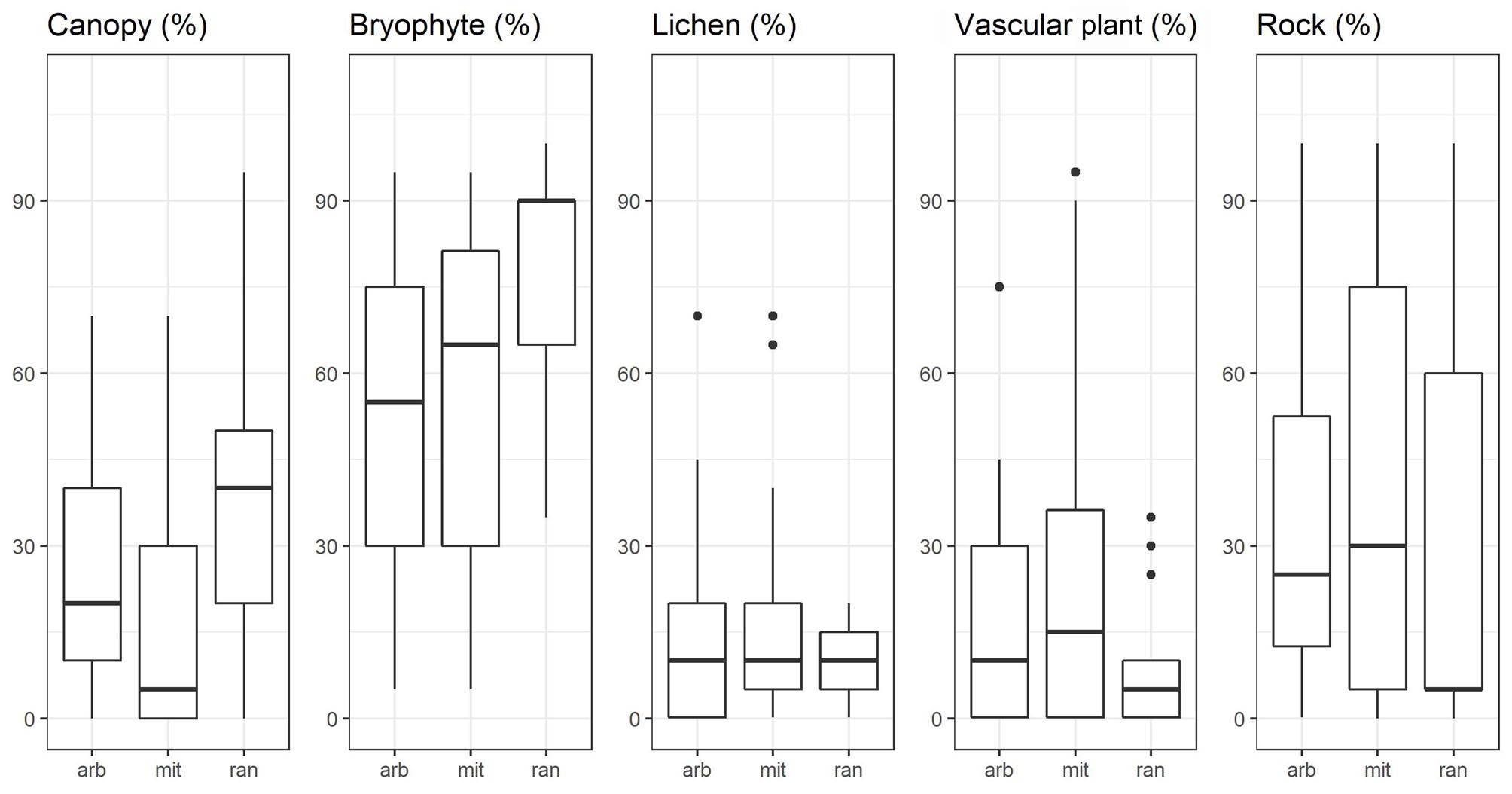
|  |  |  |  |
| --- | --- | --- | --- |
| **Species** | **Group** | **Number of relevé** | **pH** |
| *Achillea pannonica* | V | 3 | 4 |
| *Agrostis capillaris* | V | 7 | 2 |
| *Anthoxanthum odoratum* | V | 17 | 3 |
| *Artemisia absinthium* | V | 1 | 4 |
| *Artemisia campestris* | V | 1 | 4 |
| *Asperula cynanchica* | V | 2 | 4 |
| *Asplenium septentrionale* | V | 1 | 2 |
| *Asplenium trichomanes* | V | 1 | 3 |
| *Briza media* | V | 1 | 0 |
| *Calluna vulgaris* | V | 11 | 1 |
| *Carex caryophyllea* | V | 2 | 0 |
| *Carex fritschii* | V | 1 | 2 |
| *Cerastium brachypetalum* | V | 1 | 3 |
| *Chamaecytisus ratisbonensis* | V | 2 | 4 |
| *Chamaecytisus supinus subsp. aggregatus.* | V | 1 | 3 |
| *Conyza canadensis* | V | 1 | 0 |
| *Cotoneaster integerrimus* | V | 1 | 4 |
| *Crataegus monogyna* | V | 3 | 3 |
| *Deschampsia flexuosa* | V | 11 | 1 |
| *Dianthus armeria* | V | 1 | 3 |
| *Dianthus pontederae* | V | 3 | 4 |
| *Dorycnium germanicum* | V | 1 | 4 |
| *Erigeron annua* | V | 2 | 4 |
| *Erophila verna* | V | 1 | 0 |
| *Eryngium campestre* | V | 2 | 4 |
| *Euphorbia cyparissias* | V | 7 | 4 |
| *Euphorbia seguieriana* | V | 2 | 4 |
| *Euphrasia stricta* | V | 1 | 3 |
| *Fagus sylvatica* | V | 1 | 4 |
| *Festuca rupicola* | V | 9 | 4 |
| *Festuca vaginata* | V | 1 | 5 |
| *Festuca valesiaca* | V | 1 | 4 |
| *Fraxinus ornus* (sapling) | V | 2 | 4 |
| *Geranium rotundifolium* | V | 1 | 4 |
| *Geranium sanguineum* | V | 2 | 5 |
| *Hieracium bauhinii* | V | 18 | 3 |
| *Hieracium cymosum* | V | 2 | 4 |
| *Hieracium lachenallii* | V | 1 | 2 |
| *Hieracium pilosella* | V | 5 | 3 |
| *Hypericum perforatum* | V | 6 | 0 |
| *Jasione montana* | V | 11 | 2 |
| *Juniperus communis* | V | 7 | 4 |
| *Koeleria cristata* | V | 2 | 4 |
| *Luzula campestris* | V | 14 | 4 |
| *Luzula divulgata* | V | 7 | x |
| *Luzula luzuloides* | V | 1 | 2 |
| *Lembotropis nigricans* | V | 3 | 2 |
| *Linaria genistifolia* | V | 2 | 5 |
| *Minuartia frutescens* | V | 1 | 4 |
| *Ornithogalum umbellatum* | V | 1 | 4 |
| *Papaver dubium* | V | 1 | 3 |
| *Petrorhagia prolifera* | V | 3 | 0 |
| *Petrorhagia saxifraga* | V | 1 | 4 |
| *Peucedanum oreoselinum* | V | 3 | 0 |
| *Phleum paniculatum* | V | 1 | 4 |
| *Phleum phleoides* | V | 1 | 4 |
| *Pinus sylvestris* seedling | V | 1 | 5 |
| *Pimpinella saxifraga* | V | 1 | 3 |
| *Plantago lanceolata* | V | 2 | 0 |
| *Poa bulbosa* | V | 1 | 4 |
| *Polygonatum odoratum* | V | 10 | 4 |
| *Potentilla arenaria* | V | 1 | 5 |
| *Potentilla argentea* | V | 5 | 3 |
| *Quercus cerris* seedling | V | 8 | 3 |
| *Quercus petraea* seedling | V | 4 | 0 |
| *Quercus pubescens* seedling | V | 5 | 5 |
| *Rhinanthus minor* | V | 3 | 0 |
| *Rosa canina* | V | 1 | 3 |
| *Rubus fruticosus* | V | 4 | x |
| *Rumex acetosella* | V | 18 | 2 |
| *Sanguisorba minor* | V | 3 | 4 |
| *Scabiosa ochroleuca* | V | 1 | 4 |
| *Scleranthus verticillatus* | V | 1 | 3 |
| *Sedum acre* | V | 2 | 3 |
| *Sedum sexangulare* | V | 5 | 3 |
| *Seseli hippomarathrum* | V | 1 | 5 |
| *Seseli osseum* | V | 1 | 5 |
| *Silene otites* | V | 1 | 4 |
| *Sorbus aucuparia* seedling | V | 1 | 2 |
| *Stachys recta* | V | 1 | 5 |
| *Taraxacum laevigatum* | V | 1 | 0 |
| *Teucrium chamaedrys* | V | 2 | 4 |
| *Thlaspi arvense* | V | 1 | 4 |
| *Thesium linophyllum* | V | 3 | 4 |
| *Thymus glabrescens* | V | 3 | 3 |
| *Thymus praecox* | V | 3 | 5 |
| *Trifolium arvense* | V | 2 | 4 |
| *Trifolium campestre* | V | 2 | 4 |
| *Trifolium pratense* | V | 1 | 3 |
| *Trisetum flavescens* | V | 4 | 0 |
| *Verbascum phlomoides* | V | 1 | 4 |
| *Veronica officinalis* | V | 1 | 2 |
| *Vicia lathyroides* | V | 1 | 3 |
| *Vicia tetrasperma* | V | 2 | 3 |
| *Viola tricolor* | V | 1 | 0 |
| *Viscaria vulgaris* | V | 9 | x |
| *Vulpia bromoides* | V | 2 | x |
| *Acarospora fuscata* | L | 5 | 5 |
| *Aspicilia caesiocinerea* | L | 13 | 5 |
| *Caloplaca chrysodeta* | L | 1 | x |
| *Candelariella vitellina* | L | 9 | 5 |
| *Cladonia arbuscula* | L | 15 | 2 |
| *Cladonia chlorophaea* | L | 8 | 2 |
| *Cladonia coniocraea* | L | 6 | 4 |
| *Cladonia convoluta* | L | 8 | 8 |
| *Cladonia* cf. *digitata* | L | 2 | 1 |
| *Cladonia furcata* | L | 22 | 4 |
| *Cladonia gracilis* | L | 7 | 2 |
| *Cladonia macilenta* | L | 4 | 2 |
| *Cladonia mitis* | L | 36 | 2 |
| *Cladonia* cf. *pyxidata* | L | 5 | 2 |
| *Cladonia rangiferina* | L | 13 | 2 |
| *Cladonia rangiformis* | L | 12 | 3 |
| *Cladonia squamosa* | L | 1 | 2 |
| *Cladonia* cf. *subulata* | L | 4 | 3 |
| *Cladonia symphycarpa* | L | 3 | 8 |
| *Cladonia uncialis* | L | 21 | 2 |
| *Cladonia* cf*. verticillata* | L | 2 | x |
| *Hypogymnia physodes* | L | 4 | 3 |
| *Hypogymnia tubulosa* | L | 1 | 3 |
| *Lecanora muralis* | L | 9 | 8 |
| *Lepraria caesioalba* | L | 1 | x |
| *Lepraria incana* | L | 2 | x |
| *Lepraria lobificans* | L | 2 | 3 |
| *Melanelixia glabra* | L | 1 | 6 |
| *Parmelia saxatilis* | L | 2 | 3 |
| *Parmelina tiliacea* | L | 1 | 5 |
| *Physcia tenella* | L | 1 | 6 |
| *Porpidia crustulata* | L | 2 | 4 |
| *Protoblastenia rupestris* | L | 1 | 9 |
| *Pseudevernia furfuracea* | L | 1 | 2 |
| *Psora decipiens* | L | 1 | 8 |
| *Rhizocarpon distinctum* | L | 5 | 5 |
| *Rhizocarpon geographicum* | L | 3 | 3 |
| *Squamarina cartilaginea* | L | 2 | 9 |
| *Xanthoparmelia conspersa* | L | 9 | 5 |
| *Xanthoparmelia loxodes* | L | 2 | x |
| *Xanthoparmelia pulla* | L | 4 | 4 |
| *Xanthoparmelia stenophylla* | L | 9 | 5 |
| *Buxbaumia aphylla* | B | 1 | 2 |
| *Ceratodon purpureus* | B | 6 | 3 |
| *Dicranum muehlenbeckii* | B | 1 | 4 |
| *Dicranum scoparium* | B | 27 | 3 |
| *Dicranum spurium* | B | 1 | 2 |
| *Dicranum polysetum* | B | 3 | 3 |
| *Hedwigia ciliata* | B | 1 | 2 |
| *Hypnum cupressiforme* | B | 35 | 3 |
| *Leucobryum glaucum* | B | 2 | 2 |
| *Pleurozium schreberi* | B | 4 | 2 |
| *Pohlia cruda* | B | 1 | 3 |
| *Pohlia nutans* | B | 4 | 2 |
| *Polytrichastrum formosum* | B | 7 | x |
| *Polytrichum juniperinum* | B | 8 | 2 |
| *Polytrichum piliferum* | B | 21 | 2 |

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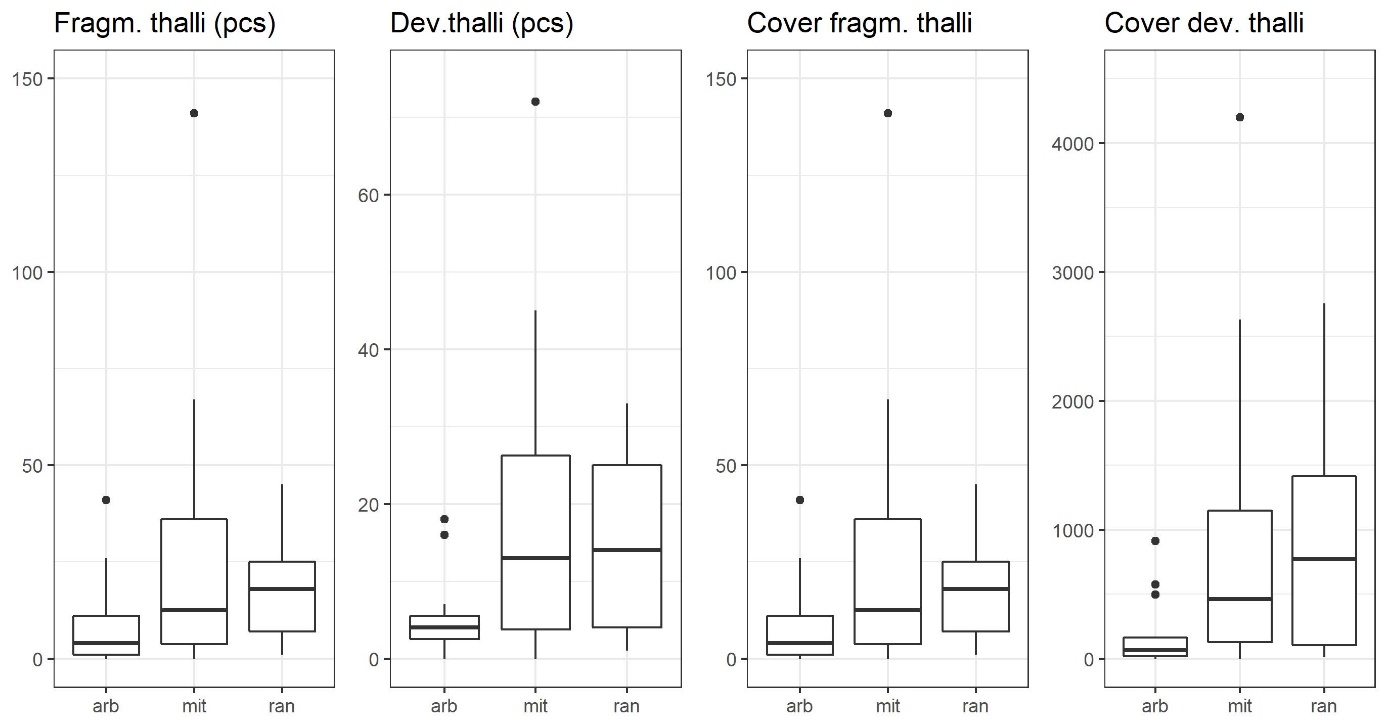
**Supplementary Material Fig. S1.**Variation of numerical environmental variables (elevation, pH, CaCO3 and soil depth) between investigated *Cladonia* species. All boxplots were calculated from all relevés which contain the given *Cladonia* species, therefore relevés which refer to two or three investigated *Cladonia* species were considered repeatedly. Boxes define 25 and 75 percentiles; thick horizontal lines show the median; whiskers define 10 and 90 percentiles; points are outliers. Abbreviations: arb = *Cladonia arbuscula,* mit = *C. mitis,* ran = *C. rangiferina*.

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**Supplementary Material Fig. S2.** Variation in the number of lichen, bryophyte and vascular plant species occurring in relevés and variation of lichen-containing microquadrats between investigated *Cladonia* species. All boxplots were calculated from all relevés which contain the given *Cladonia* species; therefore, relevés, which refer to two or three investigated *Cladonia* species were considered repeatedly. Boxes define 25 and 75 percentiles; thick horizontal lines show the median; whiskers define 10 and 90 percentiles; points are outliers. Abbreviations: No. – number of, lic – lichen, arb = *Cladonia arbuscula,* mit = *C. mitis,* ran = *C. rangiferina*.



**Supplementary Material Fig. S3.** Variation in cover of canopy, bryophyte, lichen, vascular plant species and rock between investigated species. All boxplots were calculated from all relevés which contain the given *Cladonia* species; therefore, relevés which refer to two or three investigated *Cladonia* species were considered repeatedly. Boxes define 25 and 75 percentiles; thick horizontal lines show the median; whiskers define 10 and 90 percentiles; points are outliers. Abbreviations: arb = *Cladonia arbuscula,* mit = *C. mitis,* ran = *C. rangiferina*.



**Supplementary Material Fig. S4.** Variation in number and cover of fragmented and developed thalli between investigated species. The number and cover of developed and fragmented thalli were recorded in microquadrats. Two data for *C. mitis* (22391.5 and 16429.25 cm2 cover of developed thalli) were excluded from the box plot. All boxplots were calculated from all relevés which contain the given *Cladonia* species; therefore relevés which refer to two or three investigated *Cladonia* species were considered repeatedly. Boxes define 25 and 75 percentiles; thick horizontal lines show the median; whiskers define 10 and 90 percentiles; points are outliers. Abbreviations: Fragm. thalli = fragmented thalli, Dev. thalli = developed thalli, pcs = pieces, arb = *C. arbuscula,* mit = *C. mitis,* ran = *C. rangiferina*.