

Fazan L, Gwiazdowicz DJ, Fragnière Y, Faltynowicz W, Ghosn D, Remoundou I, Rusinska A, Urbanski P, Pasta S, Garfi G, Kozłowski G (2022) Factors influencing the diversity and distribution of epiphytic lichens and bryophytes on the relict tree *Zelkova abelicea* (Lam.) Boiss. (Ulmaceae).

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Table S1. Spearman's rank correlation rho values for selected environmental variables. Significance levels: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.1$.

	Longitude	Altitude	Topography	Browsing intensity	Temperature	Precipitation
Latitude	-0.93***	-0.09	-0.16	0.47**	-0.70***	-0.08
Longitude	-	-0.18	0.31*	-0.47**	0.88***	-0.14
Altitude	-	-	-0.39*	0.11	-0.27	0.97***
Topography	-	-	-	-0.43*	0.31*	-0.39*
Browsing intensity	-	-	-	-	-0.31*	0.15
Temperature	-	-	-	-	-	-0.16
Precipitation	-	-	-	-	-	-

Table S2. Permutation tests of the distance-based redundancy analysis. Significant $p < 0.05$ values are given in bold.

Environmental variable	Df	Sum of squares	F statistic	Probability (>F)
Longitude	1	0.6196	2.4941	0.0001
Topography	1	0.9195	3.7015	0.0001
Browsing intensity	1	0.4004	1.6117	0.0320
Altitude	1	0.3020	1.2158	0.2143
Residual	30	7.4527		

Table S3. Ecological indicator values taken from Nimis (2016) and Nimis & Martellos (2021) for the observed lichens. pH: pH of substratum. 1: very acid substrata, 2: acid substrata, 3: subacid to subneutral substrata, 4: slightly basic substrata, 5: basic substrata. Solar irradiation. 1: in very shaded situations, 2: in shaded situations, 3: in sites with plenty of diffuse light but scarce direct solar irradiation, 4: in sun-exposed sites but avoiding extreme solar irradiation, 5: in sites with very high direct solar irradiation. Aridity (air humidity). 1: hygrophytic, in sites with a very high frequency of fog, 2: rather hygrophytic, intermediate between 1 and 3, 3: mesophytic, 4: xerophytic but absent from extremely arid stands, 5: very xerophytic. Eutrophication (including deposition of dust and nitrogen compounds). 1: not resistant to eutrophication, 2: resistant to very weak eutrophication, 3: resistant to weak eutrophication, 4: occurring in rather high eutrophicated situations, 5: occurring in very highly eutrophicated situations. Poleotolerance, i.e. tendency of a lichen to occur in areas with different degrees of human disturbance. 0: species occurring exclusively on old trees in ancient, undisturbed forests, 1: species occurring in natural or semi-natural habitats, 2: species occurring in moderately disturbed areas, 3: species occurring in heavily disturbed areas. Altitudinal distribution. 1: eu-Mediterranean belt, 2: submediterranean belt, 3: montane belt, 4: Oroboreal belt of the Alps, 5: above treeline.

Species	pH	Solar irradiation	Aridity	Eutrophication	Poleotolerance	Altitude
<i>Amandinea punctata</i>	123	45	34	234	123	1234
<i>Anaptychia ciliaris</i>	23	45	3	23	12	123
<i>Anisomeridium polypori</i>	34	2	2	12	1	123
<i>Athalia cerinella</i>	23	45	34	34	12	123
<i>Athalia pyracea</i>	34	45	34	234	12	1234
<i>Blastenia ferruginea</i>	23	45	3	123	12	123
<i>Candelaria concolor</i>	34	45	34	345	123	123
<i>Candelariella aurella</i>	45	345	345	234	123	12345
<i>Candelariella efflorescens</i>	34	45	3	45	1	123
<i>Candelariella xanthostigma</i>	23	345	3	23	123	1234
<i>Collema subflaccidum</i>	23	34	2	23	12	123
<i>Diplotomma alboatrum</i>	34	45	45	34	12	123
<i>Diplotomma pharcidium</i>	34	45	45	34	12	12
<i>Glaucomaria carpinea</i>	23	345	34	123	123	1234
<i>Huneckia pollinii</i>	23	45	34	23	1	12
<i>Lecania naegelia</i>	23	4	3	123	12	123
<i>Lecanora argentata</i>	23	34	3	12	12	234
<i>Lecanora chlarotera</i>	23	345	34	2345	123	1234
<i>Lecanora saligna</i>	12	45	4	12	12	234
<i>Lecidella elaeochroma</i>	234	345	2345	234	123	1234
<i>Lepra albescens</i>	23	34	23	123	12	1234
<i>Leptogium cf. cochleatum</i>	23	3	2	12	0	123
<i>Melanohalea exasperata</i>	23	45	34	23	12	123
<i>Melanohalea laciniatula</i>	12	3	2	23	1	23
<i>Ochrolechia androgyna</i>	12	3	2	1	1	2345
<i>Ochrolechia arborea</i>	2	34	3	123	12	23
<i>Ochrolechia szatalaensis</i>	12	3	23	1	1	34
<i>Parmelina pastillifera</i>	23	4	2	23	12	234
<i>Parmelina tiliacea</i>	2	34	3	23	123	1234
<i>Pertusaria pertusa</i>	2	3	23	12	12	1234
<i>Phaeophyscia nigricans</i>	34	45	34	4	12	23
<i>Phaeophyscia orbicularis</i>	2345	345	34	45	123	1234
<i>Physcia adscendens</i>	2345	45	34	345	123	12345
<i>Physcia aipolia</i>	23	45	3	34	123	1234
<i>Physcia biziana</i>	23	45	34	34	123	12
<i>Physcia dubia</i>	234	45	4	45	123	12345
<i>Physcia stellaris</i>	23	45	3	234	12	234
<i>Physcia tenella</i>	234	45	34	34	12	123
<i>Physconia distorta</i>	34	45	34	34	123	123
<i>Physconia enteroxantha</i>	23	45	3	34	12	123
<i>Physconia grisea</i>	34	345	3	45	123	1234
<i>Physconia perisidiosa</i>	23	34	23	23	12	123
<i>Physconia subpulverulenta</i>	3	45	3	34	12	12
<i>Physconia venusta</i>	23	34	2	12	1	23
<i>Pleurosticta acetabulum</i>	23	45	34	23	12	1234
<i>Polycauliona polycarpa</i>	23	45	34	23	12	34
<i>Polyzozia albescens</i>	345	345	345	34	123	1234
<i>Polyzozia dispersa</i>	45	345	45	234	23	123
<i>Polyzozia hagenii</i>	345	45	345	234	123	1234
<i>Polyzozia populicola</i>	23	34	3	1234	1	3
<i>Polyzozia semipallida</i>	45	45	34	45	1	2345
<i>Pseudevernia furfuracea</i>	12	345	34	12	12	234
<i>Ramalina farinacea</i>	23	345	12	12	12	1234
<i>Ramalina fastigiata</i>	23	345	23	123	12	1234
<i>Ramalina fraxinea</i>	23	45	23	23	1	23
<i>Rinodina pyrina</i>	23	45	3	23	12	123
<i>Rinodina sophodes</i>	23	45	34	12	12	1234
<i>Scoliciosporum chlorococcum</i>	123	23	23	123	12	1234
<i>Tephromela atra</i>	23	34	123	12	123	12345
<i>Xanthoria parietina</i>	234	345	34	34	123	1234

Table S4. Ecological indicator values for the observed bryopyhtes. The ecological indicator values follow Düll (1991). Li: light, 1: deep shade, 2: between 1 and 3, 3: shade, 4: between 3 and 5, 5: half-shade, 6: between 5 and 7, 7: half-light, 8: light, 9: full light, Te: temperature, 1: cold, 2: between 1 and 3, 3: cool, 4: between 3 and 5, 5: moderately warm, 6: between 5 and 7, 7: warm, 8: between 7 and 9, 9: extremely warm, Co: continentality, 1: euoceanic, 2: oceanic, 3: between 2 and 4, 4: suboceanic, 5: intermediate, 6: subcontinental, 7: between 6 and 8, 8: continental, 9: eucontinental, Hu: humidity, 1: strongly arid, 2: between 1 and 3, 3: arid, 4: between 3 and 5, 5: humid, 6: between 5 and 7, 7: wet, 8: between 7 and 9, 9: on lasting wet places near water or streams as well as regularly flooded or submerged mosses, pH: pH of substratum, 1: strongly acidic, 2: between 1 and 3, 3: acid, 4: between 3 and 5, moderately acid, 6: between 5 and 7, 7: weakly acid, 8: between 7 and 9, 9: basic and calcareous.

Species	Ecological indicator values				
	Li	Te	Co	Hu	pH
<i>Habrodon perpusillus</i>	6	8	3	5	5
<i>Homalothecium sericeum</i>	8	3	5	2	7
<i>Leptodon smithii</i>	8	8	3	4	6
<i>Leucodon sciuroides</i>	8	5	5	4	6
<i>Nogopterium gracile</i>	5	5	4	4	5
<i>Orthotrichum affine</i>	8	4	5	4	6
<i>Orthotrichum lyellii</i>	7	4	4	4	5
<i>Orthotrichum rupestre</i>	8	2	4	3	6
<i>Syntrichia laevipila</i>	8	5	4	3	6
<i>Syntrichia virescens</i>	8	5	5	2	6