

App. 1. Environmental variables investigated for the analytical data sets: definitions, sources, and details. Variables are listed by category in this order: year data collected; geography/location; geography/topography; climate/temperature; climate/moisture; pollution; forest stand structure; forest stand composition; lichen community composition. Under origin, values for variables labeled ‘field’ come directly from field-collected data (assigned/measured in the field or calculated from field data using standard algorithms, such as basal area per hectare derived from field measurements of tree diameters), those labeled ‘model’ are generated from a model, and those labeled ‘derived’ are modified by the authors from either field or model data. The exact source of the variable values (database source or model used) is indicated under ‘Explanation.’ Under type, Q = quantitative variable and C = categorical variable. Values originally recorded in English units or degrees F are marked with an asterisk *. Exact plot locations were used when extracting variable values from models.

Climate variables with PNV in their name are generated using the Potential Natural Vegetation mapping model (Hall 1988; Henderson 1988) currently being used by the USFS for Washington and Oregon, USA. Climate variables with CS in their name are generated using the PRISM Climate Source model (Daly & Taylor 2000), applicable to continental USA. Both these models interpolate from weather station data using digital elevation models; the PNV model is much more complex and also uses field-collected vegetation data for interpolations. Climate and elevation data were extracted with gridded (raster files) data from the CS PRISM model (PRISM -Parameter-elevation Regressions on Independent Slopes Model, including a 2.5-minute Digital Elevation Model for the conterminous USA, from Oregon Climate Service, Spatial Climate Analysis Service, SCAS, Daly & Taylor 2000) using the ESRI extension Gridspot (Rathert 2003). Elevation was also extracted from the PNV model. Climate, pollution, and lichen community composition variables with Grad in their name are scores on composite lichen community response gradients from a model for western Washington and Oregon, USA (Geiser & Neitlich, In press). Average annual wet deposition of SO₄ and NO₃ are from a Coulston et al. (2004) model using National Atmospheric Depositon Program (NADP) monitoring data.

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Variable Names	Explanation	Origin	Type	West Large	West Small	East Large	East Small
Year	Year sampled, public FS database	field	C	1994-2000	1998-2001	1994-2000	1998-2001
Geography/location							
Latitude	Exact latitude from private FS database. Ranges given here in decimal degrees to one decimal place.	field	Q	42.1 to 49.0	43.4 to 44.8	36.6 to 41.9	41.4 to 42.0
Longitude	Exact longitude from private FS database. Ranges given here in decimal degrees to one decimal place.	field	Q	-124.5 to -120.9	-122.6 to -121.8	-82.9 to -74.4	-79.4 to -78.6
CoastDis	West only: distance, km, due east from Pacific Ocean from GIS	model	Q	0.02-173.17*	107.24-178.56*		
Geography/topography							
Elevation	Elevation in m a.s.l. from PNV or CS model and field	field	Q	15.2-3047.9	304.8-2072.5	1-1200	389-679
Slope% SlopeDg	Slope: % for West; degrees for east. A slope of 90° is 100% slope. Slope Class: 1=1-3° slope, 2=4-8° slope, 3= 9° slope	field	Q	0-101.67%	1-95%	0-43.87°	1-26°
SlopeCl		derived	C				1-3
Physiog SlopPos	Two roughly equivalent physiography variables - Physiog assigned in field for West Small, and SlopPos (Slope Position) derived from slope and elevation for East Small.	field/ derived	C		Physiog: * 1= Ridge top or peak >36.6m wide, 2=Ridge top or peak <36.6m wide, 3= Side-hill, Upper 1/3rd, 4= Side-hill, Middle 1/3rd, 5= Side-hill, Lower 1/3rd, 6= Canyon bottom <201.3m wide, 7= Bench or terrace, 8= Broad flat >201.3m wide, 9= Other (described in remarks).		Slope Position: 1=valley, 2=lower slope, 3=midslope, 4=upper slope, 5=ridgetop. Slope class and elevation combined: plots in SlopeCl 1 are ridgetop >550m elevation, valley <550m. Plots in SlopeCl 2 or 3 are called upper slope for plots >575m elevation, midslope if 490-575m, lower slope <490m.
SiteMoist Aspect	Habitat grouping related to site topographic moisture status: 1=dry, 2=intermediate, 3=moist/mesic Aspect, compass degrees Estimate of insolation derived from aspect, modified by slope. Insol= -(COS(RADIANS(aspect*-30)))-1: Insol = 0 for aspect 30°; = 2 for aspect 210°. When slope <4° or <8.9%, insolation = 1.0	field	C	0-346.25	1-360	1-360	1-3
Insolation		derived	Q	0-2	0-2	0-2	0-2
Climate/temperature							
ClimGrad	West only: Plot score on Climate Gradient from Geiser & Neitlich model. Plots with higher scores have lichen communities characteristic of cooler, more inland, and higher elevation areas.	derived	Q	-1.1162 to 1.4874	0.0179 to 1.6008		
TempPNV	Mean annual temperature, °C from PNV model.	modeled	Q	1.8 to 11.8*	1.3 to 11.1*		
LapseRatePNV	Temperature Lapse Rate (°C per 305m elevation change) from PNV model regressions on elevation	modeled	Q	1.92 to 3.91*	2.85 to 3.25*		
TempCS	Average Annual Temperature, °C, average of maximum and minimum daily temperatures 1971-2000 from CS model	modeled	Q		6.6 to 15.1	6.6 to 8.4	

BaileyPRV	Bailey's Ecoregion Provinces (Bailey 1989; Bailey et al. 1994)	modeled	C	# plots by Province: Pacific Lowland Mixed Forest - 29, Cascade Mixed Forest- Coniferous Forest-Alpine Meadow - 96, Sierran Steppe- Mixed Forest-Coniferous Forest-Alpine Meadow - 29 # plots by Section: Willamette Valley and Puget Trough - 29, Oregon and Washington Coast Ranges - 44, Western Cascades - 46, Eastern Cascades - 6.	# plots by Province: Central Appalachian Broadleaf Forest- 59; Eastern Broadleaf Forest Oceanic 40; Laurentian Mixed Forest 25; Outer Coastal Plain Mixed Forest 8; Southeastern Mixed Forest 12	Cascade Mixed Forest- Coniferous Forest-Alpine Meadow Province	Laurentian Mixed Forest Province
BaileySec	Bailey's Ecoregion Sections (Bailey 1989; Bailey et al. 1994)	modeled	C	Southern Cascades - 4	# plots by Section: Western Cascades - 176, Eastern Cascades - 6	22 Ecoregion Sections Atlantic Coastal Pine Barrens-6; Blue Ridge 4; Central Appalachians 26; Erie Drift Plain 1; Middle Atlantic Coastal Plain 3; North Central Appalachians 23; Northern Appalachian Plateau and Uplands 4; Northern Piedmont 4; Piedmont 12; Ridge and Valley 35; Southeastern Plains 5; Western Allegheny Plateau 2	Northern Unglaciated Allegheny Plateau
Omernik3	Omernik's Ecoregion System Level 3 Regions (EPA 2005)	modeled	C	Klamath Mountains - 20	# Plots by Level 3 Region: Coast Range - 52, Puget Lowland - 7, Willamette Valley - 9, Cascades - 53, North Cascades - 13,	Cascades Level 3 Region # plots by Level 4 Region: Cascade Subalpine/Alpine - 1, Cascade Crest Montane Forest - 51, Western Cascades Montane Highlands - 75, Western Cascades Lowlands and Valleys - 55	North Central Appalachians Level 3 Region
Omernik4	Omernik's Ecoregion System Level 4 Regions (EPA 2005).	modeled	C	28 Omernik Level 4 Regions	# plots by VegZone: <i>Pseudotsuga menziesii</i> zone - 14, <i>Abies grandis</i> zone - 5, <i>Pinus jeffreyi</i> - 1 , <i>Tsuga mertensiana</i> zone - 7, <i>Abies amabilis</i> zone - 21, Parkland zone - 1, <i>Picea sitchensis</i> zone - 8, <i>Lithocarpus densiflorus</i> - 5 , <i>Tsuga heterophylla</i> zone - <i>heterophylla</i> zone - 84, <i>Abies concolor</i> zone - 8	30+ Omernik Level 4 Regions (One Level 3 Region with Level 4 Regions not yet defined.)	Unglaciated Allegheny High Plateau Level 4 Region
VegZone ForType	General class of forest vegetation: Vegetation Zone (VegZone) for West is modeled in the PNV model. Forest Type (ForType) for East is code assigned in the field; type names and codes from Appendix 2 of modeled/ Phase 2 Field Guide (FIA Field Guide 2005).	assigned in field	C	# plots by VegZone: <i>Pseudotsuga menziesii</i> zone - 14, <i>Abies grandis</i> zone - 5, <i>Pinus jeffreyi</i> - 1 , <i>Tsuga mertensiana</i> zone - 7, <i>Abies amabilis</i> zone - 21, Parkland zone - 1, <i>Picea sitchensis</i> zone - 8, <i>Lithocarpus densiflorus</i> - 5 , <i>Tsuga heterophylla</i> zone - <i>heterophylla</i> zone - 84, <i>Abies concolor</i> zone - 8	# plots by VegZone: <i>Pseudotsuga menziesii</i> zone - 10, <i>Abies grandis</i> zone - 2, <i>Tsuga mertensiana</i> zone - 2, <i>Abies amabilis</i> zone - 33, <i>Abies concolor</i> zone - 65, <i>Tsuga heterophylla</i> zone - 63, <i>Abies concolor</i> zone - 5	# plots by ForType: northern <i>Pinus</i> - 5, southern <i>Pinus</i> - 6, <i>Quercus</i> / <i>Pinus</i> - 8, <i>Quercus</i> / <i>Carya</i> - 72, <i>Quercus</i> / <i>Nyssa</i> / <i>Taxodium</i> - 1, <i>Ulmus</i> / <i>Fraxinus</i> - 1, <i>Acer</i> / <i>Fagus</i> / <i>Betula</i> - 49, exotic tree species - 2	# plots by ForType: northern <i>Pinus</i> - 12, <i>Quercus</i> / <i>Carya</i> - 25, <i>Acer</i> / <i>Fagus</i> / <i>Betula</i> - 103
DomTgpW DomTgpE	Vegetation Composition (local diversity, composition) (DomTgpW) for West Small is based on Plant Association (Hall 1988) definitions as refined with the PNV model, assigned in the field. Dominant Tree group (DomTgpE) for East Small is based on standard FS forest types (Anon.2005b), Measures of tree species diversity on plot; see LichenS, LichenE, LichenH' below	field	C	# plots by DomTgpW: <i>Abies amabilis</i> - 35 , <i>Abies grandis</i> - 7 , <i>Tsuga mertensiana</i> - 26 , <i>Tsuga heterophylla</i> - 77 , <i>Pseudotsuga menziesii</i> - 26 , non-forest - 7	# plots by DomTgpE: <i>Quercus</i> spp - 11, <i>Acer saccharum</i> - 40, <i>Prunus serotina</i> - 51, <i>Acer rubrum</i> - 13, other hardwoods - 13, conifers - 12		
TreeS TreeE TreeH'		derived	Q			TreeS, # trees/plot: 2-11; TreeE, eveness: 0.428-0.984; TreeH': 0.47-2.137	

	Scores on a gradient of tree species composition from NMS ordination; gradient defined as high % of <i>Prunus serotina</i> vs high % of <i>Quercus</i> spp.	derived	Q			
TreeComp	West only: Presence of hardwood vegetation. Coded present either if Hardwood%BA > 0 or if shrubs of genera <i>Acer</i> , <i>Alnus</i> , <i>Corylus</i> , <i>Quercus</i> are expected based on Plant Association group (modeled).	modeled/ field	C	0= absent, 1= present	0= absent, 1= present	TreeComp: -0.885-1.103
HardwoodVeg	% basal area in hardwoods.	field	Q	0-100	0-66	2.6-100
Hardwood%BA	% basal area in conifers.	field	Q	0-100	34-100	0-97.4
Conifer%BA						0-66.6
Acid, QU, PRSE, ACRU, ACSA: %BA	% of basal area (BA) in various tree groups and tree species	field	Q			Acid%BA= Con%BA+ QU%BA, trees with acid bark: 0-100; QU%BA= <i>Quercus</i> : 0-95.59; PRSE%BA= <i>Prunus serotina</i> : 0-100; ACRU%BA= <i>Acer rubrum</i> : 0-100; ACSA%BA= <i>Acer saccharum</i> : 0-100
Acid, QU, PRSE, ACRU, ACSA: IV	Importance Value (IV) for various tree groups and tree species = (BA gp/BA all + #stems gp/#stems all)/2	field	Q			Acid-IV= IVconifers + QU-IV, trees with acid bark: 0-100; QU-IV= <i>Quercus</i> : 0-90; PRSE-IV= <i>Prunus serotina</i> : 0-100; ACRU-IV= <i>Acer rubrum</i> : 0-100; ACSA-IV= <i>Acer saccharum</i> : 0-100
Shade	Potential shade = 1+(.75xACRU%BA + ACSA%BA)/40: index ranges from 1 (neither species present) to 3.5 (100% <i>A. saccharum</i> canopy).	derived	Q			0-3.5
Macrolichen Composition (local diversity, composition)						
Lichen S	Number of all lichen species found on a plot: S = species richness. Sum of abundance scores for all lichen species on a plot. Abundance scores are '1' for 1-3 individuals; '2' for 3-10 individuals; '3' for >10 individuals but on <half of woody substrates; '4' for on >half of woody substrates.	derived	Q	1-42	7-48	1-32
Lichen Sum	Evenness of abundance for lichen species on the plot E = Lichen H ⁻ / ln (Lichen S)	derived	Q	3-111	19-111	1-74
Lichen E		derived	Q		0-1	0.876-1
Lichen H ⁻	Shannon-Wiener diversity for lichen species on the plot H ⁻ = - sum (Pi*ln(Pi)), where Pi = (abundance of species i)/(summed abundances of all species on the plot)	derived	Q		0-3.397	1.011-2.902

	Plot score on a lichen community composition gradient not correlated with tested environmental variables, from the Geiser & Neitlich model. Plots in the model with high scores have higher abundance of Nitrogen-fixing lichens.					
CompGrad	derived	Q	-1.1859 to 1.4126	-0.7151 to 0.7064		
Small Leafy	Guild: summed abundance of lichen species with lobes <2mm wide, mature individual thallus usually <5cm wide.	derived	Q	21 species	6 species	16 species
Medium Leafy	Guild: summed abundance of lichen species with lobes >2 and <6-8mm wide, thallus usually 3-15cm wide.	derived	Q	29 species	21 species	13 species
Large Leafy	Guild: summed abundance of lichen species with lobes >6-8mm wide, thallus usually 5cm to >2dm wide.	derived	Q	8 species	4 species	14 species
Tufted/Hanging	Guild: summed abundance of lichen species with tufted, shrubby, or hanging growth form.	derived	Q	33 species	21 species	6 species
<i>Cladonia</i> -like	Guild: summed abundance of lichen species with fruiting stalks growing	derived	Q	14 species	3 species	3 species
Nitrogen-fixing	Guild: summed abundance of lichen species with cyanobacteria; fix Nitrogen. Species range from small leafy to large leafy in morphology.	derived	Q	12 species	14 species	none

App. 2. Correlations of environmental variables with ordination axes: Table A2.1. for West Large; Table A2.2. for West Small; Table A2.3. for East Large; Table A2.4. for East Small. All environmental variables investigated for each analytical data set are listed. Variables are listed by category in this order: year data collected; geography/location; geography/topography; climate/temperature; climate/moisture; pollution; forest stand structure; forest stand composition; lichen community composition. Pearson r^2 values and Kendall τ values for linear correlations are given. Values having correlation $r^2 \geq 0.10 < 0.20$ are in italics and those having $r^2 \geq 0.20$ are in bold (see note, Table A2.4). Categorical variables were evaluated visually: ‘—’ means no pattern was observed related to an axis, ‘+’ means weak pattern was observed, and ‘++’ means strong pattern was observed related to an axis. See App. 1 for definitions and details for all environmental variables.

Table A2.1. West Large. For comparison, for $n = 154$ plots, a Pearson $r^2 = 0.025$ is significant at $p = 0.05$, and $r^2 = 0.10$ has $p < 0.000$. The largest nonsignificant Kendall $\tau = 0.142$ has $p = 0.052$.

Variable	Axis 1		Axis 2		Axis 3	
	Pearson r^2	Kendall τ	Pearson r^2	Kendall τ	Pearson r^2	Kendall τ
Year	—		—		—	
Latitude	<i>0.11</i>	-0.24	0.03	-0.13	0.00	0.06
Longitude	0.22	0.33	0.01	-0.11	0.00	0.03
CoastDist	0.41	0.48	0.00	-0.06	0.00	-0.04
Elevation	<i>0.18</i>	<i>0.40</i>	0.03	-0.17	0.01	0.09
Slope%	0.01	0.10	0.04	-0.14	0.00	-0.01
Aspect	0.03	0.13	0.02	-0.11	0.01	-0.08
Insolation	0.00	0.03	0.01	-0.07	0.01	-0.09
ClimGrad	0.84	0.76	<i>0.12</i>	-0.31	0.00	0.03
TempPNV	0.35	-0.42	<i>0.19</i>	0.37	0.03	-0.15
LapseRatePNV	0.52	0.56	0.00	-0.07	0.00	-0.03
AugMxTCS	0.04	0.14	0.06	0.20	0.03	-0.14
DecMnTCS	0.42	-0.47	0.06	0.22	0.00	-0.03
PrecipPNV	0.03	-0.14	<i>0.17</i>	-0.28	0.02	0.13
FogPNV	0.31	-0.47	0.00	0.01	0.00	0.04
PrecipCS	0.03	-0.14	<i>0.14</i>	-0.29	0.04	0.16
RelH%CS	0.39	-0.48	0.00	0.07	0.00	-0.01
WetDaysCS	0.09	-0.19	0.09	-0.20	0.05	0.18
AirGrad	0.04	-0.18	0.70	0.68	0.01	-0.08
SO_4kghayr	<i>0.19</i>	-0.32	0.04	-0.11	0.00	0.02
NO_3kghayr	0.02	-0.15	0.02	-0.11	0.00	0.05
BAm ² /ha	0.04	0.14	<i>0.13</i>	-0.27	0.00	0.01
Stand Age	0.08	0.23	<i>0.13</i>	-0.35	0.00	-0.06
QuadMeanDiam	0.03	0.12	<i>0.15</i>	-0.27	0.01	-0.06
AvgDiam8	0.03	0.13	<i>0.14</i>	-0.26	0.00	-0.04
AvgDiam3	0.02	0.11	<i>0.14</i>	-0.26	0.00	-0.03
Trees/ha8.1+	0.02	0.07	0.06	-0.25	0.01	-0.06
BaileyPRV	+		+		—	
BaileySec	++		++		—	
Omernik3	++		++		—	
VegZone	++		+		—	
HardwoodVeg	+		—		—	
Conifer%BA	0.12	0.30	<i>0.18</i>	-0.41	0.01	0.10
Lichen S	<i>0.15</i>	<i>0.31</i>	0.01	0.05	0.01	-0.13
Lichen Sum	<i>0.16</i>	<i>0.34</i>	0.02	0.06	0.01	-0.09
Lichen E	0.04	0.27	0.06	0.03	0.02	0.06
Lichen H'	<i>0.17</i>	<i>0.32</i>	0.03	0.05	0.00	-0.11
CompGrad	0.12	-0.21	0.08	-0.20	0.03	0.17
Small Leafy	0.00	0.08	0.33	0.32	0.09	-0.16
Medium Leafy	0.00	-0.04	0.04	0.16	<i>0.13</i>	0.25
Large Leafy	<i>0.15</i>	<i>0.25</i>	<i>0.17</i>	-0.39	0.04	0.25
Tufted/Hanging	0.03	0.12	0.09	0.15	<i>0.10</i>	<i>0.18</i>
Cladonia-like	<i>0.14</i>	-0.19	0.27	-0.34	0.12	-0.24
Nitrogen-fixing	0.00	0.05	0.00	0.02	0.06	-0.20

Table A2.2. West Small. For comparison, for $n = 178$ plots, a Pearson $r^2 = 0.021$ is significant at $p = 0.05$, and $r^2 = 0.10$ has $p << 0.000$. The largest nonsignificant Kendall $\tau = 0.135$ has $p = 0.056$.

Variable	Axis 1		Axis 2		Axis 3	
	Pearson r^2	Kendall τ	Pearson r^2	Kendall τ	Pearson r^2	Kendall τ
Year	—	—	—	—	—	—
Latitude	0.04	-0.12	0.03	0.12	0.05	0.13
Longitude	0.20	0.28	0.01	-0.04	0.02	0.10
CoastDist	<i>0.19</i>	<i>0.30</i>	0.01	-0.05	0.02	0.09
Elevation	0.70	0.68	0.01	-0.07	0.00	-0.04
Slope%	0.09	-0.21	0.01	-0.07	0.00	-0.01
Physiog	—	—	—	—	—	—
Aspect	0.00	0.03	0.00	0.02	0.02	-0.07
Insolation	0.00	0.00	0.01	-0.07	0.05	-0.16
ClimGrad	0.75	0.66	0.01	-0.10	0.00	0.04
TempPNV	0.63	-0.61	0.00	0.05	0.01	-0.06
LapseRatePNV	<i>0.18</i>	<i>0.30</i>	0.01	-0.10	0.00	-0.02
AugMxTCS	0.31	-0.39	0.00	-0.03	0.01	-0.09
DecMnTCS	0.45	-0.50	0.02	0.12	0.00	-0.05
PrecipPNV	<i>0.10</i>	<i>-0.21</i>	0.01	0.07	0.01	0.03
FogPNV	<i>0.14</i>	<i>-0.38</i>	0.01	0.07	0.00	-0.02
PrecipCS	0.00	0.05	0.02	0.11	0.04	0.13
RelH%CS	0.09	-0.24	0.00	0.01	0.02	-0.09
WetDaysCS	0.01	-0.05	0.05	0.18	0.03	0.07
AirGrad	<i>0.17</i>	<i>-0.28</i>	0.00	0.01	0.25	-0.37
SO ₄ kgHayr	<i>0.14</i>	<i>-0.19</i>	0.04	0.12	0.03	0.13
NO ₃ kgHayr	0.06	-0.14	0.02	0.09	0.04	0.14
SulfurL	0.03	-0.13	0.01	0.01	0.01	-0.05
NitrogenL	0.01	-0.07	0.02	0.06	0.01	-0.07
BAm ² /ha	0.01	-0.05	0.04	-0.13	<i>0.14</i>	0.25
Stand Age	0.05	0.17	0.01	-0.08	0.23	0.37
QuadMeanDiam	0.01	-0.06	0.05	-0.16	<i>0.12</i>	0.25
AvgDiam8	0.04	-0.12	0.04	-0.15	<i>0.16</i>	0.31
BaileySec	—	+	—	—	—	—
Omernik4	++	+	—	—	—	—
VegZone	++	—	—	—	—	—
DomTgpW	++	+	—	+	—	—
HardwoodVeg	—	—	—	—	—	—
Conifer%BA	0.11	0.36	0.00	-0.08	0.04	0.20
Lichen S	0.43	-0.49	0.43	-0.45	0.02	0.07
Lichen Sum	0.38	-0.44	0.48	-0.49	0.01	0.03
Lichen E	0.00	-0.01	0.05	-0.18	0.05	-0.15
Lichen H'	0.43	-0.45	0.47	-0.49	0.01	0.06
CompGrad	0.00	0.05	0.24	0.38	0.02	-0.05
Small Leafy	<i>0.17</i>	<i>0.26</i>	0.09	-0.24	0.01	-0.06
Medium Leafy	0.01	-0.02	0.06	0.16	0.23	-0.31
Large Leafy	0.01	0.07	0.20	0.37	0.05	0.13
Tufted/Hanging	0.38	0.43	0.01	-0.11	<i>0.13</i>	-0.25
Cladonia-like	<i>0.19</i>	<i>-0.35</i>	0.00	0.05	0.25	0.38
Nitrogen-fixing	0.41	-0.60	0.04	-0.10	0.29	0.33

Table A2.3. East Large. For comparison, for $n = 144$ plots, a Pearson $r^2 = 0.027$ is significant at $p = 0.05$, and $r^2 = 0.10$ has $p < 0.000$. The largest nonsignificant Kendall $\tau = 0.132$ has $p = 0.051$.

Variable	Axis 1		Axis 2		Axis 3	
	Pearson r^2	Kendall τ	Pearson r^2	Kendall τ	Pearson r^2	Kendall τ
Year	—	—	—	—	—	—
Latitude	0.65	0.62	0.00	0.07	0.05	0.15
Longitude	0.12	0.24	0.17	0.32	0.01	0.04
Elevation	0.02	0.11	0.32	-0.42	0.00	0.03
SlopeDg	0.04	-0.10	0.06	-0.19	0.02	-0.05
Aspect	0.00	-0.03	0.00	0.03	0.00	0.01
Insolation	0.01	-0.07	0.00	-0.04	0.00	-0.01
TempCS	0.43	-0.46	0.07	0.16	0.04	-0.13
JulyTCS	0.29	-0.37	0.12	0.23	0.03	-0.12
JanTCS	0.50	-0.51	0.04	0.11	0.04	-0.13
PrecipCS	0.02	-0.11	0.02	-0.09	0.00	0.05
SO_4kghayr	0.21	0.33	0.06	-0.15	0.06	0.15
NO_3kghayr	0.40	0.45	0.02	-0.09	0.08	0.18
BAm ² /ha	0.00	-0.03	0.00	-0.02	0.00	-0.01
Stand Age	0.03	0.11	0.01	-0.07	0.00	-0.03
BaileyPRV	++		++		—	
Omernik3	++		+		—	
ForType	++		+		—	
Hardwood%BA	0.01	0.18	0.01	-0.05	0.06	0.14
Lichen S	0.38	-0.47	0.41	-0.52	0.01	-0.04
Lichen Sum	0.41	-0.48	0.40	-0.49	0.01	-0.07
Lichen E	0.05	-0.20	0.04	-0.08	0.05	-0.21
Lichen H'	0.43	-0.47	0.30	-0.51	0.01	-0.05
Small Leafy	0.10	-0.24	0.12	0.22	0.37	0.42
Medium Leafy	0.00	0.03	0.20	-0.38	0.08	-0.17
Large Leafy	0.02	0.07	0.13	0.29	0.38	-0.42
Tufted/Hanging	0.04	-0.30	0.03	-0.16	0.03	-0.09
Cladonia-like	0.11	0.16	0.16	-0.34	0.08	0.15

Table A2.4. East Small. For this data set only, values having Pearson $r^2 \geq 0.080 < 0.200$ are in italics. For comparison, for $n = 140$ plots, a Pearson $r^2 = 0.028$ is significant at $p = 0.05$, $r^2 = 0.08$ has $p = 0.01$, and $r^2 = 0.10$ has $p < 0.000$. The largest nonsignificant Kendall $\tau = 0.134$ has $p = 0.051$. For this data set, categorical variables marked ‘++’ do not have pattern as strong as for the other three data sets.

Variable	Axis 1		Axis 2		Axis 3	
	Pearson r^2	Kendall τ	Pearson r^2	Kendall τ	Pearson r^2	Kendall τ
Year	—		—		—	
Latitude	0.01	0.07	<i>0.10</i>	<i>0.21</i>	0.00	-0.05
Longitude	<i>0.08</i>	<i>0.19</i>	0.01	0.08	0.01	-0.07
Elevation	0.06	0.16	0.00	0.02	0.04	-0.15
SlopeDg	0.00	0.00	0.01	0.09	0.03	0.14
SlopeCl	—		—		+	
SlopPos	—		—		+	
SiteMoist	—		+		+	
Aspect	0.01	0.06	0.00	0.01	0.00	0.02
Insolation	0.01	0.05	0.00	0.04	0.00	0.00
TempCS	0.05	-0.15	0.03	-0.12	0.02	0.08
JulyTCS	0.05	-0.15	0.02	-0.09	0.02	0.09
JanTCS	0.04	-0.13	0.06	-0.18	0.02	0.09
PrecipCS	0.01	0.09	0.03	0.09	0.00	-0.06
S0 ₄ kghayr	0.02	0.10	0.04	-0.10	0.03	-0.10
N0 ₃ kghayr	0.03	0.11	0.03	-0.10	0.05	-0.13
BAm ² /ha	0.01	-0.05	0.00	0.01	0.02	-0.12
Stand Age	0.00	0.02	0.00	0.01	0.00	-0.05
StAgeCl	+		—		—	
AvgDiam3	0.01	-0.05	0.01	-0.03	0.03	-0.10
StMature	0.00	0.01	0.00	0.00	0.01	-0.06
ForType	++		—		—	
DomTgpE	++		++		+	
TreeS	0.02	-0.10	0.07	0.19	0.00	-0.03
TreeE	0.00	0.06	0.03	0.10	0.05	-0.13
TreeH'	0.01	-0.05	<i>0.09</i>	<i>0.19</i>	0.02	-0.10
Hardwood%BA	0.05	0.18	0.00	-0.02	0.00	0.12
Acid%BA	0.05	-0.15	0.00	-0.06	0.00	-0.07
QU%BA	0.04	-0.17	0.00	-0.02	0.00	0.04
PRSE%BA	0.03	0.11	0.00	-0.03	0.00	0.02
ACRU%BA	0.00	0.00	0.02	-0.10	0.01	-0.07
ACSA%BA	0.00	0.02	<i>0.11</i>	<i>0.22</i>	0.00	0.02
CON-IV	<i>0.08</i>	-0.22	0.00	0.03	0.01	-0.10
AcidB-IV	<i>0.12</i>	<i>-0.26</i>	0.00	0.01	0.00	-0.02
QU-IV	0.03	-0.20	0.00	-0.01	0.01	0.04
PRSE-IV	0.02	0.11	0.01	-0.08	0.02	0.06
ACRU-IV	0.00	0.02	<i>0.09</i>	<i>-0.19</i>	0.00	0.00
ACSA-IV	0.01	0.05	0.04	0.14	0.02	0.04
Shade	0.00	0.01	0.03	0.09	0.00	-0.04
Lichen S	0.67	-0.71	0.00	-0.03	0.00	0.00
Lichen Sum	0.67	-0.67	0.01	-0.04	0.00	0.04
Lichen E	0.01	-0.03	0.00	-0.02	0.08	0.21
Lichen H'	0.75	-0.70	0.01	-0.04	0.00	0.01
Small Leafy	0.00	0.00	0.42	0.48	0.06	0.20
Medium Leafy	0.00	0.03	<i>0.11</i>	<i>0.14</i>	0.06	0.13
Large Leafy	0.04	0.16	0.34	-0.37	0.20	0.33
Tufted/Hanging	0.09	-0.31	0.01	-0.06	0.00	0.06
Cladonia-like	0.04	-0.11	<i>0.17</i>	-0.28	0.59	-0.58

App. 3. Correlations of macrolichen species with ordination axes: Table A3.1. for West Large; Table A3.2. for West Small; Table A3.3. for East Large; Table A3.4. for East Small. All species in the analytical data set are listed with their guild assignment and number of plots at which they occurred.

Pearson r^2 values and Kendall τ values for linear correlations are given, with Pearson r^2 values and Kendall τ values for modal correlations (see text) in parentheses when that $r^2 \geq 0.10$ or when that r^2 is higher than the Pearson r^2 for linear correlation. Values having correlation $r^2 \geq 0.10$ and < 0.20 (either r^2) are in italics and those having $r^2 \geq 0.20$ are in bold.

Table A3.1. West Large. For comparison, for $n = 154$ plots, a Pearson $r^2 = 0.025$ is significant at $p = 0.05$, and $r^2 = 0.10$ has $p < 0.000$. The largest nonsignificant Kendall $\tau = 0.142$ has $p = 0.052$.

Species	Guild	# Plots	Axis 1		Axis 2		Axis 3	
			Pearson r^2	Kendall τ	Pearson r^2	Kendall τ	Pearson r^2	Kendall τ
<i>Ahtiana pallidula</i>	Medium Leafy	6	0,01	0,13	0,00	-0,08	0,01	-0,12
<i>Alectoria imshaugii</i>	Tufted/Hanging	19	0,24 (0,10)	0,37 (-0,31)	0,01	-0,17	0,00 (0,01)	0,01 (-0,14)
<i>Alectoria sarmentosa</i>	Tufted/Hanging	66	0,36 (0,21)	0,50 (-0,40)	0,22 (0,20)	-0,43 (-0,40)	0,04 (0,07)	0,20 (-0,14)
<i>Alectoria vancouverensis</i>	Tufted/Hanging	12	0,01 (0,02)	0,12 (-0,18)	0,01 (0,04)	-0,07 (-0,22)	0,00 (0,00)	-0,09 (-0,07)
<i>Bryoria</i> sp.	Tufted/Hanging	28	0,04 (0,07)	0,20 (-0,27)	0,08	-0,27	0,01 (0,04)	0,08 (-0,19)
<i>Bryoria capillaris</i>	Tufted/Hanging	49	0,20 (0,20)	0,43 (-0,44)	0,05 (0,06)	-0,21 (-0,22)	0,01 (0,05)	0,07 (0,20)
<i>Bryoria fremontii</i>	Tufted/Hanging	9	<i>0,11</i>	<i>0,23</i>	0,03 (0,03)	-0,18 (-0,17)	0,01	0,10
<i>Bryoria friabilis</i>	Tufted/Hanging	20	0,03 (0,08)	0,18 (-0,30)	0,02 (0,04)	-0,16 (-0,19)	0,01	0,05
<i>Bryoria fuscescens</i>	Tufted/Hanging	30	0,20 (0,11)	0,37 (-0,34)	0,07	-0,26	0,01 (0,06)	0,07 (-0,20)
<i>Bryoria glabra</i>	Tufted/Hanging	5	0,01	0,10	0,01	-0,15	0,01	0,07
<i>Bryoria pseudocapillaris</i>	Tufted/Hanging	3	0,01	0,08	0,00	-0,07	0,00	-0,05
<i>Bryoria pseudofuscescens</i>	Tufted/Hanging	15	0,10	0,16	0,01 (0,02)	-0,10 (-0,20)	0,00 (0,03)	0,05 (-0,16)
<i>Bryoria trichodes</i> ssp. <i>americana</i>	Tufted/Hanging	6	0,05	0,14	0,01	-0,09	0,01	0,00
<i>Candelaria concolor</i>	Small Leafy	8	0,00 (0,01)	0,03 (-0,07)	<i>0,10</i>	0,25	0,03	-0,17
<i>Cavernularia hultenii</i>	Small Leafy	13	0,00 (0,02)	0,03 (-0,13)	0,04	-0,22	0,01 (0,03)	0,09 (-0,15)
<i>Cavernularia lophyrea</i>	Small Leafy	6	0,01	-0,09	0,00	-0,05	0,01	0,09
<i>Cetrelia cetrariooides</i>	Large Leafy	6	0,01	-0,10	0,04	0,15	0,02	-0,10
<i>Cladonia</i> sp.	Cladonia -like	13	0,00 (0,00)	0,09 (-0,04)	0,01	-0,11	0,05	-0,13
<i>Cladonia albonigra</i>	Cladonia -like	3	0,00	0,03	0,00	0,05	0,00	0,02
<i>Cladonia bellidiflora</i>	Cladonia -like	3	0,00	-0,05	0,02	-0,08	0,00	0,02
<i>Cladonia carneola</i>	Cladonia -like	4	0,00	0,06	0,00	-0,01	0,01	0,11
<i>Cladonia chlorophphaea</i>	Cladonia -like	6	0,00	-0,04	0,00	0,06	0,00	-0,03
<i>Cladonia coniocraea</i>	Cladonia -like	15	0,05	-0,14	0,00 (0,01)	0,01 (-0,24)	0,04	-0,03
<i>Cladonia fimbriata</i>	Cladonia -like	17	0,00 (0,02)	-0,01 (-0,16)	0,00	0,09	0,01	-0,12
<i>Cladonia norvegica</i>	Cladonia -like	6	0,00	0,03	0,01	-0,07	0,00	-0,03
<i>Cladonia ochrochlora</i>	Cladonia -like	35	0,05	-0,09	0,02	-0,03	0,04	-0,17
<i>Cladonia squamosa</i>	Cladonia -like	10	0,03	-0,08	0,03	-0,12	<i>0,11</i>	-0,19
<i>Cladonia squamosa</i> v. <i>subsquamosa</i>	Cladonia -like	16	0,01 (0,02)	-0,05 (-0,09)	0,01	0,00	0,05	-0,18

<i>Cladonia transcendens</i>	<i>Cladonia</i> -like	54	0,04	-0,01	0,08	-0,15	0,00 (0,02)	-0,28 (-0,20)
<i>Cladonia umbricola</i>	<i>Cladonia</i> -like	10	0,00 (0,00)	0,07 (-0,02)	0,01 (0,02)	-0,08 (-0,10)	0,00 (0,00)	-0,01 (-0,03)
<i>Esslingeriana idahoensis</i>	Medium Leafy	19	0,12	0,27	0,01	0,05	0,00	-0,07
<i>Evernia prunastri</i>	Tufted/Hanging	73	0,02 (0,07)	-0,13 (-0,27)	0,44 (0,22)	0,57 (-0,48)	0,07	-0,24
<i>Hypocenomyce scalaris</i>	Small Leafy	3	0,03	0,16	0,00	0,02	0,00	-0,06
<i>Hypogymnia</i> sp.	Medium Leafy	11	0,01	-0,03	0,04	0,01	0,01 (0,02)	-0,14 (-0,04)
<i>Hypogymnia apinnata</i>	Medium Leafy	49	0,00 (0,03)	0,05 (-0,16)	0,04	-0,17	0,05	0,18
<i>Hypogymnia duplicata</i>	Medium Leafy	6	0,02	-0,01	0,05	-0,18	0,00	0,00
<i>Hypogymnia enteromorpha</i>	Medium Leafy	98	0,04	-0,05	0,20	-0,39	0,01 (0,04)	-0,04 (-0,17)
<i>Hypogymnia imshaugii</i>	Medium Leafy	59	0,35 (0,13)	0,59 (-0,51)	0,03	-0,17	0,06	-0,14
<i>Hypogymnia inactiva</i>	Medium Leafy	79	0,02 (0,15)	0,11 (-0,36)	0,00 (0,01)	-0,11 (-,31)	<i>0,15</i>	0,24
<i>Hypogymnia metaphysodes</i>	Small Leafy	27	0,07	0,37	0,01	-0,03	0,00 (0,01)	0,01 (-0,03)
<i>Hypogymnia occidentalis</i>	Medium Leafy	41	0,01	0,05	0,05	0,11	0,05	0,16
<i>Hypogymnia physodes</i>	Medium Leafy	92	0,02	-0,13	0,00 (0,08)	0,04 (-0,22)	0,08	0,15
<i>Hypogymnia rugosa</i>	Medium Leafy	3	0,04	0,14	0,01	-0,09	0,00	0,06
<i>Hypogymnia tubulosa</i>	Medium Leafy	56	0,02 (0,07)	-0,10 (-0,31)	0,02	0,09	0,07	0,13
<i>Hypotrachyna sinuosa</i>	Medium Leafy	36	0,22	-0,36	0,04	0,18	0,01	0,06
<i>Kaernefeltia merrillii</i>	Small Leafy	15	0,19	0,36	0,01	0,06	0,01	-0,05
<i>Leptogium polycarpum</i>	Medium Leafy	8	0,00 (0,02)	0,04 (-0,16)	0,01 (0,03)	0,13 (-0,19)	0,00	-0,01
<i>Letharia vulpina</i>	Tufted/Hanging	26	0,26 (0,10)	0,41 (-0,36)	0,01	0,06	0,04	-0,16
<i>Lobaria oregana</i>	Nitrogen-fixing	15	0,00 (0,01)	-0,01 (-0,07)	<i>0,15</i>	<i>-0,31</i>	0,03	-0,11
<i>Lobaria pulmonaria</i>	Nitrogen-fixing	36	0,02 (0,09)	0,14 (-0,25)	0,01 (0,04)	0,12 (-0,20)	0,01 (0,03)	-0,11 (-0,16)
<i>Lobaria scrobiculata</i>	Nitrogen-fixing	8	0,00 (0,02)	0,05 (-0,13)	0,02	0,12	0,02 (0,03)	-0,16 (-0,17)
<i>Melanelia</i> sp.	Medium Leafy	7	0,01	0,09	0,02	0,09	0,01	-0,07
<i>Melanelia subaurifera</i>	Medium Leafy	16	0,01 (0,04)	-0,10 (-0,26)	0,08	0,22	0,00 (0,00)	0,10 (-0,12)
<i>Melanohalea exasperatula</i>	Medium Leafy	17	0,01 (0,05)	0,08 (-0,21)	0,04 (0,05)	0,20 (-0,21)	0,01	-0,09
<i>Melanohalea subelegantula</i>	Medium Leafy	30	0,01 (0,06)	-0,08 (-0,25)	0,21 (0,10)	0,38 (-0,35)	0,05	-0,21
<i>Melanohalea subolivacea</i>	Medium Leafy	9	0,03	0,17	0,02	0,13	0,00	-0,10
<i>Menegazzia terebrata</i>	Small Leafy	27	0,19	-0,35	0,01	0,12	0,00 (0,02)	0,04 (-0,12)
<i>Nephroma helveticum</i>	Nitrogen-fixing	11	0,01 (0,02)	0,11 (-0,14)	0,00 (0,00)	-0,00 (-0,03)	0,03	-0,15
<i>Nephroma laevigatum</i>	Nitrogen-fixing	5	0,00	-0,02	0,00	-0,01	0,01	-0,07
<i>Nephroma resupinatum</i>	Nitrogen-fixing	12	0,02 (0,03)	0,15 (-0,18)	0,00 (0,01)	-0,03 (-0,05)	0,02 (0,03)	-0,15 (-0,18)
<i>Nodobryoria abbreviata</i>	Tufted/Hanging	9	0,04 (0,05)	0,25 (-0,24)	0,00 (0,01)	0,03 (0,06)	0,00	-0,03
<i>Nodobryoria oregana</i>	Tufted/Hanging	49	0,39 (0,26)	0,54 (-0,48)	<i>0,11 (0,15)</i>	<i>-0,33 (-0,33)</i>	0,05 (0,05)	0,14 (-0,22)
<i>Normandina pulchella</i>	Small Leafy	6	0,03	0,17	0,01	0,13	0,02	-0,16
<i>Parmelia</i> sp.	Medium Leafy	6	0,00	0,10	0,00	-0,07	<i>0,14</i>	0,07
<i>Parmelia hygrophila</i>	Medium Leafy	56	0,01 (0,04)	0,15 (-0,15)	0,01 (0,04)	0,01 (-0,19)	0,01	-0,10
<i>Parmelia pseudosulcata</i>	Medium Leafy	10	0,00 (0,03)	0,03 (-0,15)	0,04	-0,18	0,00 (0,02)	0,01 (-0,14)
<i>Parmelia saxatilis</i>	Medium Leafy	9	0,00 (0,03)	-0,01 (-0,15)	0,01	-0,03	0,00 (0,01)	0,07 (-0,03)
<i>Parmelia sulcata</i>	Medium Leafy	114	0,37	-0,50	0,32 (0,11)	0,43 (-0,28)	0,00 (0,00)	0,01 (0,10)

App. 3. Internet supplement to: Will-Wolf, S.; Geiser, L.H.; Neitlich, P.; Reis, A.H. 2006.

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<i>Parmeliopsis ambigua</i>	Small Leafy	14	0.10 (0.10)	0.29 (-0.29)	0.02 (0.02)	-0.14 (-0.13)	0.00 (0.03)	0.05 (-0.19)
<i>Parmotrema arnoldii</i>	Large Leafy	9	0,04	-0,16	0,01	0,09	0,00 (0.00)	0,01 (0.03)
<i>Parmotrema chinense</i>	Large Leafy	6	0,05	-0,17	0,05	0,16	0,02	0,12
<i>Parmotrema hypotropum</i>	Large Leafy	59	0,16	0,34	0,12	-0,40	0,02	0,05
<i>Peltigera collina</i>	Nitrogen-fixer	22	0.01 (0.02)	-0.03 (-0.13)	0.04	0.17	0.00 (0.00)	-0.09 (0.00)
<i>Physcia</i> sp.	Small Leafy	3	0,00	0,05	0,01	0,08	0,01	-0,05
<i>Physcia adscendens</i>	Small Leafy	14	0.02 (0.04)	-0.10 (-0.19)	0,21	0,33	0,06	-0,20
<i>Physcia aipolia</i>	Small Leafy	23	0.00 (0.01)	0.01 (-0.10)	0,16	0,35	0.06 (0.07)	-0.27 (-0.29)
<i>Physcia tenella</i>	Small Leafy	13	0.00 (0.01)	-0.02 (-0.14)	0,13	0,31	0,03	-0,14
<i>Physconia americana</i>	Small Leafy	4	0,02	0,12	0,02	0,13	0,01	-0,11
<i>Physconia enteroxantha</i>	Small Leafy	5	0,01	0,06	0,09	0,23	0,03	-0,16
<i>Physconia perisidiosa</i>	Small Leafy	9	0,02	0,16	0,08	0,23	0,02 (0.02)	-0,16 (-0.16)
<i>Platismatia glauca</i>	Large Leafy	120	0.09 (0.19)	0.20 (-0.26)	0.07 (0.11)	-0.28 (-.019)	0.11 (0.10)	0.28 (-0.20)
<i>Platismatia herrei</i>	Large Leafy	74	0.00 (0.12)	0.06 (-0.29)	0.11 (0.14)	-0.29 (-0.27)	0.01 (0.10)	0.10 (-0.24)
<i>Platismatia norvegica</i>	Large Leafy	14	0.00 (0.03)	-0.04 (-0.16)	0.03 (0.04)	-0.18 (-0.17)	0,03	0,16
<i>Platismatia stenophylla</i>	Large Leafy	48	0.07 (0.13)	0.26 (-0.32)	0.01 (0.09)	-0.08 (-0.23)	0.01 (0.04)	0.06 (-0.18)
<i>Pseudocyphellaria anomala</i>	Nitrogen-fixing	13	0.02 (0.02)	0.15 (-0.14)	0.00 (0.01)	0.05 (-0.03)	0,04	-0,22
<i>Pseudocyphellaria anthraspis</i>	Nitrogen-fixing	15	0.03 (0.05)	0.19 (-0.20)	0.00 (0.02)	0.06 (-0.11)	0,02	-0,13
<i>Pseudocyphellaria crocata</i>	Nitrogen-fixing	5	0,00	-0,01	0,00	0,03	0,01	-0,12
<i>Ramalina dilacerata</i>	Tufted/Hanging	22	0.02 (0.04)	-0.10 (-0.26)	0.05 (0.05)	0.22 (-0.23)	0.01 (0.02)	-0.09 (-0.13)
<i>Ramalina farinacea</i>	Tufted/Hanging	67	0.14 (0.14)	-0.30 (-0.34)	0,33	0,46	0.01 (0.01)	-0.09 (-0.07)
<i>Ramalina roesleri</i>	Tufted/Hanging	3	0,00	-0,06	0,00	0,05	0,00	0,00
<i>Sphaerophorus globosus</i>	Cladonia -like	75	0,06	-0,09	0,33	-0,50	0,04	-0,01
<i>Sticta fuliginosa</i>	Tufted/Hanging	10	0,01	-0,07	0,00 (0.01)	0,06 (-0.04)	0,02 (0.02)	-0,12 (-0.12)
<i>Sticta limbata</i>	Tufted/Hanging	6	0,04	-0,12	0,00	0,10	0,01	-0,09
<i>Tuckermannopsis chlorophylla</i>	Medium Leafy	82	0.10 (0.22)	0.29 (-0.35)	0.00 (0.10)	-0.02 (-0.20)	0.02 (0.10)	0.13 (-0.21)
<i>Tuckermannopsis orbata</i>	Medium Leafy	74	0.01 (0.02)	0.11 (-0.09)	0.01 (0.07)	0.07 (-0.26)	0,05	0,13
<i>Tuckermannopsis platyphylla</i>	Medium Leafy	28	0.23 (0.15)	0.41 (-0.36)	0.01 (0.01)	-0.11 (-0.07)	0.01 (0.03)	0.04 (-0.18)
<i>Tuckermannopsis subalpina</i>	Medium Leafy	3	0,00	0,02	0,03	-0,13	0,00	0,06
<i>Usnea</i> sp.	Tufted/Hanging	33	0.00 (0.02)	-0.02 (-0.16)	0,06	0,20	0,05	0,01
<i>Usnea cavernosa</i>	Tufted/Hanging	4	0,00	0,01	0,03	0,14	0,01	-0,07
<i>Usnea cornuta</i>	Tufted/Hanging	19	0,13	-0,29	0,03	0,09	0,03	0,13
<i>Usnea diplotypus</i>	Tufted/Hanging	4	0,00	-0,08	0,01	0,09	0,01	-0,04
<i>Usnea filipendula</i>	Tufted/Hanging	77	0,03	-0,07	0,00 (0.03)	0,08 (-0.27)	0,09	0,17
<i>Usnea glabrata</i>	Tufted/Hanging	20	0,05	-0,14	0,09 (0.09)	0,29 (-0.27)	0,05	-0,16
<i>Usnea glabrescens</i>	Tufted/Hanging	3	0,00	0,06	0,01	0,08	0,01	0,09
<i>Usnea lapponica</i>	Tufted/Hanging	18	0.01 (0.04)	-0.05 (-0.20)	0.07 (0.07)	0.25 (-0.27)	0.00 (0.01)	-0.05 (-0.08)
<i>Usnea longissima</i>	Tufted/Hanging	8	0.01 (0.03)	-0.05 (-0.15)	0.00 (0.02)	-0.06 (-0.11)	0,03	0,15
<i>Usnea pachyclada</i>	Tufted/Hanging	6	0,01	-0,06	0,00	0,00	0,00	-0,07
<i>Usnea scabrata</i>	Tufted/Hanging	26	0.00 (0.05)	0.06 (-0.22)	0.00 (0.05)	0.05 (-0.17)	0.00 (0.02)	-0.06 (-0.12)

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<i>Usnea subfloridana</i>	Tufted/Hanging	27	0.00 (0.05)	0.02 (-0.21)	0.00 (0.01)	0.03 (-0.06)	0.00 (0.01)	-0.04 (-0.04)
<i>Usnea substerilis</i>	Tufted/Hanging	4	0,00	0,00	0,04	0,14	0,03	-0,09
<i>Usnea wirthii</i>	Tufted/Hanging	55	0.32 (0.19)	-0.52 (-0.49)	0.08 (0.08)	0.29 (-0.29)	0,08	0,12
<i>Vulpicida canadensis</i>	Medium Leafy	10	0,11	0,27	0,02	0,09	0,04	-0,14
<i>Xanthomendoza hasseana</i>	Small Leafy	7	0,00	0,08	0,04	0,20	0,01	-0,11
<i>Xanthomendoza oregana</i>	Small Leafy	4	0,00	-0,07	0,10	0,21	0,04	-0,18
<i>Xanthoria</i> sp.	Small Leafy	4	0,00	0,00	0,03	0,15	0,01	-0,13
<i>Xanthoria candelaria</i>	Small Leafy	3	0,00	-0,03	0,03	0,16	0,00	-0,01
<i>Xanthoria polycarpa</i>	Small Leafy	20	0.01 (0.02)	-0.03 (-0.13)	0,19	0,34	0,09	-0,28

Table A3.2. West Small. For comparison, for n = 178 plots, a Pearson $r^2 = 0.021$ is significant at p = 0.05, and $r^2 = 0.10$ has p << 0.000. The largest nonsignificant Kendall $\tau = 0.135$ has p = 0.056.

Species	Guild	# Plots	Axis 1		Axis 2		Axis 3	
			Pearson r^2	Kendall τ	Pearson r^2	Kendall τ	Pearson r^2	Kendall τ
<i>Ahtiana pallidula</i>	Medium Leafy	38	0,00	-0,11	0,07	-0,29	0,00 (0.01)	0,02 (0.06)
<i>Alectoria imshaugii</i>	Tufted/Hanging	86	0.28 (0.25)	0.36 (-0.36)	0,10	-0,31	0,02 (0.06)	-0,11 (-0.18)
<i>Alectoria sarmentosa</i>	Tufted/Hanging	166	0.54 (0.40)	0.54 (-0.48)	0,16	0,31	0,01 (0.01)	0,04 (-0.07)
<i>Alectoria vancouverensis</i>	Tufted/Hanging	12	0,04	-0,17	0,00	0,01	0,00	-0,05
<i>Bryoria</i> sp.	Tufted/Hanging	34	0.05 (0.14)	0.24 (-0.30)	0.00 (0.01)	-0.12 (-0.02)	0,05	-0,15
<i>Bryoria capillaris</i>	Tufted/Hanging	100	0.06 (0.07)	0.14 (-0.14)	0,01	-0,18	0,00 (0.01)	-0,04 (-0.08)
<i>Bryoria fremontii</i>	Tufted/Hanging	14	0,04	-0,17	0,00 (0.01)	-0,09 (-0.03)	0,01	-0,04
<i>Bryoria friabilis</i>	Tufted/Hanging	46	0.14 (0.14)	0.25 (-0.25)	0,09 (0.10)	-0,26 (-0.24)	0,00 (0.04)	0,04 (-0.15)
<i>Bryoria fuscescens</i>	Tufted/Hanging	62	0,16	0,28	0,01 (0.03)	-0,11 (-0.15)	0,03	0,12
<i>Bryoria glabra</i>	Tufted/Hanging	69	0.33 (0.30)	0.39 (-0.39)	0,00	-0,04	0,01 (0.03)	-0,15 (-0.15)
<i>Bryoria pseudofuscescens</i>	Tufted/Hanging	53	0,01	0,03	0,00	-0,01	0,00 (0.01)	0,01 (0.08)
<i>Bryoria trichodes</i> ssp. <i>americana</i>	Tufted/Hanging	16	0,06	0,14	0,00 (0.01)	-0,00 (-0.02)	0,01	0,10
<i>Cavernularia hultenii</i>	Small Leafy	36	0,05	-0,20	0,04 (0.04)	0,13 (-0.19)	0,04	0,14
<i>Cladonia ochrochlora</i>	Cladonia -like	11	0,07	-0,23	0,01 (0.01)	-0,06 (-0.07)	0,02	0,13
<i>Cladonia transcendens</i>	Cladonia -like	18	0,03	0,05	0,04	-0,18	0,04	0,24
<i>Esslingeriana idahoensis</i>	Medium Leafy	46	0,01	-0,08	0,07	-0,26	0,02	-0,06
<i>Evernia prunastri</i>	Tufted/Hanging	27	0,06	-0,21	0,00 (0.00)	0,06 (-0.09)	0,12	-0,24
<i>Fuscopannaria leucostictoides</i>	Nitrogen-fixing	8	0,05	-0,22	0,01	-0,07	0,04	0,08
<i>Hypocenomyce castaneocinerea</i>	Small Leafy	9	0,03	-0,16	0,03	-0,16	0,00 (0.01)	0,02 (-0.03)
<i>Hypogymnia apinnata</i>	Medium Leafy	91	0.04 (0.04)	0.14 (-0.14)	0,01 (0.03)	-0,03 (-0.16)	0,07	0,19
<i>Hypogymnia enteromorpha</i>	Medium Leafy	162	0,00	0,06	0,33	0,49	0,06	-0,12
<i>Hypogymnia imshaugii</i>	Medium Leafy	155	0.37 (0.26)	0.44 (-0.38)	0,00 (0.01)	0,09 (-0.07)	0,08	-0,18
<i>Hypogymnia inactiva</i>	Medium Leafy	137	0,21	-0,24	0,27	0,44	0,00	-0,04
<i>Hypogymnia metaphysodes</i>	Small Leafy	79	0.08 (0.10)	0.22 (-0.23)	0,11	-0,28	0,01 (0.03)	-0,08 (-0.14)
<i>Hypogymnia occidentalis</i>	Medium Leafy	57	0.27 (0.25)	0.38 (-0.37)	0,01 (0.01)	-0,07 (-0.05)	0,00	0,04

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<i>Hypogymnia oceanica</i>	Medium Leafy	24	0,00 (0,01)	0,01 (-0,04)	0,00 (0,06)	-0,02 (-0,23)	0,07	0,20
<i>Hypogymnia physodes</i>	Medium Leafy	138	0,16	-0,26	0,20	0,34	0,00 (0,02)	-0,03 (0,09)
<i>Hypogymnia tubulosa</i>	Medium Leafy	101	0,08	-0,24	0,00 (0,02)	0,04 (-0,15)	0,01 (0,01)	-0,08 (-0,04)
<i>Hypotrachyna sinuosa</i>	Medium Leafy	12	0,04	-0,18	0,00	-0,04	0,03	-0,13
<i>Kaernefeltia merrillii</i>	Medium Leafy	29	0,21 (0,16)	0,32 (-0,31)	0,02 (0,03)	-0,13 (-0,14)	0,06	-0,19
<i>Letharia vulpina</i>	Tufted/Hanging	76	0,22 (0,18)	0,30 (-0,29)	0,11	-0,29	0,01 (0,06)	-0,09 (-0,18)
<i>Lobaria oregana</i>	Nitrogen-fixing	56	0,25	-0,44	0,06	0,17	0,24 (0,10)	0,37 (-0,26)
<i>Lobaria pulmonaria</i>	Nitrogen-fixing	64	0,35	-0,50	0,03	-0,15	<i>0,13</i>	<i>0,25</i>
<i>Lobaria scrobiculata</i>	Nitrogen-fixing	21	<i>0,10</i>	<i>-0,30</i>	0,03	-0,10	0,09	0,18
<i>Melanelia subaurifera</i>	Medium Leafy	17	0,05	-0,21	0,00 (0,01)	-0,00 (0,01)	<i>0,11</i>	-0,24
<i>Melanohalea exasperatula</i>	Medium Leafy	11	0,00	0,00	0,00 (0,00)	-0,00 (0,04)	0,04	-0,14
<i>Melanohalea subelegantula</i>	Medium Leafy	20	0,01 (0,03)	0,10 (-0,12)	0,05	-0,21	0,04	-0,19
<i>Nephroma bellum</i>	Nitrogen-fixing	22	<i>0,11</i>	<i>-0,30</i>	0,02	-0,11	<i>0,13</i>	<i>0,30</i>
<i>Nephroma helveticum</i>	Nitrogen-fixing	27	<i>0,14</i>	<i>-0,34</i>	0,07	-0,25	<i>0,18</i>	<i>0,31</i>
<i>Nephroma occultum</i>	Nitrogen-fixing	9	0,04	-0,20	0,02	-0,12	<i>0,11</i>	<i>0,22</i>
<i>Nephroma parile</i>	Nitrogen-fixing	14	0,01	-0,11	0,03	-0,20	0,04	0,17
<i>Nephroma resupinatum</i>	Nitrogen-fixing	14	0,09	-0,27	0,07	-0,24	0,04	0,11
<i>Nodobryoria oregana</i>	Nitrogen-fixing	113	0,24 (0,26)	0,40 (-0,39)	0,00 (0,02)	0,01 (-0,14)	0,01	-0,04
<i>Parmelia hygrophila</i>	Medium Leafy	138	0,01 (0,06)	0,12 (-0,19)	0,00 (0,01)	0,07 (-0,11)	0,00	0,00
<i>Parmelia pseudosulcata</i>	Medium Leafy	19	0,05	-0,24	0,00	-0,04	0,02	0,11
<i>Parmelia sulcata</i>	Medium Leafy	85	0,20	-0,31	0,02	0,16	<i>0,16</i>	<i>-0,30</i>
<i>Parmeliopsis ambigua</i>	Small Leafy	49	0,21 (0,18)	0,34 (-0,32)	0,05 (0,07)	-0,22 (-0,22)	0,00 (0,01)	0,05 (-0,06)
<i>Parmotrema hypotropum</i>	Large Leafy	159	0,28 (0,26)	0,43 (-0,38)	0,01 (0,03)	0,16 (-0,06)	0,07	0,16
<i>Peltigera collina</i>	Nitrogen-fixer	22	<i>0,12</i>	<i>-0,32</i>	0,07	-0,24	0,00	0,04
<i>Physcia aipolia</i>	Small Leafy	9	0,04	-0,18	0,00	-0,04	0,03	-0,11
<i>Platismatia glauca</i>	Large Leafy	177	0,25 (0,11)	0,34 (-0,24)	0,31	0,43	0,00	0,01
<i>Platismatia herrei</i>	Large Leafy	148	<i>0,13</i>	<i>-0,12</i>	0,04	0,23	<i>0,10</i>	<i>0,20</i>
<i>Platismatia stenophylla</i>	Large Leafy	122	<i>0,16</i>	<i>-0,25</i>	0,07	0,24	0,02	-0,13
<i>Pseudocyphellaria anomala</i>	Nitrogen-fixing	60	0,31	-0,46	0,03	-0,16	<i>0,19</i>	<i>0,33</i>
<i>Pseudocyphellaria anthraspis</i>	Nitrogen-fixing	34	<i>0,16</i>	<i>-0,36</i>	<i>0,12</i>	<i>-0,26</i>	0,09	0,23
<i>Pseudocyphellaria crocata</i>	Nitrogen-fixing	21	<i>0,17</i>	<i>-0,37</i>	0,00 (0,00)	-0,02 (0,06)	<i>0,16</i>	<i>0,24</i>
<i>Ramalina dilacerata</i>	Tufted/Hanging	14	0,07	-0,27	0,00 (0,00)	-0,04 (0,07)	0,04	-0,18
<i>Ramalina farinacea</i>	Tufted/Hanging	36	<i>0,14</i>	<i>-0,34</i>	0,00 (0,01)	-0,08 (0,07)	<i>0,11</i>	<i>-0,29</i>
<i>Sphaerophorus globosus</i>	Cladonia -like	101	0,26	-0,39	0,04	0,13	<i>0,19</i>	<i>0,34</i>
<i>Sticta fuliginosa</i>	Nitrogen-fixing	15	0,08	-0,26	0,02	-0,14	0,09	0,18
<i>Tuckermannopsis chlorophylla</i>	Medium Leafy	140	0,00	0,08	0,00	-0,04	0,00	-0,01
<i>Tuckermannopsis orbata</i>	Medium Leafy	96	<i>0,10</i>	<i>-0,26</i>	0,00 (0,00)	0,00 (0,05)	<i>0,18</i>	<i>-0,31</i>
<i>Tuckermannopsis platyphylla</i>	Medium Leafy	130	0,28 (0,23)	0,44 (-0,40)	0,06 (0,07)	-0,11 (-0,12)	0,01 (0,02)	-0,07 (-0,09)
<i>Usnea</i> sp.	Tufted/Hanging	31	0,28	-0,42	0,03	0,12	0,05	-0,17

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<i>Usnea filipendula</i>	Tufted/Hanging	87	0,04	-0,20	0,00 (0,00)	-0,01 (0,05)	0,09	-0,23
<i>Usnea glabrata</i>	Tufted/Hanging	11	0,13	-0,27	0,01 (0,02)	0,04 (0,09)	0,00	-0,05
<i>Usnea scabrata</i>	Tufted/Hanging	75	0,08	-0,23	0,00 (0,02)	-0,09 (0,16)	0,00	-0,05
<i>Usnea subfloridana</i>	Tufted/Hanging	15	0,09	-0,24	0,00 (0,01)	-0,03 (-0,10)	0,04	-0,19
<i>Vulpicida canadensis</i>	Medium Leafy	23	0,01	-0,07	0,03	-0,20	0,04	-0,17

Table A3.3. East Large. For comparison, for $n = 144$ plots, a Pearson $r^2 = 0.027$ is significant at $p = 0.05$, and $r^2 = 0.10$ has $p < 0.000$. The largest nonsignificant Kendall $\tau = 0.132$ has $p = 0.051$.

Species	Guild	# Plots	Axis 1		Axis 2		Axis 3	
			Pearson r^2	Kendall τ	Pearson r^2	Kendall τ	Pearson r^2	Kendall τ
<i>Allocetraria oakesiana</i>	Medium Leafy	35	0,01 (0,04)	0,11 (-0,15)	0,22 (0,15)	-0,42 (-0,33)	0,01 (0,05)	-0,07 (-0,16)
<i>Anaptychia palmulata</i>	Small Leafy	10	0,08	0,23	0,02 (0,05)	-0,21 (-0,21)	0,02	-0,12
<i>Candelaria concolor</i>	Small Leafy	24	0,05	0,24	0,02 (0,04)	0,11 (-0,16)	0,01 (0,04)	0,08 (-0,20)
<i>Cladonia chlorophaea</i>	Cladonia -like	16	0,01 (0,01)	0,05 (-0,15)	0,08	-0,24	0,03	-0,10
<i>Cladonia coniocraea</i>	Cladonia -like	61	0,11	-0,22	0,09	-0,26	0,09	0,15
<i>Cladonia cylindrica</i>	Cladonia -like	13	0,00	0,05	0,05 (0,08)	-0,22 (-0,25)	0,00 (0,01)	0,08 (-0,10)
<i>Cladonia macilenta v. bacillaris</i>	Cladonia -like	15	0,03	-0,01	0,02	-0,23	0,01	0,06
<i>Cladonia ochrochlora</i>	Cladonia -like	7	0,01	-0,08	0,01	-0,09	0,02	0,08
<i>Cladonia ramulosa</i>	Cladonia -like	5	0,01	0,10	0,02	-0,12	0,00	0,03
<i>Evernia mesomorpha</i>	Tufted/Hanging	5	0,05	-0,18	0,02	-0,03	0,02	-0,01
<i>Flavoparmelia caperata</i>	Large Leafy	127	0,20	-0,28	0,18	0,36	0,18	-0,28
<i>Flavopunctelia flaventior</i>	Large Leafy	12	0,01 (0,04)	0,09 (-0,17)	0,13 (0,11)	-0,32 (-0,17)	0,00 (0,03)	-0,01 (-0,17)
<i>Flavopunctelia soredica</i>	Large Leafy	5	0,01	-0,04	0,00	-0,07	0,01	0,12
<i>Heterodermia granulifera</i>	Small Leafy	5	0,03	0,17	0,02	-0,14	0,00	-0,03
<i>Heterodermia obscurata</i>	Small Leafy	34	0,10	0,41	0,00	-0,22	0,01 (0,02)	-0,19 (-0,20)
<i>Heterodermia speciosa</i>	Small Leafy	16	0,11	0,28	0,01 (0,02)	-0,11 (-0,16)	0,01 (0,01)	-0,08 (-0,08)
<i>Heterodermia squamulosa</i>	Small Leafy	6	0,02	0,11	0,05	-0,20	0,00	-0,02
<i>Hypogymnia physodes</i>	Medium Leafy	28	0,05	-0,06	0,11	-0,39	0,03	-0,01
<i>Hypotrachyna livida</i>	Medium Leafy	20	0,05 (0,07)	0,23 (-0,25)	0,01	-0,192	0,04	-0,20
<i>Hypotrachyna showmanii</i>	Medium Leafy	12	0,00 (0,00)	0,06 (-0,07)	0,04	-0,22	0,01 (0,04)	0,14 (-0,21)
<i>Imshaugia aleurites</i>	Small Leafy	11	0,01	0,10	0,10	-0,29	0,02 (0,02)	-0,12 (-0,13)
<i>Melanelixia subaurifera</i>	Medium Leafy	21	0,01 (0,03)	-0,03 (-0,16)	0,03	-0,27	0,02	0,11
<i>Myelochroa aurulenta</i>	Medium Leafy	58	0,06	0,26	0,03	0,04	0,00 (0,01)	-0,01 (-0,09)
<i>Myelochroa galbina</i>	Medium Leafy	22	0,13	0,32	0,00 (0,01)	-0,22 (0,03)	0,06	-0,14
<i>Parmelia squarrosa</i>	Medium Leafy	32	0,02 (0,03)	0,20 (-0,20)	0,14 (0,11)	-0,37 (-0,34)	0,01	-0,04
<i>Parmelia sulcata</i>	Medium Leafy	69	0,37	-0,44	0,01 (0,08)	-0,18 (-0,25)	0,02	-0,02
<i>Parmelinopsis horrescens</i>	Medium Leafy	9	0,03 (0,04)	0,17 (-0,18)	0,02	-0,15	0,02	-0,10
<i>Parmelinopsis minarum</i>	Medium Leafy	37	0,25	0,42	0,01 (0,02)	-0,19 (-0,20)	0,07	-0,23
<i>Parmotrema</i> sp.	Large Leafy	10	0,05	0,20	0,00 (0,01)	-0,07 (-0,08)	0,01 (0,01)	-0,04 (-0,13)
<i>Parmotrema eurySacum</i>	Large Leafy	10	0,30 (0,22)	0,48 (-0,41)	0,02	0,06	0,01	-0,06

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<i>Parmotrema hypotropum</i>	Large Leafy	47	0,06	0,26	0,06	-0,23	0,02 (0,03)	-0,13 (-0,17)
<i>Parmotrema margaritatum</i>	Large Leafy	22	0,00 (0,02)	0,05 (-0,12)	0,00	-0,06	0,01 (0,02)	0,10 (-0,11)
<i>Phaeophyscia adiastola</i>	Small Leafy	8	0,01 (0,02)	0,10 (-0,09)	0,00 (0,00)	-0,05 (-0,08)	0,01	0,08
<i>Phaeophyscia pusilloides</i>	Small Leafy	41	0,08	0,28	0,01 (0,02)	0,02 (-0,09)	0,10	0,31
<i>Phaeophyscia rubropulchra</i>	Small Leafy	99	0,00 (0,14)	0,07 (-0,29)	0,10	0,20	0,48	0,49
<i>Physcia aipolia</i>	Small Leafy	21	0,08	0,25	0,01	0,03	0,00	0,09
<i>Physcia americana</i>	Small Leafy	24	0,15	0,35	0,00	-0,06	0,0 (0,06)	-0,01 (-0,22)
<i>Physcia millegrana</i>	Small Leafy	99	0,13 (0,19)	-0,31 (-0,37)	0,18	0,28	0,27	0,42
<i>Physcia stellaris</i>	Small Leafy	36	0,02 (0,05)	0,16 (-0,21)	0,01	-0,23	0,02	-0,02
<i>Pseudevernia consocians</i>	Medium Leafy	6	0,02	0,14	0,08	-0,22	0,03	-0,17
<i>Punctelia</i> sp.	Large Leafy	8	0,03	0,24	0,01	-0,02	0,06	-0,16
<i>Punctelia missouriensis</i>	Large Leafy	16	0,28	-0,34	0,01 (0,11)	-0,14 (-0,33)	0,07	-0,14
<i>Punctelia perreticulata</i>	Large Leafy	78	0,04 (0,12)	0,23 (-0,35)	0,25	0,30	0,02	-0,11
<i>Punctelia rufecta</i>	Large Leafy	93	0,02	0,10	0,01	-0,10	0,00 (0,00)	0,02 (0,06)
<i>Punctelia semansiana</i>	Large Leafy	11	0,04	-0,12	0,01	-0,08	0,00 (0,01)	0,01 (-0,08)
<i>Pyxine caesiopruinosa</i>	Small Leafy	9	0,04	0,21	0,01 (0,01)	0,05 (-0,12)	0,00 (0,01)	0,02 (-0,10)
<i>Pyxine sorediata</i>	Small Leafy	46	0,29 (0,23)	0,46 (-0,40)	0,09	-0,32	0,07	-0,17
<i>Ramalina americana</i>	Tufted/Hanging	14	0,06 (0,07)	0,24 (-0,24)	0,08	-0,29	0,00 (0,00)	-0,02 (0,04)
<i>Rimelia cetrata</i>	Large Leafy	10	0,08	0,24	0,05	-0,21	0,02 (0,03)	-0,15 (-0,19)
<i>Rimelia reticulata</i>	Large Leafy	24	0,21	0,36	0,00 (0,01)	-0,14 (0,10)	0,06	-0,21
<i>Tuckermannopsis ciliaris</i>	Medium Leafy	12	0,04 (0,05)	0,22 (-0,24)	0,00 (0,02)	-0,16 (0,15)	0,01	-0,07
<i>Usnea</i> sp.	Tufted/Hanging	5	0,01 (0,02)	0,15 (-0,17)	0,00	-0,07	0,05	-0,19
<i>Usnea mutabilis</i>	Tufted/Hanging	8	0,03	0,15	0,09	-0,25	0,02	-0,12
<i>Usnea rubicunda</i>	Tufted/Hanging	6	0,00	0,04	0,02	-0,12	0,02	0,14
<i>Usnea strigosa</i>	Tufted/Hanging	18	0,13 (0,11)	0,36 (-0,35)	0,01	0,02	0,00	0,01

Table A3.4. East Small. For comparison, for n = 140 plots, a Pearson $r^2 = 0,028$ is significant at $p = 0,05$, and $r^2 = 0,10$ has $p < 0,000$. The largest nonsignificant Kendall $\tau = 0,134$ has $p = 0,051$.

Species	Guild	# Plots	Axis 1		Axis 2		Axis 3	
			Pearson r^2	Kendall τ	Pearson r^2	Kendall τ	Pearson r^2	Kendall τ
<i>Ahtiana aurescens</i>	Medium Leafy	13	0,01 (0,07)	0,07 (-0,23)	0,01	-0,05	0,02	-0,10
<i>Allocetraria oakesiana</i>	Medium Leafy	33	0,11	-0,32	0,03	0,10	0,02	-0,16
<i>Candelaria concolor</i>	Small Leafy	4	0,04	-0,21	0,09	-0,21	0,13	-0,25
<i>Cladonia caespiticia</i>	Cladonia -like	38	0,19 (0,13)	-0,37 (-0,04)	0,01	-0,09	0,07	-0,22
<i>Cladonia chlorophaea</i>	Cladonia -like	5	0,00	-0,08	0,02	-0,06	0,00	0,03
<i>Cladonia coniocraea</i>	Cladonia -like	102	0,07	0,24	0,06	-0,16	0,43 (0,35)	-0,55 (-0,11)
<i>Cladonia cristatella</i>	Cladonia -like	6	0,00	-0,05	0,01	-0,04	0,03	-0,08
<i>Cladonia cylindrica</i>	Cladonia -like	9	0,01	-0,20	0,02	-0,04	0,02	0,07
<i>Cladonia floerkeana</i>	Cladonia -like	3	0,00	-0,06	0,00	0,00	0,00	0,01
<i>Cladonia grayi</i>	Cladonia -like	4	0,00	-0,08	0,01	-0,05	0,01	0,01

App. 3. Internet supplement to: Will-Wolf, S.; Geiser, L.H.; Neitlich, P.; Reis, A.H. 2006.

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<i>Cladonia macilenta</i>	<i>Cladonia</i> -like	7	0,01 (0,02)	-0,14 (-0,12)	0,02 (0,05)	-0,08 (-0,22)	0,00	-0,05
<i>Cladonia macilenta</i> v. <i>bacillaris</i>	<i>Cladonia</i> -like	40	0,04	-0,19	0,00 (0,05)	0,04 (-0,18)	0,00 (0,02)	-0,01 (-0,08)
<i>Cladonia ochrochlora</i>	<i>Cladonia</i> -like	14	0,02	-0,17	0,00	0,03	0,11	-0,19
<i>Cladonia parasitica</i>	<i>Cladonia</i> -like	19	0,00 (0,01)	-0,04 (-0,06)	0,03	0,12	0,00	0,09
<i>Evernia mesomorpha</i>	Tufted/Hanging	18	0,07	-0,25	0,01	-0,08	0,01	0,06
<i>Flavoparmelia caperata</i>	Large Leafy	103	0,15	0,27	0,22 (0,12)	-0,34 (-0,22)	0,11	0,23
<i>Hypogymnia physodes</i>	Medium Leafy	68	0,10	-0,31	0,08	0,17	0,11	0,21
<i>Melanelia subaurifera</i>	Medium Leafy	32	0,10	-0,39	0,00	0,04	0,02	0,09
<i>Myelochroa aurulenta</i>	Medium Leafy	10	0,00 (0,03)	-0,10 (-0,16)	0,01 (0,02)	0,02 (0,04)	0,03	0,11
<i>Parmelia</i> sp.	Medium Leafy	3	0,00	-0,06	0,00	0,05	0,00	-0,03
<i>Parmelia squarrosa</i>	Medium Leafy	19	0,09	-0,25	0,06	0,14	0,01	-0,05
<i>Parmelia sulcata</i>	Medium Leafy	134	0,62	0,68	0,00 (0,01)	-0,02 (0,14)	0,03	0,04
<i>Phaeophyscia pusilloides</i>	Small Leafy	20	0,01 (0,03)	-0,11 (0,14)	0,04	0,11	0,04	0,18
<i>Phaeophyscia rubropulchra</i>	Small Leafy	89	0,07	0,17	0,48	0,58	0,00	0,03
<i>Physcia aipolia</i>	Small Leafy	3	0,02	-0,12	0,02	0,12	0,00	0,08
<i>Physcia millegrana</i>	Small Leafy	75	0,10 (0,15)	-0,22 (-0,3)	0,05	0,17	0,06	0,16
<i>Physcia stellaris</i>	Small Leafy	7	0,00 (0,02)	-0,12 (0,15)	0,01	-0,04	0,03	0,11
<i>Punctelia</i> sp.	Large Leafy	6	0,00 (0,04)	0,00 (0,15)	0,35 (0,11)	-0,44 (-0,24)	0,14	0,27
<i>Punctelia perreticulata</i>	Large Leafy	78	0,02	-0,21	0,04	0,17	0,02	0,10
<i>Punctelia rufecta</i>	Large Leafy	32	0,01	0,03	0,00	0,03	0,08	-0,19
<i>Usnea hirta</i>	Tufted/Hanging	3	0,01	-0,12	0,00	-0,05	0,00	0,01
<i>Usnea strigosa</i>	Tufted/Hanging	6	0,06	-0,21	0,00	0,06	0,00	0,04